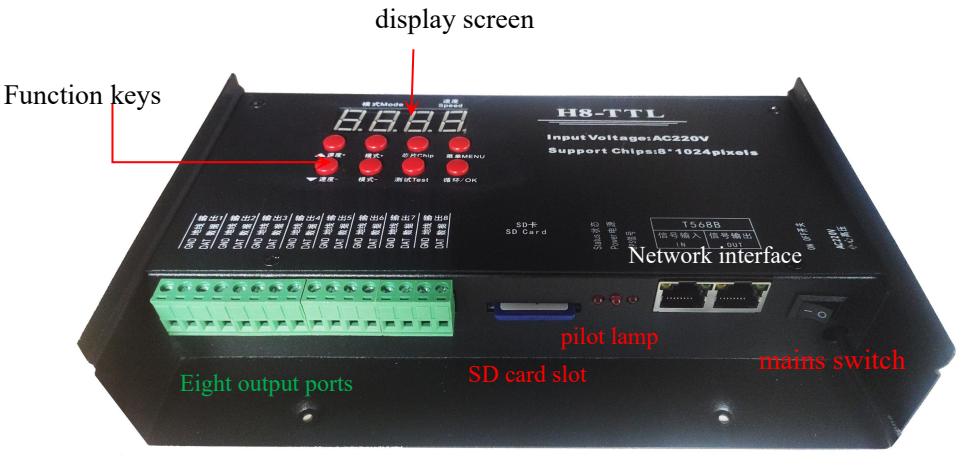
H8-TTL GPS Controller Manual

一、 Controller Overview



Note: Format the SD card before using it.

2. Detailed parameters:

1. Power supply voltage: AC220V
2. Control mode: TTL serial
3. Synchronization method: Satellite synchronization
4. Dimensions: 162×127×42 mm
5. Weight: 1.25kg
6. SD format: FAT32
7、SD capacity ： 1G

2. Features of (H8-TTL) + GPS products:

1. Solve the problem that controllers cannot be synchronized between buildings because cable lines cannot be installed.

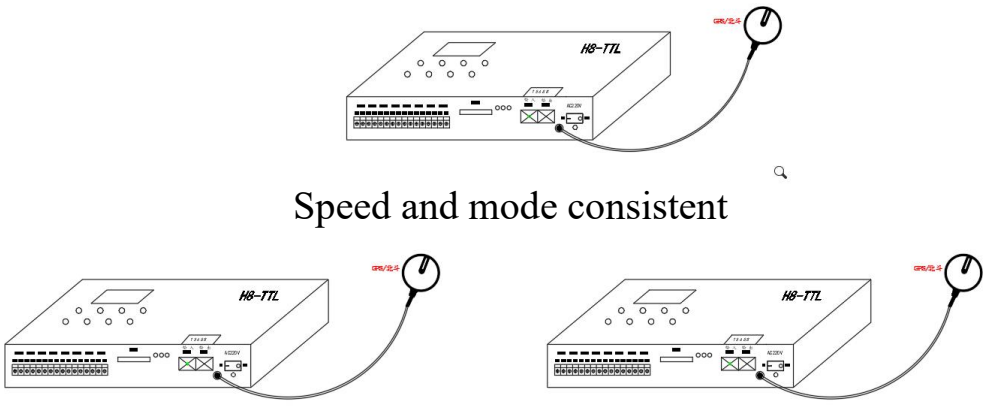
2. The GPS synchronization method enables controller synchronization anywhere with satellite signal reception, ensuring global availability.

3. External antenna: Separating the antenna from the GPS synchronization module enables better, faster, and more stable satellite signal reception.

Note: The GPS global synchronization module antenna must be placed outdoors, not in indoor enclosed spaces.

3. Working principle:

The H8-TTL-GPS off-line control system features either a standalone GPS+H8-TTL configuration or a front-end GPS synchronization with H8-TTL-GPS and back-end cascading. This independent offline master synchronization employs software-automated image segmentation, enabling each controller to operate independently while maintaining unified performance. By implementing time synchronization between controllers to achieve frame synchronization, the entire display becomes operational, establishing a reliable theoretical foundation for H8-TTL-GPS's GPS synchronization. The H8-TTL-GPS off-line controller continuously receives world time data from GPS satellites via its module, ensuring seamless frame synchronization across all controllers.

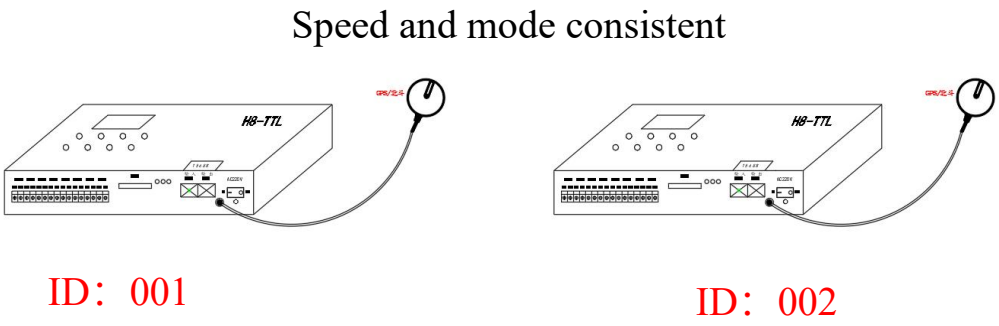


Problem 1: Two or more GPS devices fail to sync after power-on
Answer: 1) The GPS global synchronization module's antenna is not deployed outdoors, preventing it from receiving satellite synchronization signals.

2) The controller's excessive pixel count prevents it from matching the frame rate supported by the GPS global synchronization module.

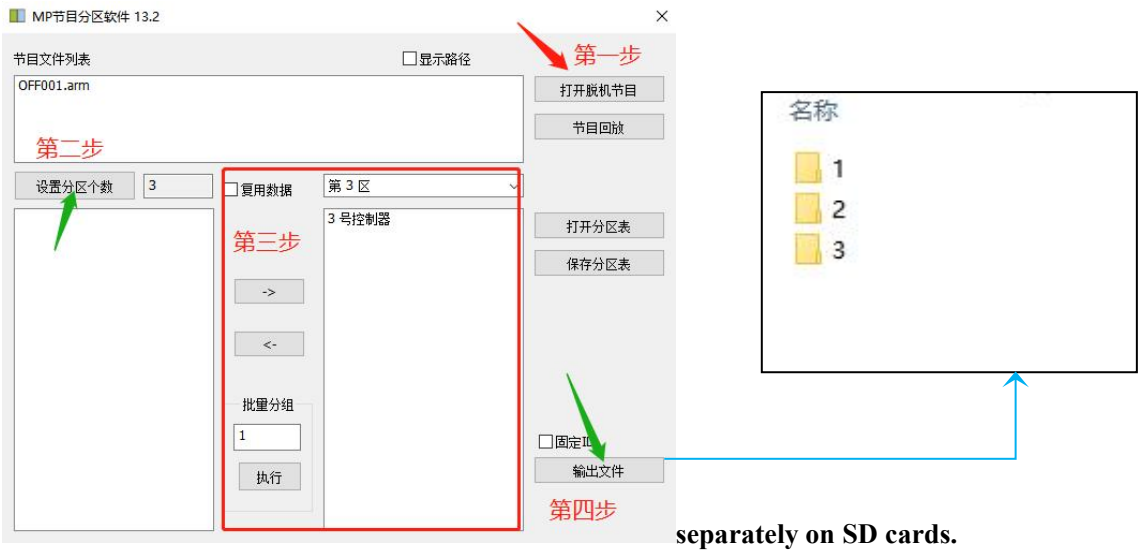
4、Operation mode (GPS synchronization has two options)

Option 1: Copy files with different ID numbers to the SD card without distinction using the same effect file



For setting the specific ID number, refer to the controller operation steps below.

Option 2: Same ID number, different effect files (program sections). Copy files



separately on SD cards.

The controller SD card copies the corresponding files:

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

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

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

III. Features of the H8-TTL System

1. Grayscale control from level 32 to 65536 with software Gamma correction.

2、 Supports various point, line, and surface light sources, as well as regular and irregular shapes.

3. The controller supports only TTL signal-controlled lamps, with each port providing independent

output and supporting up to 1024 lamps per port.

4. Operates on AC220V power, with each unit featuring an independent program and eight-port output.

5. The controller's SD card supports up to 8GB of storage. It features eight independent ports with non-interfering outputs.

6. The controller must be equipped with an SD card for both single-unit and multi-unit operation.

7. Supports standard RGB and RGBW lighting (UCS2904, SK6812).

8. New one-click reset feature: Press and hold the Cycle/OK key and the Speed+up button simultaneously to power off and restart.

4、Digital display and key meaning, key meaning:

Menu Display	**Digital display**	liquid-crystal display	**Chinese translation**
①	**1-c P**	Set Chip x x x x	Set chip
②	**2-100**	Set Bright 100%	Set brightness and gamma values
③	**d-01**	Set ID	Set controller number
④	**4-RGB**	Set RGB Mode	Set channel
⑤	**LA24**	Set pixes	Set points
⑥	**6-100**	Set the refresh rate	Set refresh rate
⑦	**7000**	Synchronization delay setting	Sync delay settings
⑧	**R-oF**	Setting domain Space	Set space

Key name	**meaning**
Speed +/Speed-	Up and down keys for selection, up and down for switching, up and down for channel selection
Mode+/Mode-	Switching between programs
slug （CHIP）	Press the chip key to display the model number on the digital screen. Press up or down to switch to the corresponding lamp model.
test （Test）	There are five test modes in total to check whether the signal is smooth and the power supply is sufficient. Switch by pressing this button.

Menu (MENU)	Settings: Chip, brightness, number, channel, points, refresh rate, delay settings, field space settings
recurrence (OK)	After completing the above items, press the cycle/OK button to save and switch to cycle mode.

5. The detailed operation steps are as follows:

1. Chip Configuration (CHIP): The chip identifies the lamp model. All standard chips available on the market can be controlled.Full-color lamps are controlled by chips. No matter what kind of full-color lamps are used, there are models, so it is necessary to clarify the specific chip model of the lamps before using them, and know the model before operating the controller.

The specific operation steps are as follows:

Step 1: Press the MENU button once or the ` button once to enter

Step 2: Press the Cycle/OK button to enter the chip selection interface

Step 3: Press the Speed+ and speed-buttons to switch the chip model and select the corresponding model for the lamp.

Chip selection correspondence table			
01：1903	02：6812	03：1670	04：1804
05：2904	06：2811	07：2812	08：1914
09：9883	10：8206	11：8205	12：5603
13：1923	14：1814	15：6703	16：1916
17：8903	18：8904	19：1603	20：9812

Step 4: Press the **Cycle/OK** button to save to the controller, and the lamp will start to work.

2. Adjust brightness (Bright):

When the brightness of the actual lamp is too bright or too low, the brightness value can be

adjusted appropriately. Only the overall brightness can be adjusted, 5%---100% grade. The higher the 100%, the higher the brightness.

Step 1: Press the **MENU** button twice. The interface will display as follows

Step 2: Press the **Cycle/OK** button to enter the brightness adjustment interface.

Step 3: Press the **Speed+/-**key to switch the digital level and select the appropriate lamp brightness (005-100). The higher the number, the brighter the light.

Step 4: Press the **Cycle/OK** button to save to the controller, and the lamp will adjust to the selected brightness.

2.1. Set gamma value:

Step 1: Press the **MENU** button twice. The interface will display

Step 2: Press the **Cycle/OK** button twice to access the gamma value adjustment interface.

Step 4: Press the **Speed+/-**key to adjust the gamma value. Save the setting by pressing the **Cycle/OK** key to return to the main interface.

3. Set ID:

When operating multiple controllers simultaneously, users can either assign unique ID numbers to each controller or develop separate programs for each unit. If ID assignment is required, configure them in sequence. The default ID for a single controller is 0001. During programming, the system automatically assigns port numbers to devices: controllers with ports 1-2 are automatically designated as the primary unit.

Step 1: Press the **MENU** button three times. The interface will display as follows

Step 2: Press the **Cycle/OK** button to enter the ID setting interface. The blinking number indicates that adjustment is possible.

Step 3: Press the **Speed +/-**button to switch the number and select the corresponding number for the controller.

Step 4: Press the **Cycle/OK** button to return to the main interface.

4. Channel switching:

The channel refers to the sequence of R, G, and B in a light fixture, with a total of 7 possible sequences. When there's a discrepancy between the designed color profile and the actual color output of the light fixture, it indicates a misalignment in the RGB sequence. Therefore, the controller must adjust the RGB sequence accordingly.

The specific operation steps are as follows:

Step 1: Press the **MENU** button four times. The interface will display as follows

Step 2: Press the **Cycle/OK** button again to confirm entering the channel selection interface.

Step 3: Press the **Speed +/-**key to switch channels (1RGB, 2RGB, 3RGB, 4RGB, 5RGB, 6RGB, 7RGBW) and select the channel for the light fixture.

Step 4: Press the **Cycle/OK** button to save and return to the main interface.

5. Set points:

Step 1: Press the **MENU** button 5 times. The interface will display as follows

Step 2: Press the **Cycle/OK** button to confirm entering the point setting interface. The blinking numbers indicate that adjustment is possible.

Step 3: Press the **Speed +/-**key to switch up to 1024 points and select the desired number.

Step 4: Press the **Cycle/OK** button to save and return to the main interface.

6. Set refresh rate:

Step 1: Press the **MENU** button 6 times. The interface will display as follows

Step 2: Press the **Cycle/OK** button to confirm entering the refresh rate setting interface. The blinking numbers indicate that adjustment is possible.

Step 3: Press the **Speed +/-**button to switch between 50-300 and select the desired refresh rate.

Step 4: Press the **Cycle/OK** button to save and return to the main interface.

7. Sync delay settings:

Step 1: Press the **MENU** button 7 times. The interface will display as follows

Step 2: Press the **Cycle/OK** button to confirm entering the synchronization delay setting interface. The blinking digital display indicates adjustable settings.

Step 3: Press the **Speed +/-**key to switch the number (0-999) and select the desired value.

Step 4: Press the **Cycle/OK** button to save and return to the main interface.

8. Set field space:

Step 1: Press the **MENU** button 8 times. The interface will display as follows

Step 2: Press the **Cycle/OK** button to confirm entering the field space setting interface. The blinking number indicates that adjustment is possible.

Step 3: Press the **Speed +/-**button to switch between digits (oF, 01,02) and select the desired value.

Step 4: Press the **Cycle/OK** button to save and enter the following interface. The blinking numbers indicate that adjustment is possible.

Step 5: Press the **Speed +/-**key to select the desired value.

Step 6: Press the **Cycle/OK** button to save to the controller and enter the following interface

Step 7: Press the **Speed +/-**key to select the desired value.

Step 8: Press the **Cycle/OK** button to save to the controller and return to the main interface

9. Switch Mode (MODE):

The system features two modes: SD card program mode and built-in effect mode, with seamless switching between them. Press and hold the **Cycle/OK** button for 3 seconds to toggle modes. For users who prefer custom programming over the controller's built-in effects, developers can design programs and copy them to the SD card. For basic contour effects requiring minimal variations, the built-in effects library (totaling 130 presets) provides sufficient

options.

9.1. SD card program mode: It is designed by program software, according to customer requirements or designed by designers themselves.

The specific operation steps are as follows:

Step 1: Press the **Cycle/OK** button for 3 seconds to switch between the SD card program and the built-in program. Wait for the interface to display as shown below.

d: SD card program mode; 01: First program; 5: Speed 5

Step 2: Press the **MODE+/-**key to switch between mode files.

Step 3: Press the **Speed +/-**button to adjust the controller speed (1-8). The higher the number, the faster the speed.

Press the **Cycle/OK** key once to toggle between single-program loop and all-program loop.

d: represents a single loop of the SD card program; A: represents all loops of the SD card program.

F: represents a single loop in the built-in program; E: represents all loops in the built-in program

9.2. Built-in effect mode: (Built-in effects can be activated with or without the controller card, which means it's independent of the SD card.)

The controller comes with built-in effect programs, which are relatively basic and mainly used to test whether the lamp is working properly and whether the controller is working normally. If you want more gorgeous effects, you need to write a program file and place it on the SD card. Some simple contours can be used with the built-in effects.

The specific operation steps are as follows:

Step 1: Press and hold the **Cycle (OK)** button for 3 seconds until the interface appears

F: Controller built-in program mode; 01: First program; 5: Speed 5

Step 2: Press the **Speed+/-**button to switch between programs. There are 86 modes in total.

Step 3: Press the **Speed +/-**button to switch the program speed (1-8).

Press the **Cycle/OK** key once to toggle between single-program loop and all-program loop.

d: represents a single loop of the SD card program; A: represents all loops of the SD card program.

F: represents a single loop of built-in programs; E: represents all built-in program loops.

10. Set up the test (Test):

The following scenarios require the test function: ① Unclear number of lights ② Unidentified channel sequence (RGB, RGB, GRB, GBR, BRG, BGR) ③ Presence of faulty pixels ④ Insufficient power supply ⑤ Normal DMX512 address encoding (including code corruption). All these issues can be effectively diagnosed using the test function.

Step 1: Press the **Test** key to enter the test interface

Step 2: Press the **Speed +/-**button to switch the 3/4 channel lights. For example, use 3 channels.

Step 3: Press the **Cycle/OK** button. The interface displays

Step 4: Press the **Speed +/-**key to switch the digital selection to the corresponding port test.

Step 5: Press the **Cycle/OK** button to enter the manual measurement interface.

Step 6: Press the **Speed +/-**key to manually test each individual value (1-1024).

Step 7: Press the **MENU** button to automatically measure the point, then press it again to return to the manual measurement interface.

To test the RGB channel sequence of the light, press the **Test** key in the manual measurement interface.

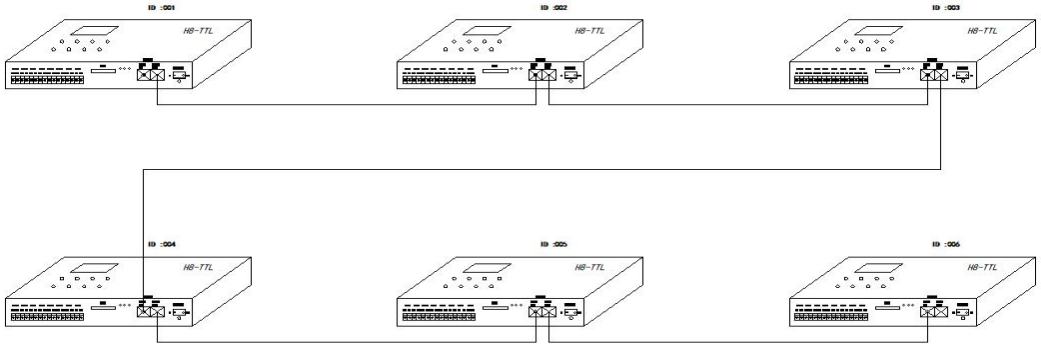
Press the Test key again to switch to the next color.

Always red Always green Always blue Always white

The color sequence of the lamps is the channel sequence of the lamps

Step 8: Press the **Cycle/OK** button to return to the main interface after testing is complete.

6. H8-TTL wiring diagram:

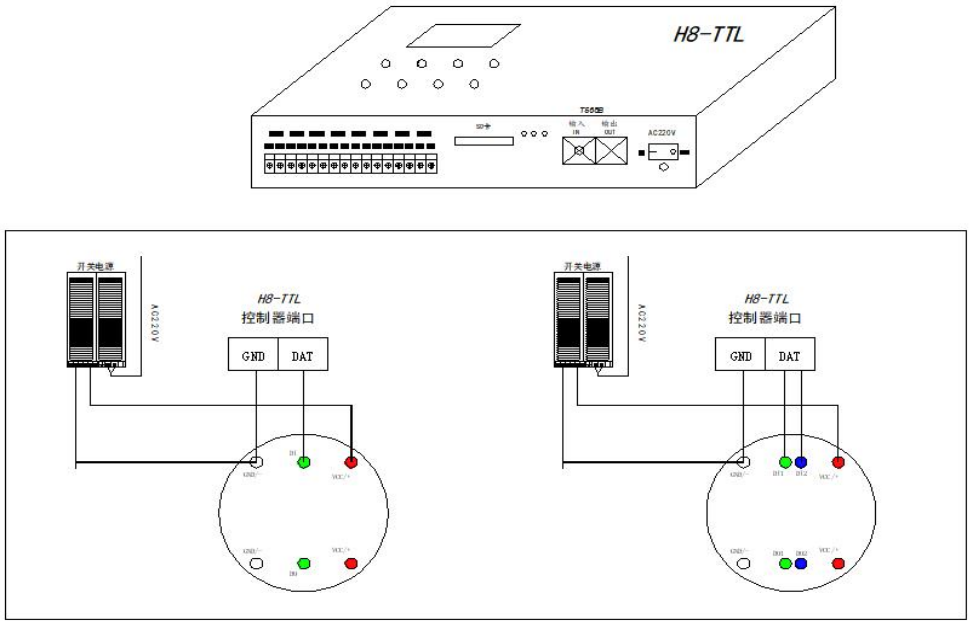


Note: For cascaded synchronization, use Cat.5e network cables with 568B parallel straight-through configuration.

B.Each controller copies the same program, and the SD card capacity must be consistent.

C.The network cable uses Category 5e shielded cable.

D.The controller assigns an ID number to each unit. After cascading, the first unit becomes the master controller, and adjustments can be made to the first unit.



Conventional chips: 1903, etc

Resume from breakpoint: 9883/1916,2818, etc.

Requirements: 1. The GND must be properly connected to ensure identical grounding.

2. Distinguish data lines: Different chips have different data lines. For conventional systems, a single data line is used, while two lines are required for breakpoint continuation.

3. The positive and negative poles of the power supply and the positive and negative directions of the signal should be clearly marked.