Agricultural Planting Intelligent Controller

Product Operation Manual

Contents

Part 1: Basic Information

1. Package Information

Inner box size: L308*W180*H74 mm
Outer carton size: L380*W325*H200 mm (5 boxes/carton)
Net Weight: 0.87 kg/box
Gross Weight: 5 kg/carton

2. Electrical Requirements

Input Requirement
Input Voltage: 12 V ±5%
Input Current: 0.5-1 A

Output Requirement
PWM signal amplitude value: 10 V ±5% duty cycle: 0%-100%
Analog signal: 0-10 V
Interface definition

Interface	MODEL / parameters
Signal output	OUT RJ-45 8P8C*1/RJ12 6P6C*1 The definition can be found in the Interface Definition Diagram below.
Sensor signal input	Audio seat PJ393*1
DC IN	DC5.5*2.1

Standby Power: < 0.1 W

Environmental Requirements
Temperature
Operation : 0 ℃ to 40 ℃
Storage: 0 ℃ to 60 ℃

Humidity
Operation: 20%-85%
Storage: 10%-95%

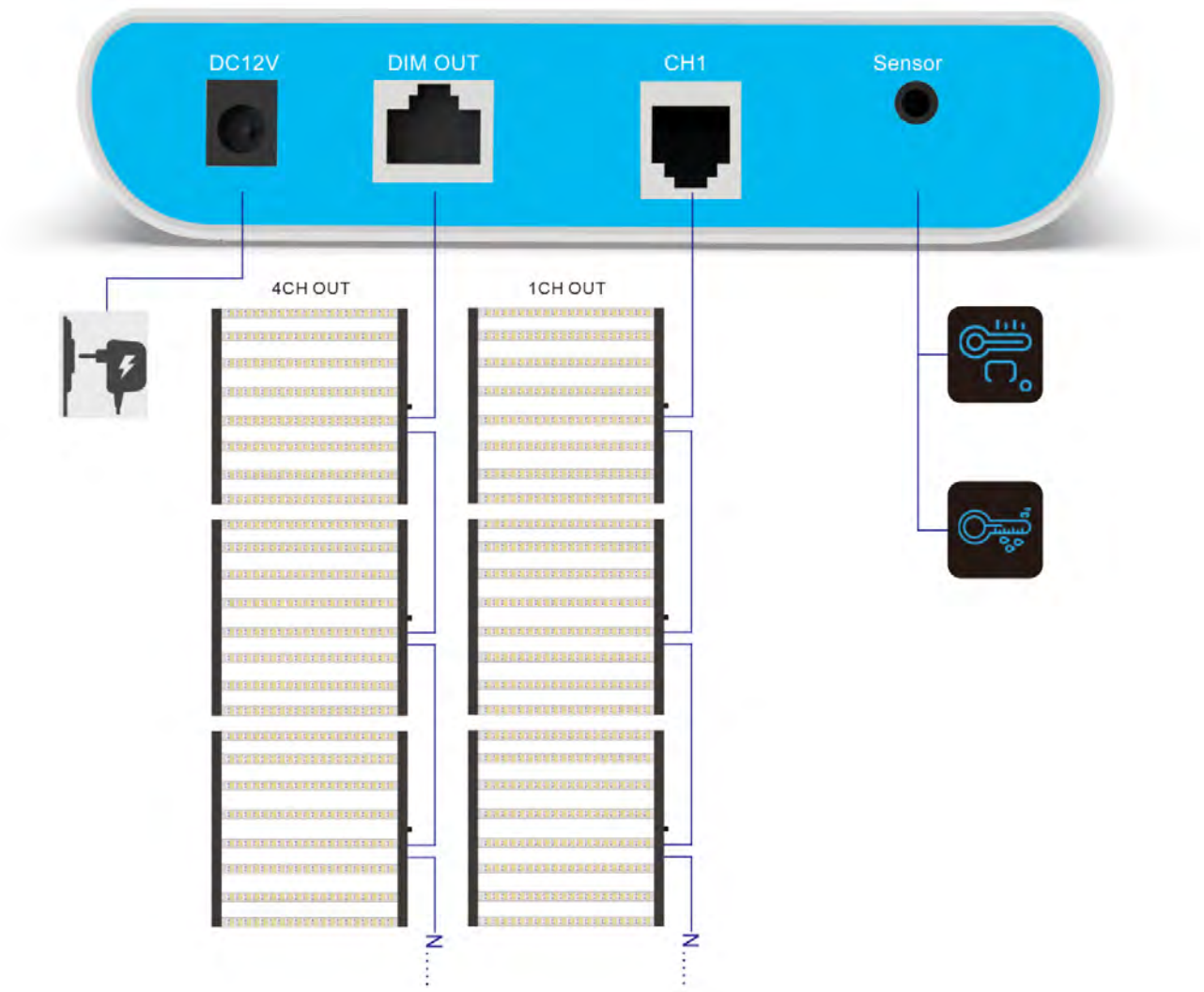
Reliability
Mean Time between Failure (MTBF): 30,000 operating hours

Safety Certification

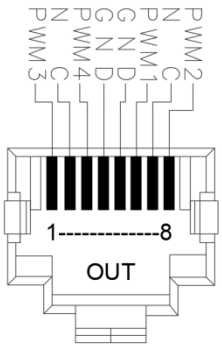
FCCID:2BBF5-XRMOG4B03

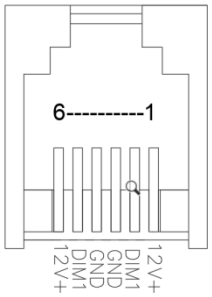
CERED:RCT2023051003-01C

3. Connection Diagram



Interface Definition Diagram

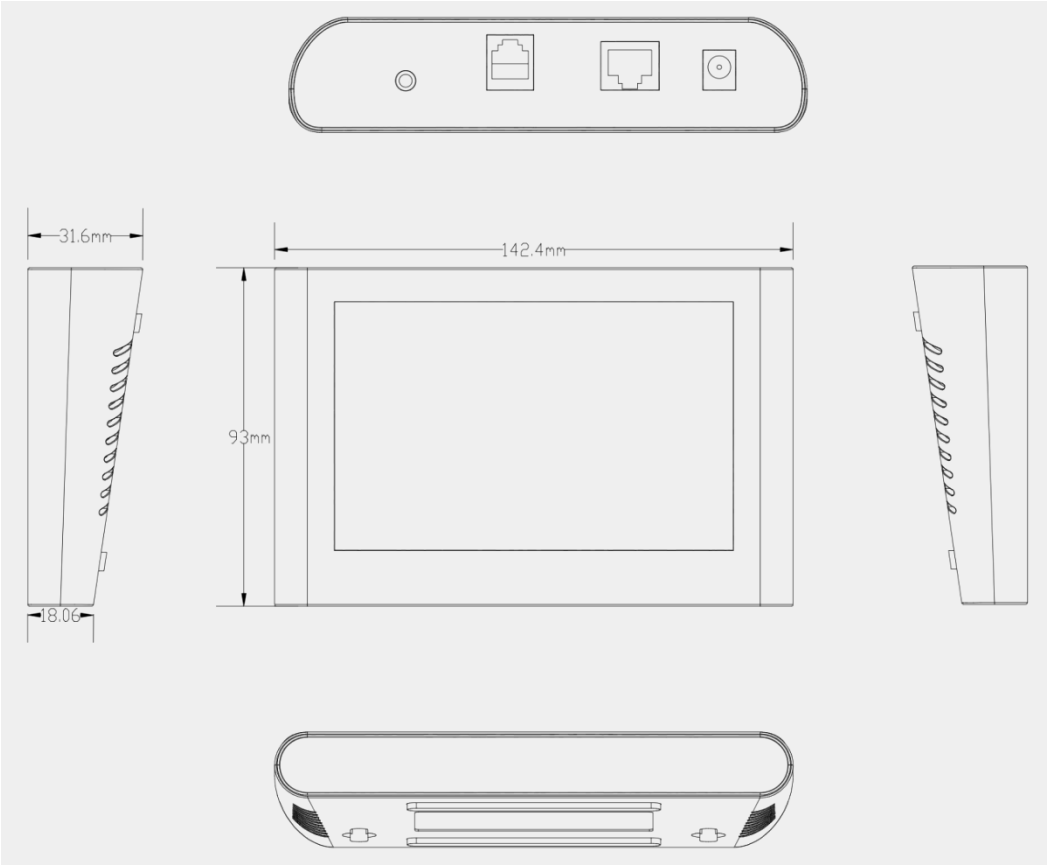


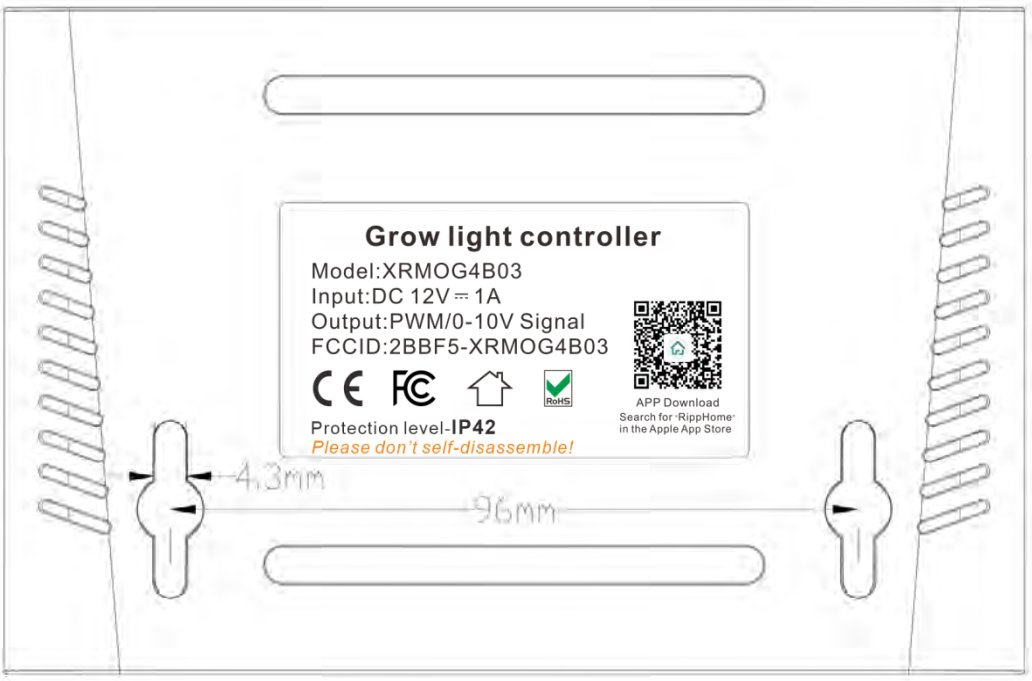


Note:

1. The sensor is already built into the product. An external sensor can only be selected if the controller and the position to be monitored are different.
2. RJ45 interface outputs four channel signals of CH1, CH2, CH3 and CH4. The RJ12 interface can only output CH1 channel signals.

4. Product Dimensions





Part 2: Operating Instructions

1. Main Interface

01 System On/Off
02 System Time
03 Confirm Button
04 Timer On/Off Button
05 Temp. and Humidity
06 Power Setting
07 – 08 Channel Brightness/Total Brightness Adjustment
09 – 10 Reduce/Increase the Brightness
11 Timer Setting
12 Sunrise/Sunset Setting
13 System Setting
14 Customize Setting
15 Preset Setting
16 Spectrum Setting

2. Operation Processing

01 System On/Off

 ON (Color White)

 OFF (Color Red)

Note:

1. The screen will automatically turn off after two minutes. It can be awakened with a light touch.
2. At OFF Status, there is no output from the controller.

02 System Time

Press and hold to bring up the Setting display, as shown below.

Note: Move up and down to set the time. Click ✓ to save the setting.

03 Confirm Button

Click ✓ to save the setting.

04 Timer On/Off Button

ON (Color Blue)

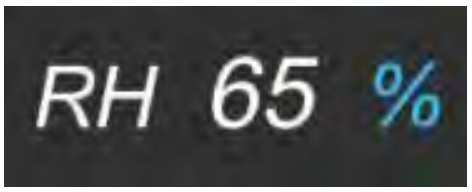
OFF (Color Gray)

Note: Timer On/Off button is a master switch. When OFF, all set times are OFF.

05 Temperature and Humidity

Click the left temperature position to switch between Fahrenheit and degrees Celsius.

Humidity is displayed in percent relative humidity.



06 Power Setting

Press and hold the Power display area (2 seconds) to bring up the power setting interface, as shown below.

Set each channel to the desired power level.

Note: Slide the indicator or click + or - to adjust the power.

Click ✓ in the top right corner to save the setting.

07 – 08 Channel Brightness/Total Brightness Adjustment

Select a channel icon from the left side of the display. The main display (08) will show that channel's setting.

Move the rotating slider (08) to adjust the channel's brightness to the desired level.

Click ✓ in the top right corner to save the setting. If you wait 5 seconds, the display will stop flashing and save the setting automatically.

When not adjusting a single channel, the main display (08) shows the total brightness level for all channels.

Example:

1. Enter the Power Setting mode.
2. Set the parameters, as shown below:
   CH1: 430 W (100% brightness in 08)
   CH2: 440 W (100% brightness in 08)
   CH3: 49 W (100% brightness in 08)
   CH4: 48 W (100% brightness in 08)
   Total: 967 W

Example:
Set the brightness parameters in 07, as shown below:
CH1: 430 W (80% brightness in 07, CH1, 430 W x 80%=344 W)
CH2: 440 W (80% brightness in 07, CH2, 440 W x 80%=352 W)
CH3: 49 W (50% brightness in 07, CH3, 49 W x 50%=25 W)
CH4: 48 W (0% brightness in 07, CH4, 48 W x 0%=0 W)
Display 721 W (344 W + 352 W + 25 W = 721 W)

Example:
Set the brightness parameters in 08, as shown below.
CH1: 430 W (80% brightness in 07, 90% brightness in 08)
CH1 Actual PWM Output = 430 W x 80% x 90% = 310 W

CH2: 440 W (80% brightness in 07, 90% brightness in 08)
CH2 Actual PWM Output = 440 W x 80% x 90% = 317 W
CH3: 49 W (50% brightness in 07, 90% brightness in 08)
CH3 Actual PWM Output = 49 W x 50% x 90% = 22 W

CH4: 48 W (0% brightness in 07, 90% brightness in 08)
CH4 Actual PWM Output = 48 W x 0% x 90% = 0 W
Display 649 W (310 W + 317 W + 22 W = 649 W)

Note:

1. The total shown in 08 is the overall brightness adjustment (effective for both Customize mode and Preset mode), while the other four channels are associated with the brightness set for individual channels and the overall brightness.
2. The controller will initially default to 100%. If the total brightness falls below 10%, the output is set to 0.
3. Duty cycle output requirement: output frequency is 850 Hz.
4. PWM display range: 10%-100% (all displayed percentages match the actual output PWM (Pulse Width Modulation) percentages, with no display or output in the range of 1%-9%).

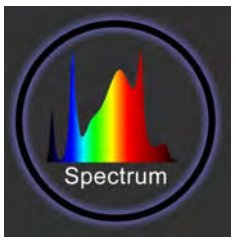
09 – 10 Reduce/Increase the Brightness

Click + or - to adjust the brightness.

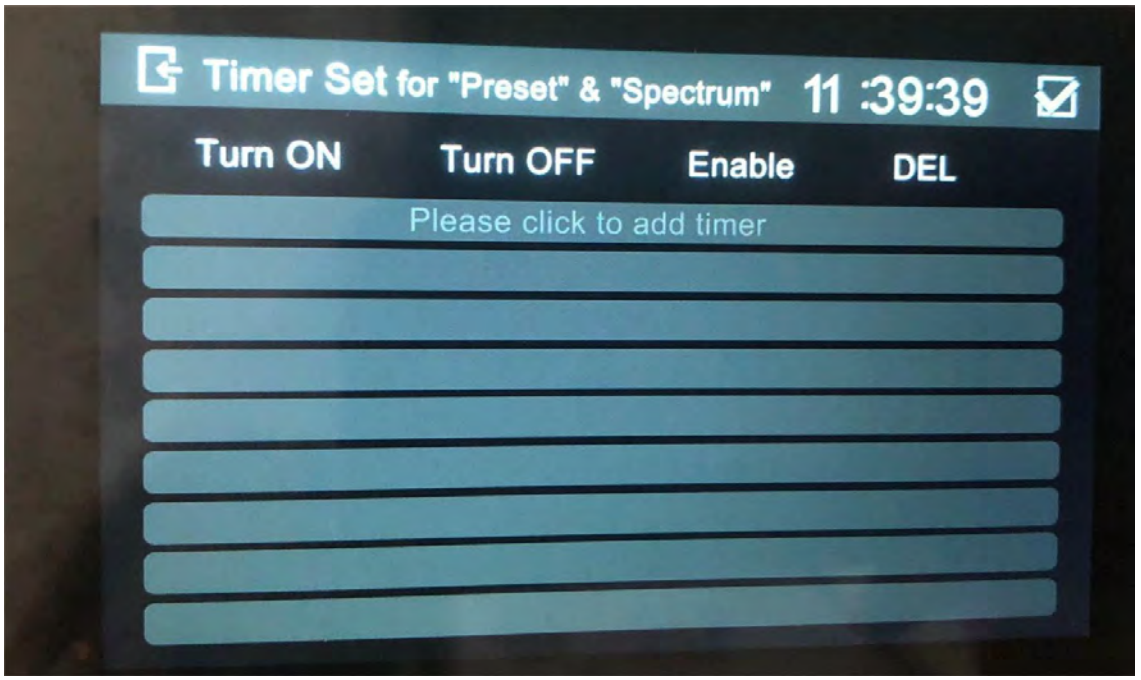
11 Timer Setting

Effective in 3 modes: Customize, Preset, and Spectrum.

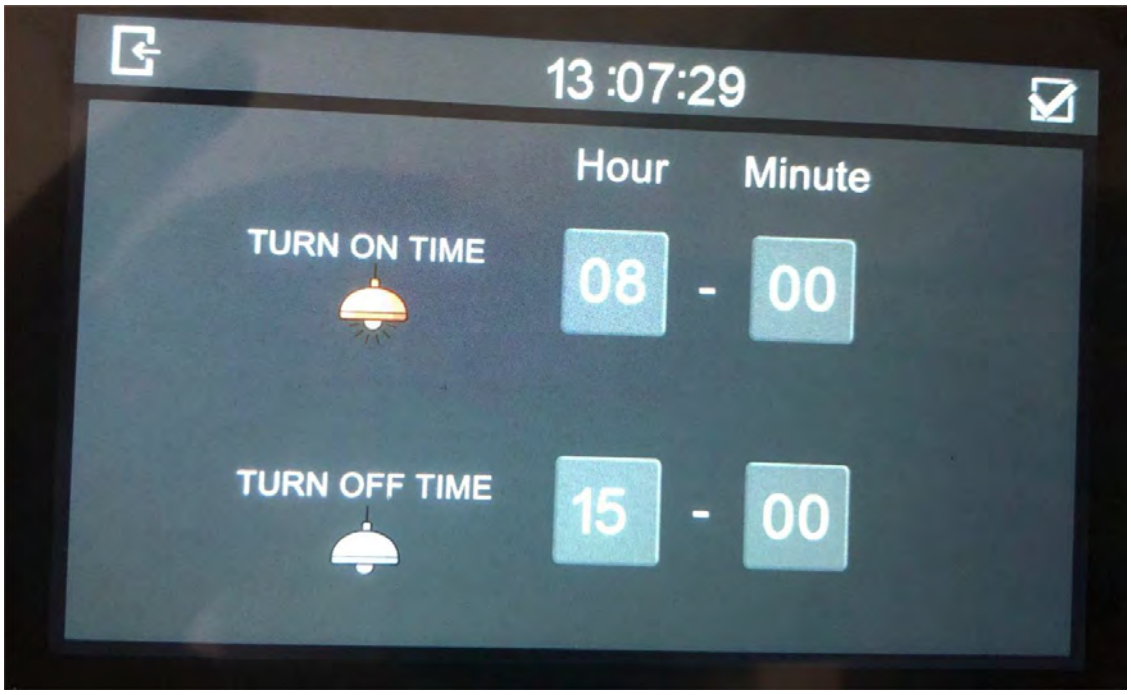
Timer Setting in Preset and Spectrum Mode



Click “Timer Set” in **11** to enter the Setting interface, as shown below.



Click on “Please click to add timer” to enter the timer creation interface, as shown below.

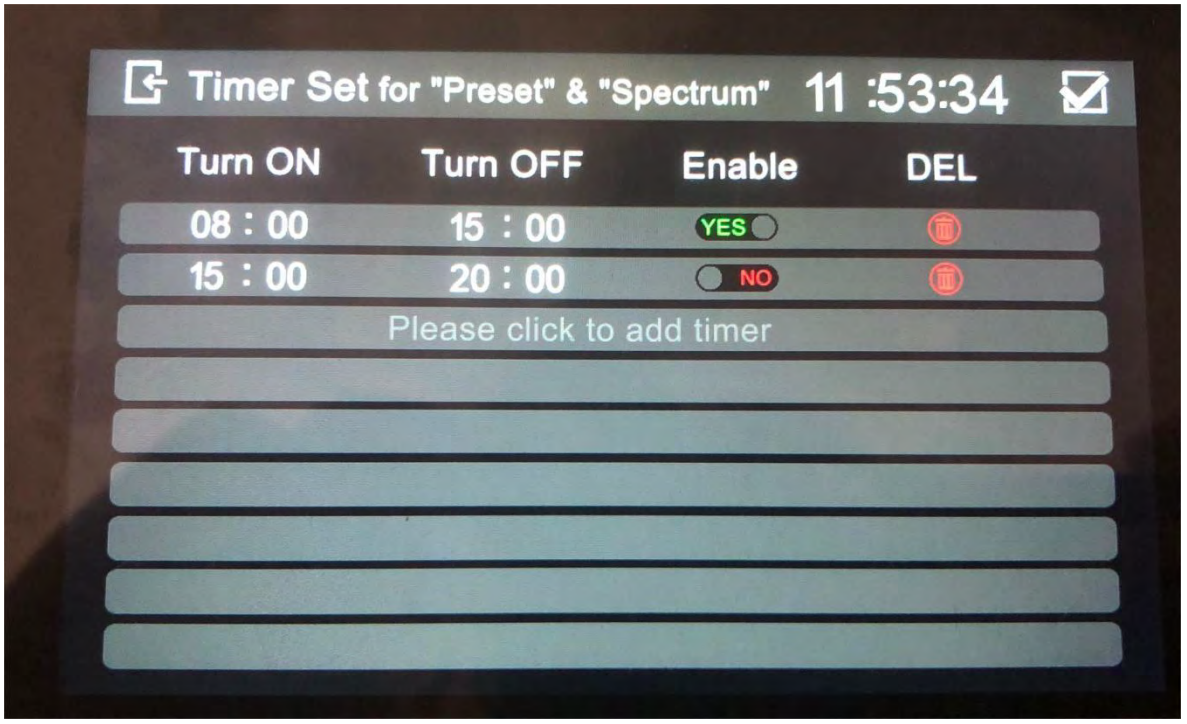


Turn on: Indicates the execution time for turning on the timer. Click "08" to open the number keypad and set the hour (00-23 hours). Click "00" to open the number keypad and set the minutes (00 - 59 minutes).

Turn off: Indicates the execution time for turning off the timer. Click "15" to open the number keypad and set the hour (00-23 hours). Click "00" to open the number keypad and set the minutes (00 -59 minutes).

Save: Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.

Set more timer schedules in the same way, as shown below.



"YES": Activate this timed segment.

"NO": Deactivate this timed segment.

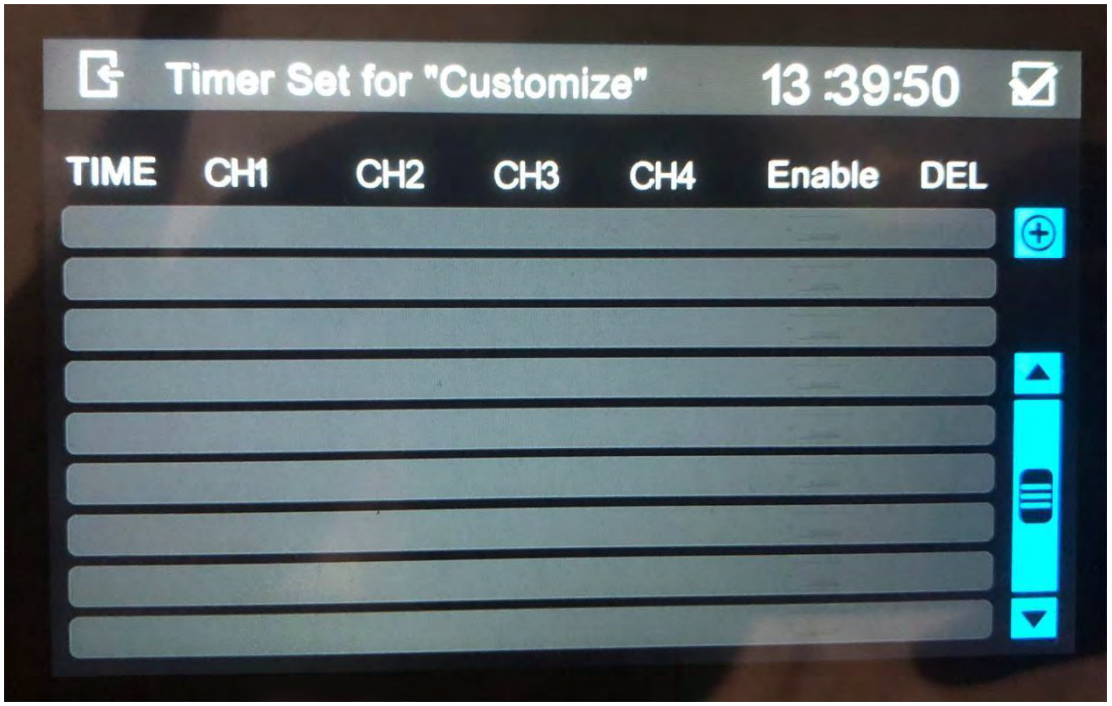
"DEL": Delete this timed segment.

The maximum number of segments is 20.

Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.

Timer Setting in Customize Mode

Click “Timer Set” in **11** to enter the Setting interface, as shown below.



Click “+” on the right side to enter the timer creation interface, as shown below.

Execute Time: Represents execution time. Click the dropdown arrow beside "08" to set the hour (00-23). Click the dropdown arrow beside "30" to set the minutes (00-59).

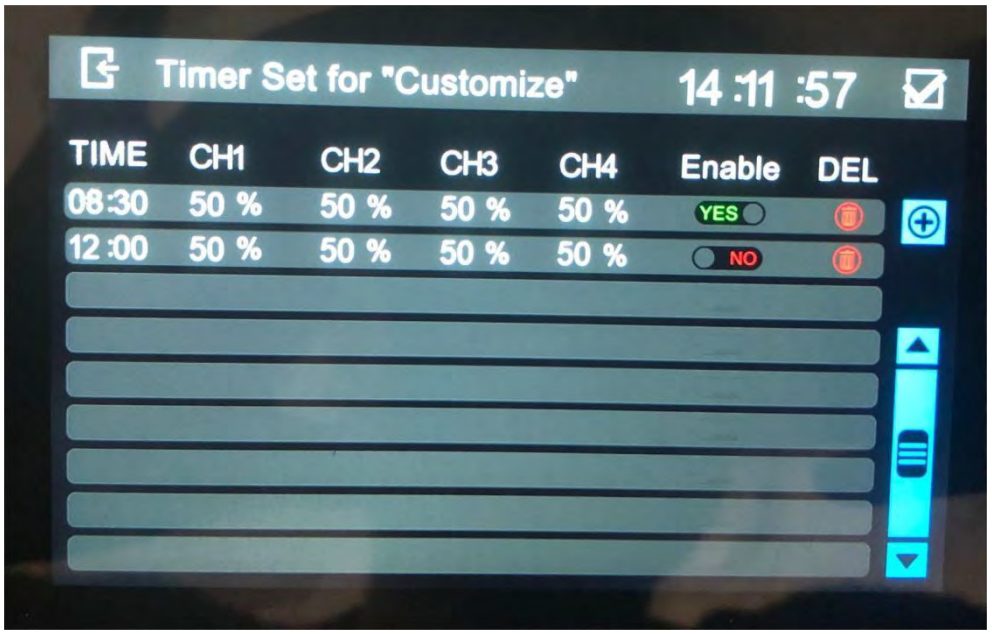
Brightness: The brightness setting ranges from 0 - 100%. Slide the value or click + or - to adjust the brightness. A 0% brightness indicates lights off.

Save: Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.

Note: To maintain consistency between the actual brightness and scheduled brightness, adjust the overall brightness on the main interface's "Total" (large circle in 08) to 100%.

Example: If the brightness is set to 100% for CH1 at a specific time (as indicated by the small circle in 07 CH1 showing 100%), and the overall brightness on the main interface (large circle in 08) is set to 80%, then the actual output for the CH1 channel will be 80%.

Set more timer schedules in the same way, as shown below.

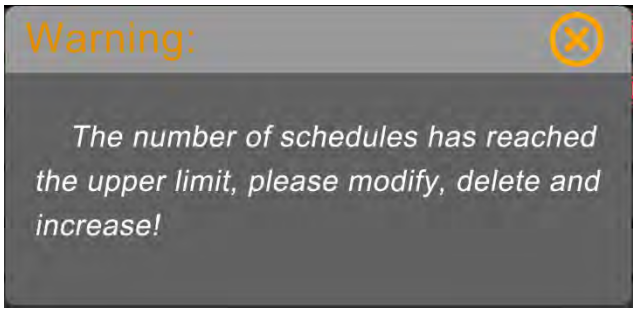


"YES": Activate this timed segment.

"NO": Deactivate this timed segment.

"DEL": Delete this timed segment.

The maximum number of segments is 20. If exceeded, a pop-up window will prompt as follows.



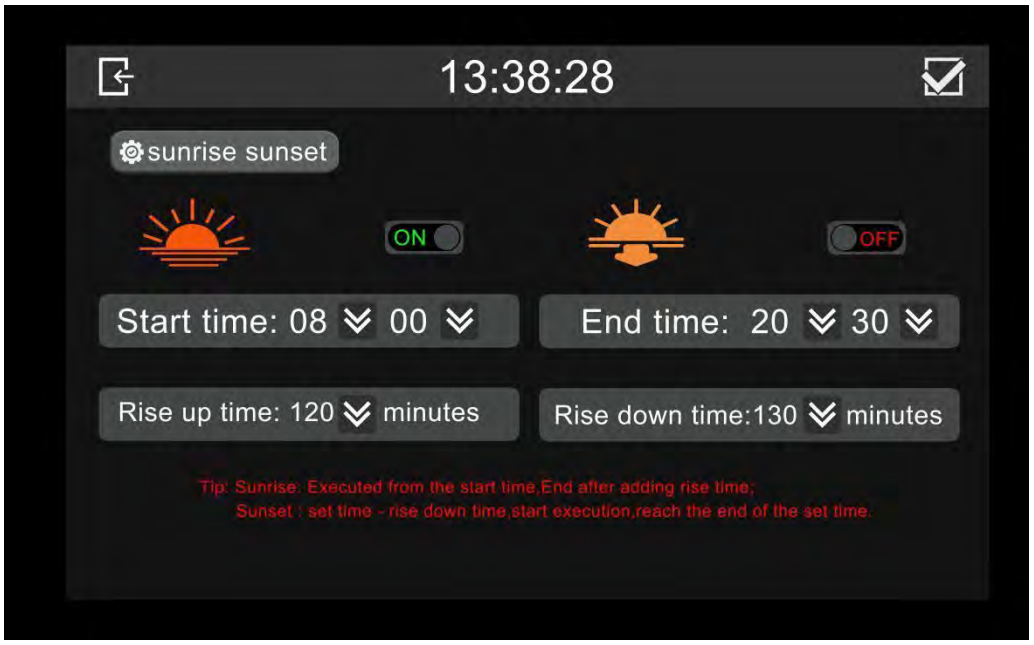
Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.

Note: Timing takes priority when both timing and sunrise/sunset are enabled.

Example: If there is a scheduled instruction during the execution of sunrise or sunset, it will automatically interrupt the sunrise or sunset execution, prioritizing the execution of the scheduled instruction.

12 Sunrise/Sunset Setting

Click “Sunrise/Sunset Setting” in **12** to enter the Setting interface, as shown below.



Set the simulated sunrise and sunset (time format is a 24-hour system). The range for rise up time and rise down time is 10 - 180 minutes.

Sunrise Setting

Start Time: The time when the light brightness begins to rise. Click the dropdown arrow beside "08" to set the hour (00-23). Click the dropdown arrow beside "00" to set the minutes (00-59).

Rise Up Time: The duration for the brightness to ascend. Click the dropdown arrow beside "120" to select the minutes (minimum is 10 minutes; maximum is 180 minutes). The brightness rises to the set value within the specified rise up time.

Example: If the start time is set for 8:00 and the rise up time is 60 minutes, the brightness will evenly ascend to the set value within the 60-minute duration, reaching the designated brightness at 9:00. If the lights are already on when the execution begins, regardless of the current brightness, it will first decrease to 0 before commencing the ascent.

Sunset Setting

End Time: The time when the light brightness finishes descending. Click the dropdown arrow beside "20" to set the hour (00-23). Click the dropdown arrow beside "30" to set the minutes (00-59).

Rise Down Time: The duration for the brightness to descend. Click the dropdown arrow beside "130" to select the minutes (minimum is 10 minutes; maximum is 180 minutes). The brightness decreases within the specified rise down time.

Example: If the end time is set to 20:00 and the rise down time is 60 minutes, then starting from 19:00, the brightness will evenly descend over the course of 60 minutes until the light is off. In other words, the descent begins at 19:00 and completes by 20:00 when the light is turned off.

Save setting:

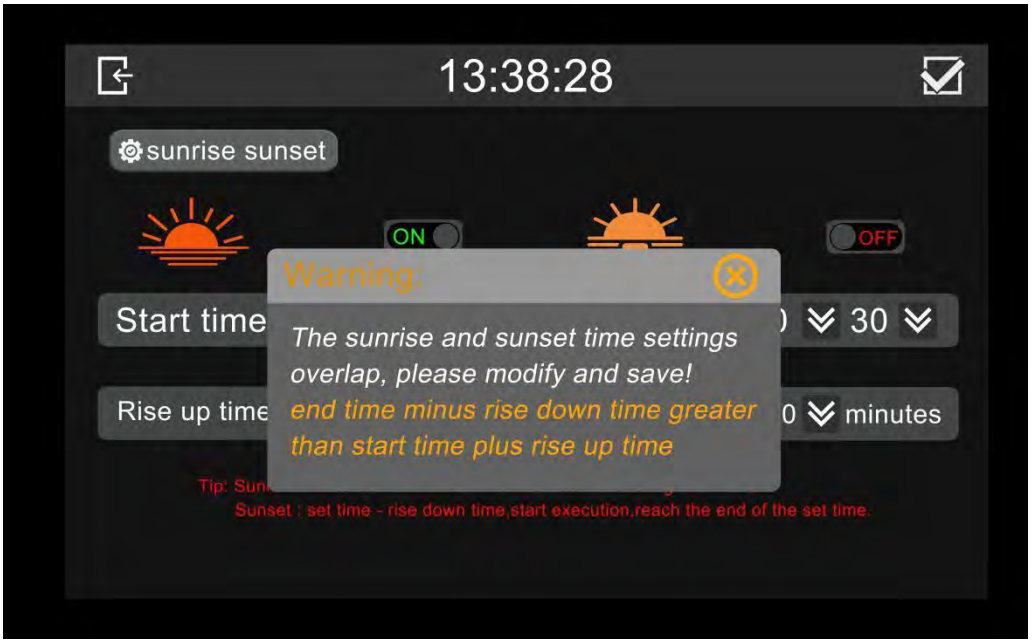
"ON" enables the Sunrise/Sunset function.

"OFF" disables the Sunrise/Sunset function.

Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.

Note:

1. When there is overlap in the set parameters, a pop-up window will open with the following prompt**:**



2. Parameter overlap: If the end of the rise up time is later than the start of the rise down time, then a pop-up window will appear with a notification.
3. The sunrise and sunset functions only work within a scheduled time segment.

13 System Setting

Click “System Set” in **13** to enter the Setting interface, as shown below.

Revert to Factory Settings

Click and hold the system version display icon (beside the version number, e.g., XR231123-C-GML in the above image) for 3 seconds. The buzzer will sound for 1 second, indicating a successful action, and the system will automatically revert to factory settings.

Real-TEMP (Display real-time temperature data).

TEMP Derating (Temperature derating protection).

When the collected temperature reaches the set value, the brightness of all currently active channels decreases at a rate of 1% every 5 minutes until the temperature drops by 5 degrees below the set value. Afterwards, the brightness starts to recover at a rate of 1% every 5 minutes until it returns to the original level. If the temperature cannot recover, it continues decreasing until it reaches 0%.

Example: Set the derating temperature to 32 degrees. When the collected temperature reaches 32 degrees, the brightness starts decreasing until the temperature drops to 27 degrees, at which point it begins to recover.

"ON" (enables TEMP-Derating); "OFF"(disables TEMP-Derating).

Over-TEMP (Over Temperature protection)

When the collected temperature reaches the set value, all currently active channels are turned off until the temperature drops by 5 degrees below the set value. Afterwards, the channels are restored to their original brightness.

Example: Set the over-temperature threshold to 35 degrees. When the collected temperature reaches 35 degrees, the output is turned off until the temperature drops to 30 degrees, at which point the original brightness is restored.

"ON" (enables Over-TEMP); "OFF"(disables Over-TEMP).

14 Customize Setting

Parameters can be set manually. The icon displays white when Customize mode is running.

Parameters cannot be set manually. The icon displays black when Customize mode is not running.

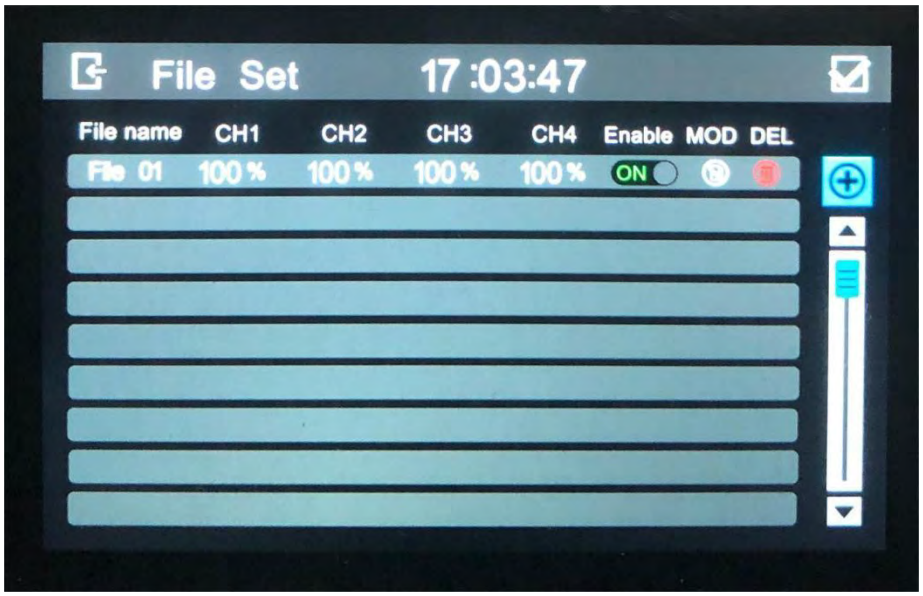
Note: When Customize mode is running, the brightness of individual channels (small circles in 07) and the overall brightness (large circle in 08) can be adjusted. The default overall brightness is set to 100%.

15 Preset Setting

Icon displays white when Preset mode is running.

Icon displays black when Preset mode is not running.

Click “Preset” in **15** to enter the Setting interface, as shown below.



Directly Select the File to Run

Only one file can be selected at a time. Selecting another file automatically exits the execution of the previous file, and its status becomes "OFF."

In Preset mode, it is necessary to select and run at least one file. You cannot close or delete all files.

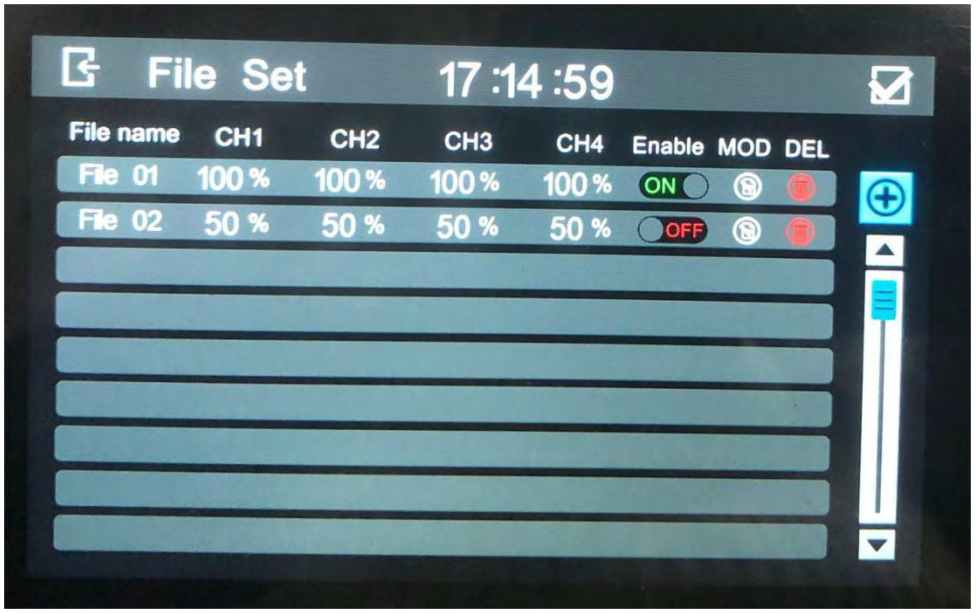
The default initial state is File01, with the brightness of all four channels set to 100%. You can modify File01, but you cannot delete it.

Add a New File

Click on the "+" on the right to enter the Settings interface, as shown below.

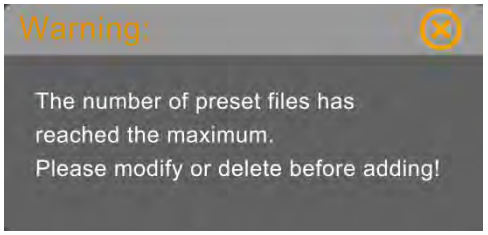
The brightness setting ranges from 0 to 100%. Slide the value or click + or - to adjust the brightness. A 0% brightness indicates that the channel is off.

Click ✓ in the top right corner to save the setting, or click Exit to exit without saving.



Maximum Number of Files

The maximum number of files is 27. A pop-up window will appear when the limit is reached.



16 Spectrum Setting

Click “Spectrum” in 16 to enter the Setting interface, as shown below.

Power

Same as 06 Power Setting.

CH1 CH2 CH3 CH4 Percentage

The percentage of each channel is based on the files selected for operation and cannot be manually adjusted.

Progress Bar

Tap + to increase the brightness percentage of all the channels together.

Tap - to decrease the brightness percentage of all the channels together.

Executing File

Click “Executing File”to select a file from the 60 preset files to run.

Click ✓ to save the setting.

Exit

 The exit button in the upper right corner is used to exit the current mode, return to the main interface, and restore the state prior to entering that mode.

Note: A total of 60 preset combinations and images are available.

Part 3: Troubleshooting

No display on screen	
Is the power cord plugged in?	Check whether the power adapter and DC connector are plugged in properly.
Have you entered the screensaver (off screen)?	Tap the screen to restore the display.
Unable to control lamp	
Is the connecting wire connected?	Check whether the connecting wire is connected properly.
Are lamp terminals "IN" and "OUT" connected correctly?	Check whether the connecting wire is connected to the "IN" interface.
Is the lamp end set to "EXT" position?	Set the lamp to "EXT".
Does the controller wiring or signal class match at the lamp end?	Confirm whether the wiring of the lamp is consistent with the wiring in the Interface Definition Diagram, and whether the signal is "0-10 V" or "PWM".