

RF SPI Multi-pixel LED Controller

- RGB/RGBW or white light SPI LED controller, support RF remote control and push switch control, output two group SPI signals, digital display, 3-button operation.
- Output SPI(TTL) signal, compatible with RGB or white LED strips with 48 kinds chip, the chip type and R/G/B color sequence can be set.
Compatible chip: TM1809(default), TM1804, TM1812, UCS1903, UCS1909, UCS1912, SK6813, UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, SM16703P, TM1803, TM1829, TLS3001, TLS3002, GW6205, MBI6120, TM1814B(RGBW), SK6812(RGBW), WS2813(RGBW), WS2814(RGBW), UCS8904B(RGBW), LPD6803, LPD1101, D705, UCS6909, UCS6912, LPD8803, LPD8806, WS2801, WS2803, P9813, SK9822, TM1914A, GS8206, GS8208, UCS2904, SM16804, SM16825, SM16714(RGBW), UCS2603, UCS5603, SM16714D, UCS7604(RGBW), UCS7804(RGBW).
- Three push switches can be connected for up direction switching, down direction switching, all switching functions.
- Connect the up direction and down direction push switch to control the staircase light on/off.
- 16 kinds color light, 10 kinds dynamic mode and 6 kinds movement directions are selectable, speed and brightness adjustable.
- Match with RF 2.4G RGB/RGBW remote control optional, to realize up direction switching, down direction switching or all switching control.

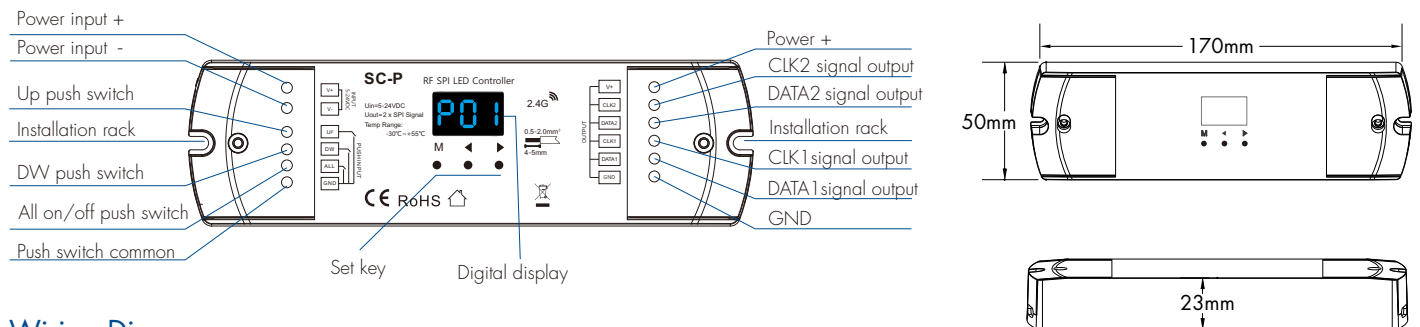


CE RoHS

Technical Parameters

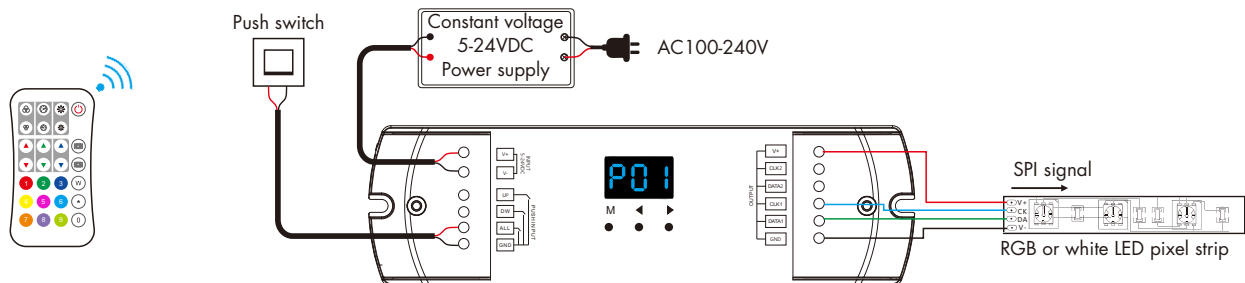
| Input and Output | | Environment | | Safety and EMC | |
|------------------|-------------------------|-------------------------|---------------------|-----------------|---|
| Input voltage | 5-24VDC | Operation temperature | Ta: -30°C ~ +55°C | EMC standard | EN IEC 55015/EN IEC 61547 ETSI EN 301 489-1/-3 |
| Input current | 10A | Case temperature (Max.) | Tc: +65°C | Safety standard | EN 61347-1/-2 |
| Output signal | 2 X SPI(TTL) | IP rating | IP 20 | Radio Equipment | ETSI EN 300 440 |
| Pixel Dots | Max.900 | Package | | Certification | CE RoHS |
| Input signal | RF 2.4GHz + push switch | Size | L175 x W120 x H35mm | Warranty | |
| | | Gross weight | 0.27kg | Warranty | 5 years |

Mechanical Structures and Installations



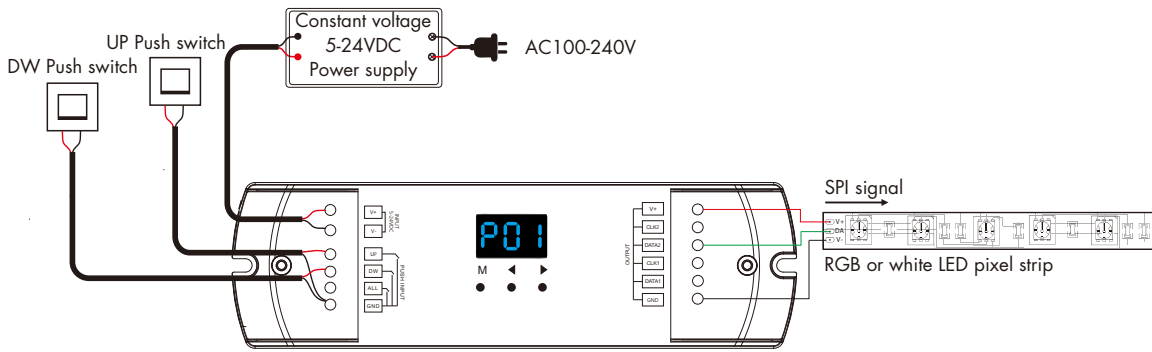
Wiring Diagram

1. SC-P controller connected to one push switch, matching with RF remote control.



- Short press the push switch to turn on the light, display the current light mode; short press the push switch again, turn off the light, display "OFF".
- Double-click the push switch to sequentially switch the 16 kinds color type.
- Long press the push switch for more than 2s, sequentially switch the 10 kinds dynamic mode, switching of one type every 2s.

2. SC-P controller connected to two push switch for stair light manual switch control.



- The UP push switch is installed at the bottom of the stairs; the DW push switch is installed at the top of the stairs.
- Short press the push switch to turn on the light, display the current light mode; short press the push switch again, turn off the light, display "OFF".
- Long press the UP push switch for more than 2s, adjust 5 levels brightness (20%, 40%, 60%, 80%, 100%), digital displays "b20" - "bFF". Long press the DW push switch for more than 2s, adjust 5 levels speed (2,4,6,8,10), digital displays "S-2" - "S-F".

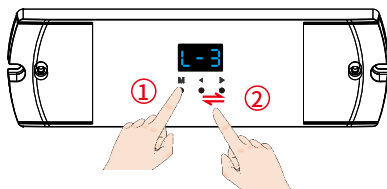
Installation Precautions:

1. If the SPI LED strip is a single-wire control method, the DATA and CLK signal line outputs of the controller are same, and one controller can connect four LED strips.
2. If the SPI LED strip is a dual wire control method, one controller can connect two LED strips.
3. When the SPI LED strip load does not exceed 10A, the same power supply can simultaneously power the SC-P controller and the SPI LED strip at the same time. When the load on the SPI LED strip exceeds 10A, separate power supplies are required for the SC-P controller and the SPI LED strip. Only DATA and GND signal lines are connected between SC-P controller and SPI LED strip.
4. The output power of the constant voltage power supply is at least 1.2 times of the output load (LED strip), otherwise the full power output of the load is likely to cause the lights to automatically flicker or shake phenomenon.

Parameters Setting

1. Long press the M and ◀ key for 2s simultaneously, enter the light parameters setting state: set the light type, pixel length, up or down switching light off mode.

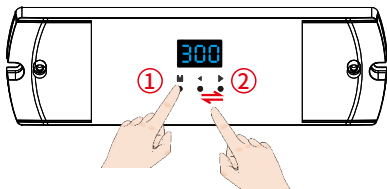
(1) Light type setting



- 3-bead white light: 1 pixel with 3 same data, control 3-bead white LED, display "L-1".
- 1-bead white light: 1 pixel with 1 data, control 1-bead white LED, display "L-2".
- RGB color light: 1 pixel with 3 data, control one R/G/B LED, display "L-3".

- ① Short press M key to enter light type setting interface.
- ② Short press ◀ or ▶ key to switch three light type.

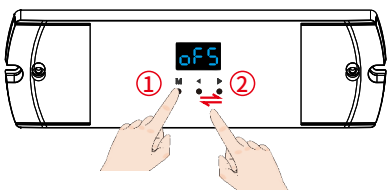
(2) Pixel length setting



- Pixel length: Set the number of pixel points, the range is 032-900, display "032"-"900".

- ① Short press M key to enter pixel length setting interface;
- ② Short press ◀ or ▶ key to set the pixel length.

(3) Up or down switching light off mode setting

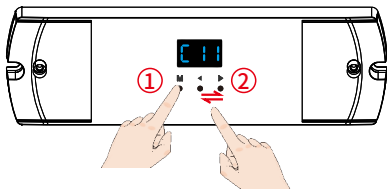


- Turn off light mode
- Sequential light off: Light turn off sequentially from the beginning to the end, display "oFS".
- Sequential light off in reverse: Light turn off sequentially from end to beginning, display "oFb".
- Synchronized light off: Light turn off synchronously, display "oFC".
- Note: Turn off light mode setting is only valid for up or down switching operations.

- ① Short press M key to enter light off setting interface.
- ② Short press ◀ or ▶ key to switch three light off mode.

2. Long press the ◀ and ▶ key for 2s simultaneously, enter the LED strip parameters setting state: set the chip type, RGB color order.

(1) Chip type setting



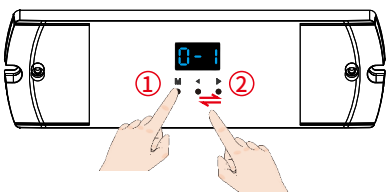
- ① Short press M key to enter the chip type setting interface;
- ② Short press ◀ or ▶ key to switch chip type (Table 1).

LED strip IC types list:

| No. | IC type | Compatible IC type | Output signal |
|-----|----------------|--|---------------|
| C11 | TM1803 | | DATA |
| C12 | TM1809 | TM1804, TM1812, UCS1903, UCS1909, UCS1912, SK6813, UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, SM16703P | DATA |
| C13 | TM1829 | | DATA |
| C14 | TLS3001 | TLS3002 | DATA |
| C15 | GW6205 | | DATA |
| C17 | TM1814B(RGBW) | | DATA |
| C18 | SK6812(RGBW) | WS2813(RGBW), WS2814(RGBW) | DATA |
| C19 | UCS8904B(RGBW) | | DATA |
| C21 | LPD6803 | LPD1101, D705, UCS6909, UCS6912 | DATA, CLK |
| C22 | LPD8803 | LPD8806 | DATA, CLK |
| C23 | WS2801 | WS2803 | DATA, CLK |
| C24 | P9813 | | DATA, CLK |
| C25 | SK9822 | | DATA, CLK |
| C26 | MBI6020 | | DATA |
| C31 | TM1914A | | DATA |
| C32 | GS8206 | GS8208 | DATA |
| C33 | UCS2904 | | DATA |
| C34 | SM16804 | | DATA |
| C36 | SM16714(RGBW) | | DATA |
| C37 | UCS5603 | | DATA |
| C38 | UCS2603 | | DATA |
| C39 | SM16714D | | DATA |
| C41 | UCS7604(RGBW) | | DATA |
| C42 | UCS7804(RGBW) | | DATA |

(Table 1)

(2) RGB color order setting



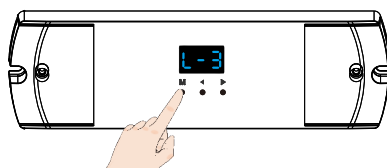
LED strip RGB color order:

| R/G/B order | RGB | RBG | GRB | GBR | BRG | BGR |
|-----------------|-----|-----|-----|-----|-----|-----|
| Digital display | 0-1 | 0-2 | 0-3 | 0-4 | 0-5 | 0-6 |

(Table 2)

- ① Short press M key to enter the RGB order setting interface;
- ② Short press ◀ or ▶ key to switch R/G/B order (Table 2).

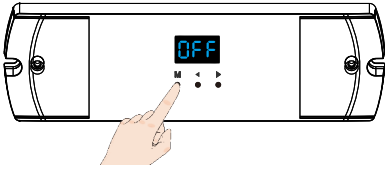
3. Quit the parameter setting



Long press the M key for 2s, quit and save the current system parameter setting.

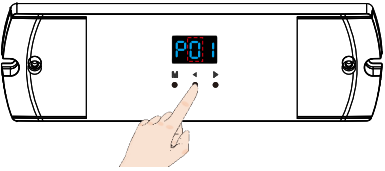
Light Effect Settings

(1) Turn on/off light



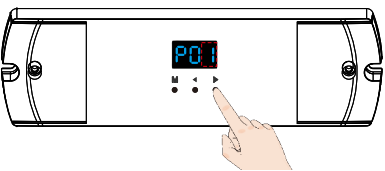
Short press M key, turn on/off light.

(2) Light color and speed settings



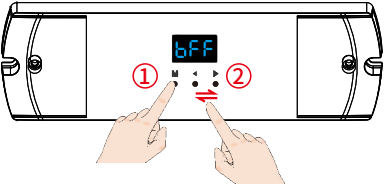
- ① Short press ◀ key to switch 16 kinds of color type in sequence (Table 3);
- ② Long press the ◀ key for 2s to enter speed setting interface.
Short press ◀ or ▶ key to switch the speed level, 1-10 levels adjustable, display "S-1"-"S-F".

(3) Light change type and motion direction settings



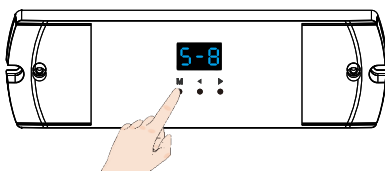
- ① Short press ▶ key to switch 10 kinds of light change type (Table 4);
- ② Long press the ▶ button for 2s to enter the light motion direction setting interface.
Short press ◀ or ▶ key to switch 6 kinds of light movement direction, display "d-1"-"d-6" (Table 5).

(4) Light brightness settings (including custom R/G/B colors)



- ① Long press M key to enter the brightness setting interface;
- ② Short press M key to switch 2 parameter items: brightness, custom R/G/B color;
Short press ◀ or ▶ key to adjust the parameter value of each parameter item.
Brightness, custom R/G/B color parameter value description:
Brightness: 1-5 levels adjustable (20%-40%-60%-80%-100%).
Display "b20"-"bFF", bFF means 100% brightness.
Custom R/G/B color: 0-255 (00-FF) adjustable.
R channel display "100" - "1FF"; G channel display "200" - "2FF";
B channel display "300" - "3FF".

(5) Quit light speed, direction, brightness parameter settings



Long press the M key for 2s or wait for 15s, quit light speed, direction, brightness parameter setting state.

Note:

1. White light type does not support setting the color type.
2. For color light type, 16 light colors and 10 light change types are combined to form more than one hundred kinds of lighting effects, and static change types are not supported when the light color is multi-color.
3. Static, jump, fade, Random flash lighting change type, motion direction setting is not supported.

Factory Default Parameter Setting

- Long press ◀ and ▶ key for 5s simultaneously, restore factory default parameters, display "RES".
- Factory default parameters: RGB color light output, 300 pixels, sequential light off, chip type TM1809, RGB order, brightness 100%, 8th speed level, 7 colors, flow change type, motion direction forward.



Color light mode, digital display: P00~P09.



White light mode, digital display: P-0~P-9.

Color type (2nd digit):

| NO. | Name | NO. | Name |
|-----|-----------------------------|-----|----------------|
| 0 | White (custom R/G/B colors) | 8 | R/G/B 3 color |
| 1 | Red | 9 | 7 color |
| 2 | Orange | A | Red + yellow |
| 3 | Yellow | b | Red + purple |
| 4 | Green | c | Green + yellow |
| 5 | Cyan | d | Green + cyan |
| 6 | Blue | E | Blue + cyan |
| 7 | Purple | F | Blue + purple |

(Table 3)

Light change type (3rd digit):

| NO. | Name | Motion direction |
|-----|---------------------|---|
| 0 | Static | / |
| 1 | Flow | Supports forward, reverse, round trip, center split, close, center split and close. |
| 2 | Chase | Supports forward, reverse, round trip, center split, close, center split and close. |
| 3 | Building blocks | Supports forward, reverse, round trip, center split, close, center split and close. |
| 4 | Float | Supports forward, reverse, round trip, center split, close, center split and close. |
| 5 | Trail | Supports forward, reverse, round trip, center split, close, center split and close. |
| 6 | Trail+black section | Supports forward, reverse, round trip, center split, close, center split and close. |
| 7 | Jump | / |
| 8 | Fade | / |
| 9 | Random flash | / |

(Table 4)

Light movement direction type:

| NO. | Name |
|-----|---|
| d-1 | Forward |
| d-2 | Reverse |
| d-3 | Round trip (forward + reverse) |
| d-4 | Center split (center to sides) |
| d-5 | Close (sides coming together in the center) |
| d-6 | Center split and close (center split + close) |

(Table 5)

Push Switch Function

Three push switch are used for light on/off, light brightness, speed, color light type and light change type switching operations.

1. Up push switch:

Short press to turn on/off the up direction light.

Long press for more than 2s to switch 5 levels of brightness (20%, 40%, 60%,80%,100%) in sequence, switching one level every 2s.

2. DW push switch:

Short press to turn on/off the down direction light.

Long press for more than 2s to switch 5 levels of speed in sequence, switching one level every 2s.

3. All on/off push switch:

Short press to turn on/off the light.

Double click to switch 16 kinds of color type in sequence (Table 3).

Long press for more than 2s to switch 10 kinds of light change types (Table 4) in sequence, switching one type every 2s.

Match RF Remote Control

Different RF remotes can be matched to realize up direction switching, down direction switching or all switching control independently.

There are two ways to match RF remotes.

Match by M and ► keys of the controller

1. Match all switch remote control:

Long press M and ► key simultaneously for 2s, digital display "RLS", indicating that it enter the RF remote control matching state.

Immediately short press the on/off key on the remote control, "RLO" is displayed to indicate the matching is successful.

2. Match UP switch remote control:

Long press M and ► key simultaneously for 5s, digital display "RLu", indicating that it enter the UP switch RF remote control matching state.

Immediately short press the on/off key on the remote control, "RLO" is displayed to indicate the matching is successful.

3. Match DW switch remote control:

Long press M and ► key simultaneously for 8s, digital display "RLd", indicating that it enter the DW switch RF remote control matching state.

Immediately short press the on/off key on the remote control, "RLO" is displayed to indicate the matching is successful.

Match by push switch

1. Match all switch remote control:

When the controller is power up, long press all push switch for 5s, the output LED strip flash slowly and the digital display "RLS", indicating that it enters the RF remote control matching state.

Immediately short press the on/off key on the remote control, the output LED strip flash 3 times and the digital display "RLO", indicate the matching is successful.

2. Match UP switch remote control:

When the controller is power up, long press UP push switch for 5s, the output LED strip flash slowly and the digital display "RLu", indicating that it enters UP switch RF remote control matching state.

Immediately short press the on/off key on the remote control, the output LED strip flash 3 times and the digital display "RLO", indicate the matching is successful.

3. Match DW switch remote control:

When the controller is power up, long press DW push switch for 5s, the output LED strip flash slowly and the digital display "RLd", indicating that it enters DWV switch RF remote control pairing state.

Immediately short press the on/off key on the remote control, the output LED strip flash 3 times and the digital display "RLO", indicate the matching is successful.

Delete Remote Controller:

Long press M and ► key for 10s simultaneously to delete all matched RF remote controllers, and the digital will display "RLE".