

## Q12-5A Controller instructions V3.0

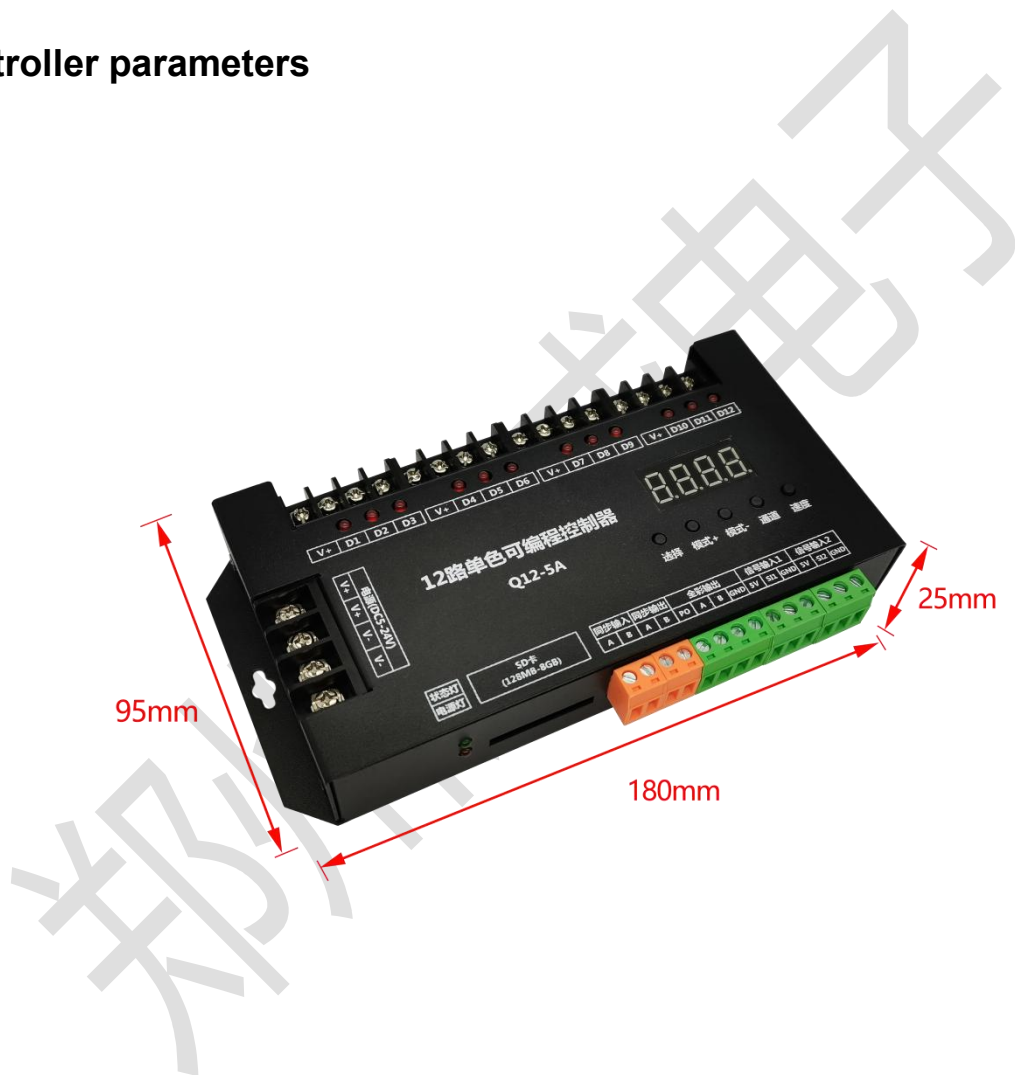


### 一、Features and advantages of controller

- ✓ 12 channels of monochrome output and 1 channel of full-color output.
- ✓ It can control monochrome, colorful and full-color lamps at the same time.
- ✓ 2-way switch signal input.
- ✓ It supports cascade synchronization and can be configured with our "gps-sync synchronization controller" for cluster synchronization.
- ✓ When the SD card is not inserted, the built-in effects are played. There are 98 kinds of built-in effects, and the functions of full broadcast, unicast and anycast are supported.

- ✓ Play the effect files in the SD card when inserting the card. The SD card capacity supports 128mb-8Gb.
- ✓ The LED digital tube is used to display the controller information, which is resistant to low temperature and is not affected by ambient temperature.
- ✓ The controller provides 5 entity keys for setting various parameters, which is simple and reliable.
- ✓ DC 5-24v power supply, wide voltage, suitable for more application scenarios.
- ✓ Each controller is presented with a 2-inch slotted screwdriver, which completely solves the trouble of finding suitable tools during wiring.

## 二、Controller parameters



### 2.1、Component description

Silk screen display		Function description
Power supply (DC5-24V)	V+	Connected to the positive pole of (5-24v) power supply
	V-	Connected to negative pole of power supply
Indicator lamp	Power lamp	The power indicator is on after the controller is powered on

	Status light	The status light is on when the controller has output	
Synchronous input	A	Synchronous input signal A port	
	B	Synchronous input signal B port	
Synchronous output	A	Synchronous output signal A port	
	B	Synchronous output signal B port	
Full color output	P0	Connected to DMX512 lamp address line	
	A	Connected to DMX512 lamp signal line a or data line of TTL lamp	
	B	Connected to DMX512 lamp signal line B	
	GND	Connected to GND line of lamps	
Signal input 1	5V	Semaphore power supply	
	SI1	Signal 1	
	GND	GND	
Signal input 2	5V	Semaphore power supply	
	SI2	Signal 2	
	GND	GND	
Entity key		Monochrome setting mode	Full color setting mode
	Choice	Long press the "select" key to enter the mode selection status [---], and then press the "speed" key to enter the full-color setting mode	
	Mode +	Switch to the next program	Program switching
	Mode -	Switch to previous program	Full color test mode
	Passage	Number of loaded units	
	Speed	Playback speed	Exit mode
Monochrome output	V+	Connected to the positive pole of lamps in channels 1 ~ 3	
	D1	Connected to negative pole of lamp 1	
	D2	Connected to negative pole of lamp 2	
	D3	Connected to negative pole of lamp 3	
	V+	Connected to the positive pole of lamps in channels 4 ~ 6	
	D4	Connected to negative pole of lamp 4	
	D5	Connected to negative pole of lamp 5	

	D6	Connected to negative pole of lamp 6
	V+	Connected to the positive pole of lamps in channels 7~9
	D7	Connected to negative pole of lamp 7
	D8	Connected to negative pole of lamp 8
	D9	Connected to negative pole of lamp 9
	V+	Connected to the positive pole of lamps in channels 10~12
	D10	Connected to negative pole of lamp 10
	D11	Connected to negative pole of lamp 11
	D12	Connected to negative pole of lamp 12

## 2.2、Controller parameters

Working voltage: DC5-24V

Rated power: <1W

Weight: 350G

Product size: 180mm x 95mm x 25mm

Output port: 12 way monochrome, 1 way full color

(TTL or Dmx512)

Carrying capacity: Monochrome < 5A per channel,  
full color 1024 (TTL) or 512 (DMX512)

SD card type: SDHC

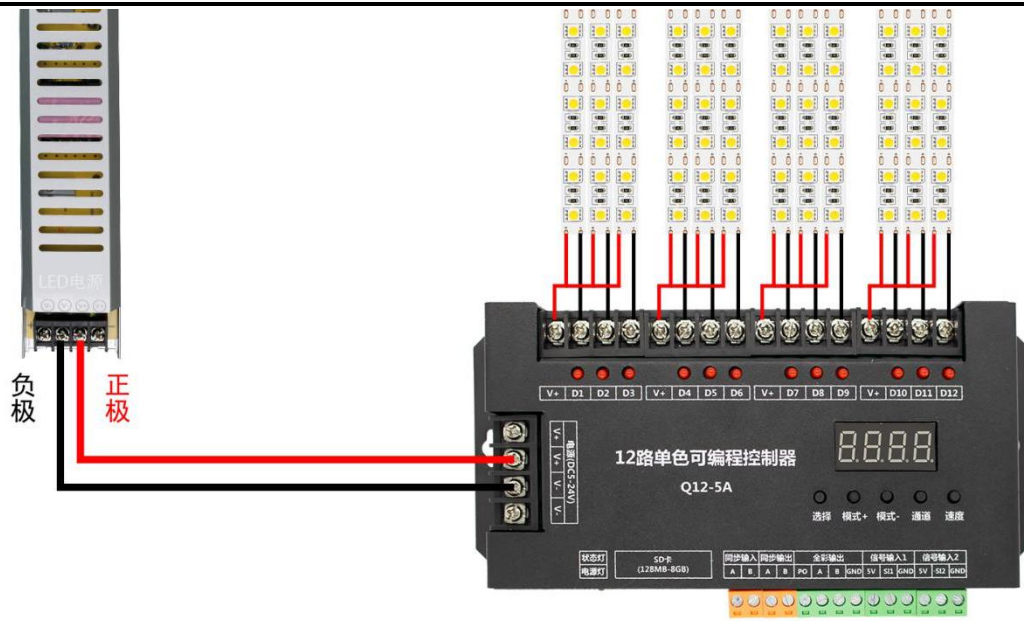
SD card capacity: 128MB-8GB

Effect file format: FAT32

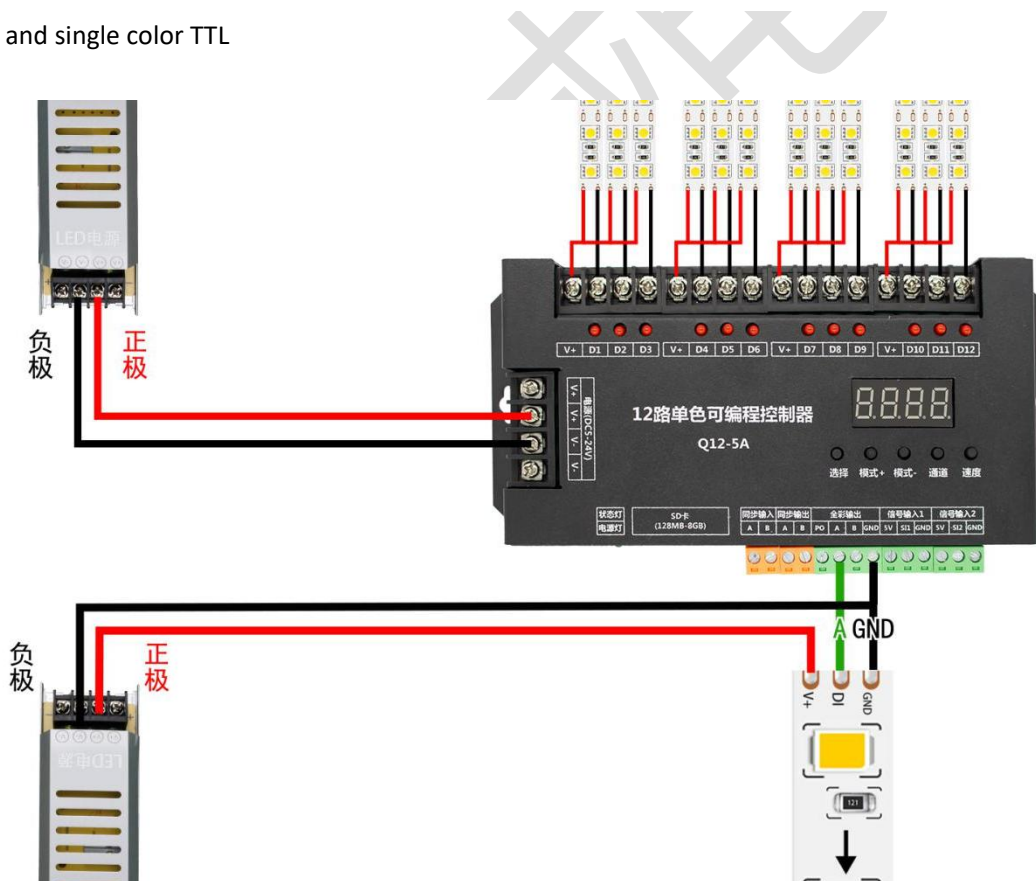
Effect file type: \*.LED

## 三、Wiring diagram

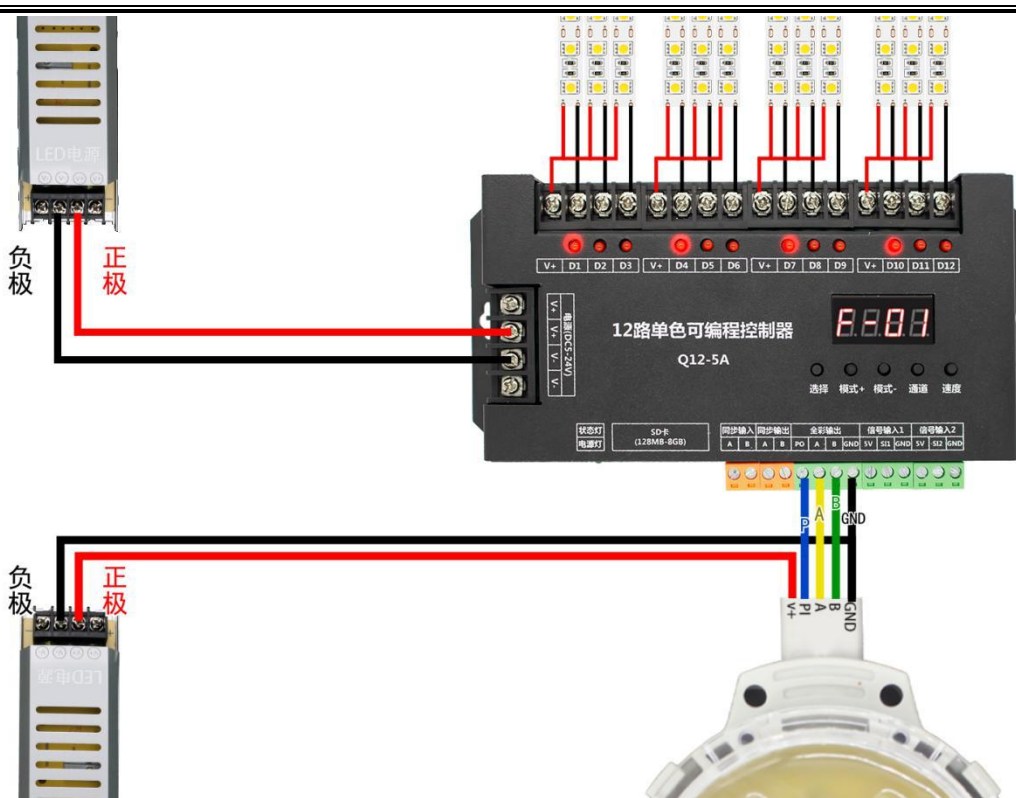
- The controller only uses monochrome lamps



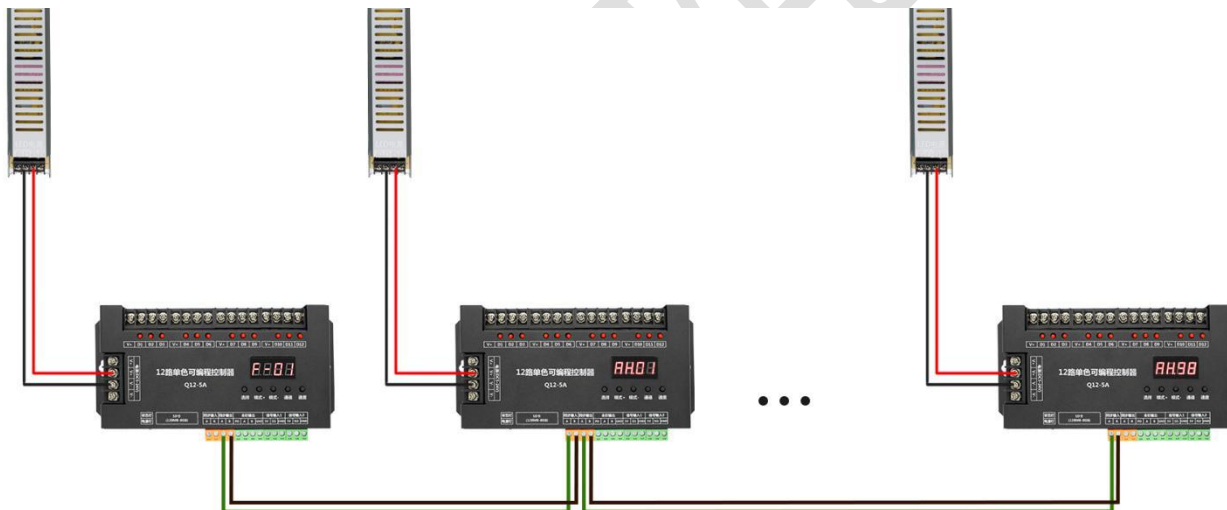
■ Lamps and single color TTL



Monochrome lamps and DMX512 lamps



■ Cascade synchronization



#### 四、Nixie tube display meaning

	Display content	Meaning
Monochrome mode	Monochrome program in	Monochrome program in SD card

(default)	SD card	
	F-XX	Single color built-in effect selection
	L-XX	Playback speed
	A-XX	Number of loaded units
Full color mode	P.-XX	Full color program in SD card
	F.-XX	Full color built-in effect selection
	XXXX	Chip model
	AE.00	RGBW sequence
	AF.01	Test effect
	- - - -	Select key operation type
	V-XX	Controller firmware version
	E-XX	Error message

## 五、Operating instructions

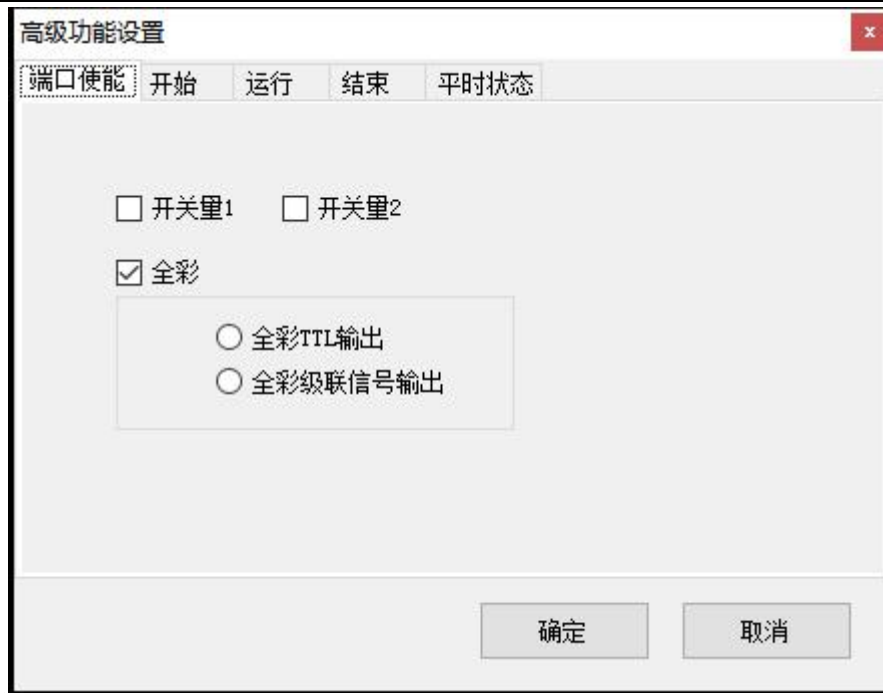
### 5.1、Play SD card effect

#### 5.1.1、Use monochrome effects only

After the full-color file is edited by the LED system, only the full-color editing effect will be displayed by default.

#### 5.1.2、Use monochrome + full color effect

Put the full-color LED file into the SD card, and use the Q12 special editing software to edit the monochrome animation effect. When exporting, tick the "switch enable", and use it in the advanced function setting window to tick the full-color and select the full-color TTL output.



■ The functions of monochrome mode setting keys for playing SD card effect are as follows:

- 1、The "select" key is used to enter the full-color state switching.
- 2、The "mode +" key is used to switch the next program. The nixie tube displays p-xx, XX represents the program serial number in the SD card, p-00 represents the cyclic playback of all programs, other numbers represent only the current program, and numbers represent the program serial number.
- 3、The "mode -" key is used to switch the previous program. The nixie tube displays p-xx, XX represents the program serial number in the SD card, p-00 represents cyclic playback of all programs, other numbers represent only the current program, and numbers represent the program serial number.
- 4、The "channel" key is used to display the number of extensions. The nixie tube displays a-xx. XX represents the number of extensions loaded by the controller.
- 5、The "speed" key is used to adjust the playback speed. After the first press, the nixie tube displays l-00 and the digital part flashes, indicating that the controller enters the speed setting state. The number indicates the speed level. The larger the number, the faster the speed. Every time you press the "speed" key to switch to a speed level, switch to L-16 and return to l-00. When playing the SD card effect, l-00 means to use the speed set in the SD card, and other values mean to force it to a certain speed. The corresponding relationship between speed and frame rate is as follows:

Speed and frame rate correspondence table

Display content	Frame rate	Display content	Frame rate
L-00	SD card frame rate or 25 frames / sec	L-01	5 fps
L-02	6 fps	L-03	7 fps
L-04	8 fps	L-05	9 fps



L-06	10 fps	L-07	12 fps
L-08	14 fps	L-09	16 fps
L-10	18 fps	L-11	20 fps
L-12	21 fps	L-13	22 fps
L-14	23 fps	L-15	24 fps
L-16	25 fps		

■ **The functions of full-color mode setting keys for playing SD card effect are as follows:**

1、The "select" key is used to enter the full-color state switching. Long press the "select" key, the nixie tube displays [--], and then press the "speed" key to enter the full-color mode content setting. After the setting is completed, press the "speed" key to save and return to the monochrome mode.

2、The "mode +" key is used to switch the next program. The nixie tube displays P. - XX, XX represents the program serial number in the SD card, P. - 00 represents the cyclic playback of all programs, other numbers represent only the current program, and numbers represent the program serial number.

3、The "mode -" key is used for testing, and the nixie tube displays af-xx. The effect list is as follows:

Sequencing effect table

Display content	Effect description	Display content	Effect description
AF. 01	All black	AF. 02	All white
AF. 03	Black and white gradient	AF. 04	All red
AF. 05	All green	AF. 06	All blue
AF. 07	Red, Green and Blue jump	AF. 08	Brush red, green, blue, white and black

4、The "channel" key is used to display the current full-color chip type.

5、The "speed" key is used to exit the full-color setting mode.

## 5.2、Play built-in effects

To play the built-in effect, you must not insert the SD card, and then power on. Inserting an SD card halfway does not affect the built-in playback effect. When playing the built-in effect, monochrome and full-color play the effect at the same time.

### 5.2.1、Monochrome content mode setting

1、The "select" key is used to enter the full-color state switching. Long press the "select" key, the nixie tube displays [--], and then press the "speed" key to enter the full-color mode content setting. After the setting is completed, press the "speed" key to save and return to the monochrome mode.

- 2、 The "mode +" key is used to switch to the next built-in program.
- 3、 The "mode -" key is used to switch the previous built-in program.
- 4、 Use the "channel" key to modify the number of on-board extensions. The maximum number is 20 extensions. Press and hold to jump to the maximum number of extensions A-20.
- 5、 The "speed" key is used to adjust the playback speed.

There are 11 kinds of built-in programs, which are listed as follows:

Serial number	Effect	Signal trigger
F-01	Brush color	Signal 1 trigger effect running direction from left to right  Signal 2 trigger effect running direction from right to left
F-02	Trailing	
F-03	Building blocks	
F-04	Table tennis	
F-05	Rat run	
F-06	Respiration	
F-07	Pull curtain	Signal 1 trigger effect running direction from left to right  Signal 2 trigger effect running direction from right to left
F-08	Gradual change	
F-09	Blinking	
F-10	Random	After the key is triggered - > flashing - > random running - > sequential running and slow stop
F-11	Black	The trigger direction of signal 1 is to pull the curtain from left to right. After all channels are on, one channel after another will be extinguished. The trigger direction of signal 2 is from right to left

### 5.2.2、 Full color mode content setting

Long press the "select" key, and then press the "speed" key when the nixie tube displays [---] to enter the full-color mode.

The key functions for playing built-in effects are as follows:

- 1、 The "select" key is used to modify the RGBW sequence of built-in effects. There are 24 modes in total. Press and hold to return to ae-35. The controller will automatically judge whether the W-bit is used according to the set chip type.

RGBW sequence table

Display content	RGBW order	Display content	RGBW order
AE. 00	RGBW	AE. 10	RGWB
AE. 01	GRBW	AE. 11	GRWB
AE. 02	RBGW	AE. 12	RBWG
AE. 03	GBRW	AE. 13	GBWR
AE. 04	BRGW	AE. 14	BRWG
AE. 05	BGRW	AE. 15	BGWR
AE. 20	RWGB	AE. 30	WRGB
AE. 21	GWRB	AE. 31	WGRB
AE. 22	RWBG	AE. 32	WRBG
AE. 23	GWBR	AE. 33	WGBR
AE. 24	BWRG	AE. 34	WBRG
AE. 25	BWGR	AE. 35	WBGR

2、"Mode +" key is used to switch built-in effects. After the first press, the nixie tube displays f-00 and the digital part flashes, indicating that the controller enters the built-in effect setting state. After that, press the "mode" key every time to switch a built-in effect. After switching to the last effect, press the "mode" key to return to the first one. If there is no key operation within 30s, it will automatically return to the normal playing state, and the last two digital tubes will not flash during normal playing.

The names of 98 built-in effects are shown in the table below:

ID	Effect	ID	Effect
F-00	Loop play	F-50	Two way 6 color trailing
F-01	All red	F-51	Backward wave interval 2 white dot running
F-02	All green	F-52	Run at two o'clock on purple, yellow and green
F-03	All blue	F-53	Two way 7-color gradient running
F-04	All yellow	F-54	Backward 6-color line segment interval running
F-05	Quan Qing	F-55	7 color jump
F-06	All purple	F-56	Back to the coloring, run at 1 points.
F-07	All white	F-57	Backward combination of line segments and white line running
F-08	Two way 6 color gradual trailing	F-58	Red wave running
F-09	First 6 colors black interval running	F-59	Green wave
F-10	7 color gradient	F-60	Blue wave

F-11	Forward 3 colors running at 1 points.	F-61	Yellow wave
F-12	Forward combination color line segment interval white line segment running	F-62	Cyan wave
F-13	Red tail	F-63	Purple wave
F-14	Green tail	F-64	White wave
F-15	Blue tail	F-65	Brush back in 7 colors
F-16	Yellow tail	F-66	Run back at 1:00 in 6 colors
F-17	Cyan tail	F-67	Forward 6 color line segment white interval running
F-18	Purple tail	F-68	Trailing white interval 2
F-19	White tail	F-69	Forward red and green tail
F-20	Brush 7 colors forward	F-70	Forward green blue 2 color trailing
F-21	Backward 3 colors running at 1 points.	F-71	Forward red and blue tail
F-22	Backward 3 colors running at 1 points.	F-72	Two way 6 color interval 2 white dot trailing
F-23	Forward coloring interval 2 white dot trailing	F-73	Forward yellow and purple, running 2 points each.
F-24	Run forward in red and green waves	F-74	Forward 3-color wave run
F-25	Run forward in green and blue waves	F-75	Backward 3-color wave run
F-26	Run forward in red and blue waves	F-76	Backward 6 color gradual trailing
F-27	Bidirectional 6-color interval 2 white dot trailing	F-77	Forward color combination tail
F-28	Forward red, green and blue, running 2 points each.	F-78	Backward composite color trailing
F-29	Forward red, green and blue 3-color tail	F-79	Forward 7-color wave run
F-30	Forward red, green and blue 3-color tail	F-80	Backward 7-color wave run
F-31	Forward 6-color gradient trailing	F-81	Backward 3 color interval 2 white dot trailing
F-32	Forward combo wave run	F-82	Run forward at 2 o'clock on blue, red and green
F-33	Backward combination color wave	F-83	Forward blue wave interval 2 Green Point running
F-34	Forward 7 color tail	F-84	Backward 6-color white tail
F-35	Backward 7-color tail	F-85	Forward 3 colors wave interval 2 white spots running
F-36	Forward 3-color interval 2 white dot trailing	F-86	Run forward with 2 blue dots between the red waves
F-37	Forward 6 colors running at 1 points.	F-87	Run forward with blue waves and 2 green dots apart
F-38	Run forward with green waves and 2 red dots apart	F-88	Run forward by 1 point in each combination color
F-39	Forward 6-color white tail	F-89	Forward 3 color line segment interval white line running

F-40	Backward 3 color wave interval 2 white spots running	F-90	7 color gradient running forward
F-41	Run forward with 2 green dots between the red waves	F-91	Backward 6-color white head tail
F-42	Run forward with blue waves and 2 red dots apart	F-92	Forward 6 color line segment without gap running
F-43	Run forward with blue waves and 2 yellow dots apart	F-93	Backward white line interval running
F-44	Run forward at 2 o'clock on green, red and blue	F-94	Two way 6-color wave running
F-45	Backward 7-color gradient running	F-95	Forward combined color wave interval 2 white spots running
F-46	Backward 3 color interval white line running	F-96	2 points running forward, yellow and purple.
F-47	Forward 6-color white head tail	F-97	Purple green wave interval 2
F-48	Backward 6-color segment running without interval	F-98	Forward red wave interval 2 Green Point running
F-49	Run forward at intervals of white line segments	F-99	Play the selected effect

3、The "mode -" key is used for the test mode, and the nixie tube displays af-xx. The test effect table is as shown in the test effect table in 5.1.2

4、The "channel" key is used to adjust the chip type of built-in effect. The chip list is as follows、

Chip type table

Display content	Chip name	Display content	Chip name
6703	SM16703	1914	TM1914
1903	UCS1903	8206	GS8206
9883	P9883	2811	WS2811
2818	WS2818	1814	TM1814
6704	SM16704	1916	1916
512H	DMX512-500K	512L	DMX512-250K
512A	DMX512-750K		

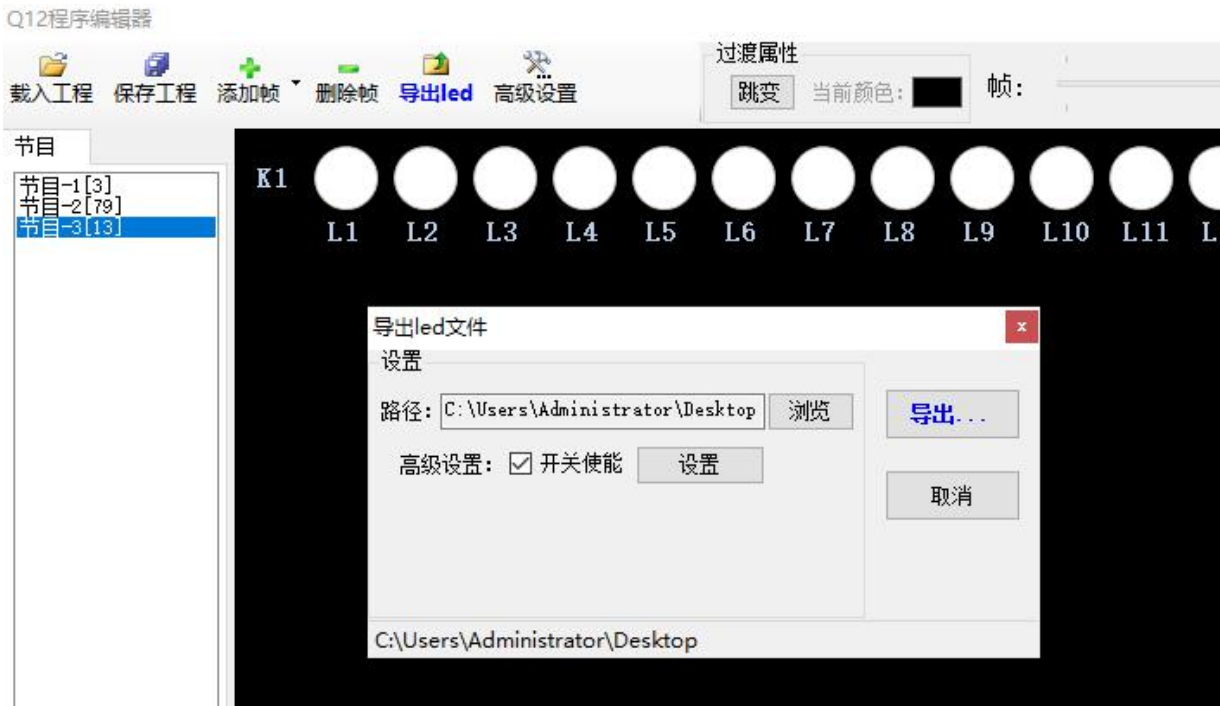
5、Use the "speed" key to exit the full-color mode and return to the monochrome mode.

## 六、Advanced settings

### ➤ Signal port controls program rotation

In order to realize the switching of current program effect every time the signal port is triggered, the setting steps are as follows:

1、Use Q12 special editing software to edit multiple program effects, click export led, and check the "switch use" of advanced settings in the "export led file" box.



2、Click the "advanced settings" button to open the "advanced settings" tab. The switching value 1 corresponds to the signal input port 1, and the switching value 2 corresponds to the signal input port 2. Check to use this signal port. Press the signal input port 1 to add 1 to the program, press the signal input port 2 to subtract 1 from the program, and cycle switching.



#### ■ Rotation monochrome

Check the switching value to be used and the "monochrome" in the key rotation. Otherwise, the monochrome rotation can be realized without checking.



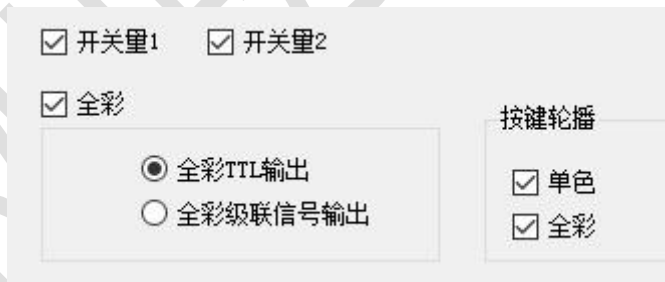
■ Rotate full color

Check the switching value to be used and the "full color" in the key rotation, and check the full color under "switching value 1". If the full color output port of Q12 controller is used to send and display the full color LED file in SD card, make "full color TTL output" selected. If other full-color controllers with "synchronous input" port produced by our company are used, select "full-color cascade signal output" and put the full-color LED files into the SD card used by our controller.



■ Rotate full color and monochrome

Select the corresponding settings in the way of "full-color rotation", and check the monochrome "monochrome" in the key rotation. When switching programs, monochrome and full-color switch at the same time.

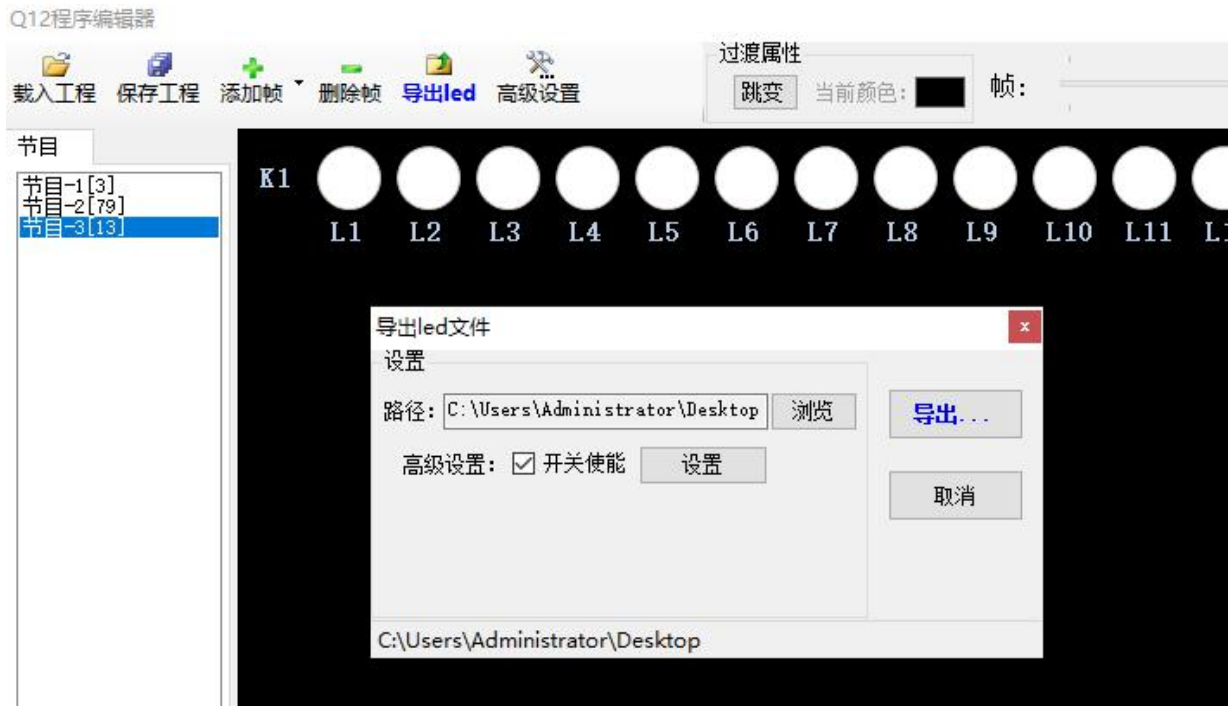


3、 Click "OK" to complete the setting. And click "export.." in "export led file" Press the key to "export" q12-1 Led file  
**Note: "q12-1. Led" file and the file to be used for full-color shall be copied to SD card when full-color control is provided.**

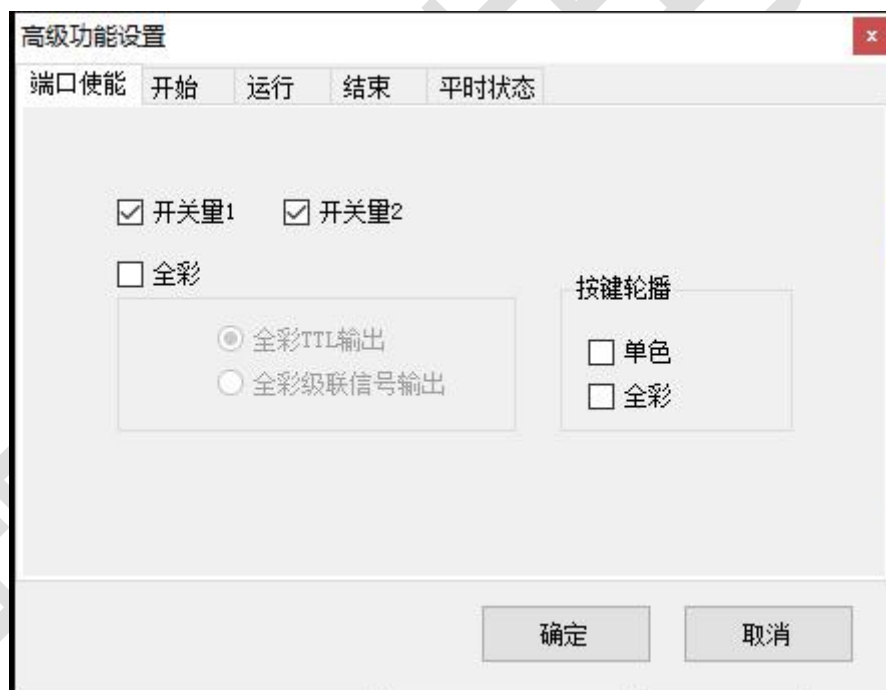


➤ The signal port controls the program playback according to the process

1、 Use Q12 special editing software to edit multiple program effects, click export led, and check the "switch use" of advanced settings in the "export led file" box.



2、Click the "Settings" button to open the advanced function settings.



The software divides the use process into four steps according to the conventional signal use scenario: start - "" run - "" end - "" idle.

#### ■ Port enable setting

In the "port enable" tab, check the switching value used and whether to use full-color programs. Note that "monochrome" and "full-color" in key rotation cannot be checked, otherwise it will enter the rotation function.

#### ■ Start state

Trigger the enabled signal input port to enter the start state. In monochrome, select the monochrome program sequence number in the start state. The default is circular playback. If you play only once and stay in the last frame, check "single playback", and select the full-color program in the start state in the program sequence number in full-color. The duration is the timeout of the start state.



单色

节目: 1  单次播放

持续时间: 3 秒

全彩

节目序号: 1

#### ■ Running state

In the trigger, select the trigger condition for entering the operation state, "switch" is the enabled signal input port to trigger the operation state, "start state timeout" is the operation state after setting the "duration" in the playback start state.

In monochrome, select the monochrome program sequence number played in the running state, and the default is circular play. If you play only once and stay in the last frame, check "single play", and select the full-color program in the starting state in the program sequence number in full-color. The duration is the timeout of the start state.

单色

触发

开关  开始状态超时

节目: 1  单次播放

持续时间: 3 秒

全彩

节目序号: 1

#### ■ End state

The program whose end state is in the running state will stop playing slowly within the "duration" set in the end state. If the time set in the end state is 0 seconds and the running state is set to "single play", it will remain until the last frame of the program in the running state.

In the trigger, select the trigger condition to enter the end state, "switch" is the enabled signal input port to trigger the end state, "operation state timeout" is to enter the end state after setting "duration" in the playback operation state. The duration is the timeout of the end state.

单色

结束触发:  开关  运行状态超时

持续时间: 3 秒

全彩

节目: 1

#### ■ Idle state

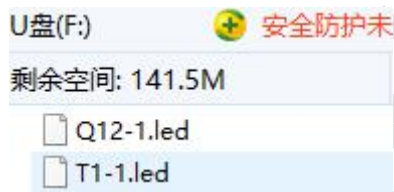
The idle state is the program played by the standby of the controller after no trigger for a long time.

The "timeout trigger" time is the waiting time for entering the idle state after the "end state". After the timeout, enter the "idle state" and play the program sequence number set in the idle state

The screenshot shows a configuration window with two sections. The top section is titled '单色' (Monochrome) and contains two settings: '超时触发:' (Timeout Trigger) set to 30 seconds, and '节目:' (Program) set to 1. The bottom section is titled '全彩' (Full Color) and contains one setting: '节目:' (Program) set to 1.

3、Click "OK" to complete the setting. And click "export.." in "export led file" Press the key to "export" q12-1 Led file

**Note: "q12-1. led" file and the file to be used for full-color shall be copied to SD card when full-color control is provided.**



## 七、Points for attention

1、 Before copying the file to the SD card, the SD card must be formatted. It needs to be formatted before each copy. Format parameters: file system = FAT32, allocation unit size = default configuration size, or directly click "restore device default value (d)".

2、 The SD card cannot be hot unplugged. You must first disconnect the power supply of the controller and then unplug the SD card.

3、 **The signal input port only supports 5V signal acquisition equipment.**