WT-SPI-P

WiFi & RF SPI LED Controller

SPI



CE RoHS

Features

- WiFi & RF SPI LED controller, SPI signal output, suitable for White, RGB, RGBW, and RGBCCT LED pixel strip.
- Tuya smart APP cloud control, support on/off, RGB color, color temperature and brightness adjustment, delayed light on/off, timer run, scene edit and music play function.
- Voice control, support for Amazon Alexa, Google Assistant, Tmall Genie and Xiaodu smart speakers.
- Compatible with White, RGB, RGBW, RGB+CCT SPI LED strips with 53 kinds chip, the chip type and R/G/B/W/C color sequence can be configured via the APP.
  Compatible chips: 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(RGBW), SM16804(RGBW), SM16714(RGBW), UCS2603,UCS5603, SM16714D, UCS7604(RGBW), UCS7804(RGBW), SM16825(RGBCCT), SM18605E(RGBCCT), UCS2905(RGBCCT), FW1906(RGBCCT), WS2805(RGBCCT).
- Painted segment color mixing: full color filling, color pencil segment painting, eraser segment light off.
- Rich dynamic effects: 44 default and 10+ custom dynamic scenarios, 16 variations.
- 3 APP music rhythms.
- Supports both up direction and down direction push switch control.
- Match with RF 2.4G SPI remote control optional.

Technical Parameters

Input and Output	
Input voltage	5-24VDC
Input Current	5A
Input signal	WiFi + RF 2.4GHz +Push
Output signal	SPI(TTL)
Scenario Mode	44 default and 10+ customizations
Pixel Dots	MAX. 1000

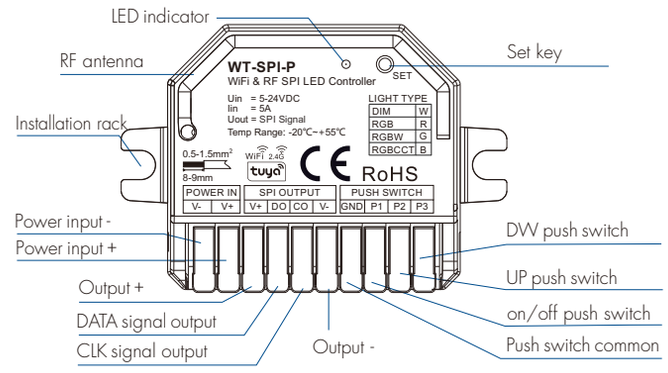
Environment	
Operation temperature	Ta: -20°C ~ +55°C
Case temperature (Max.)	Tc: +70°C
IP rating	IP20

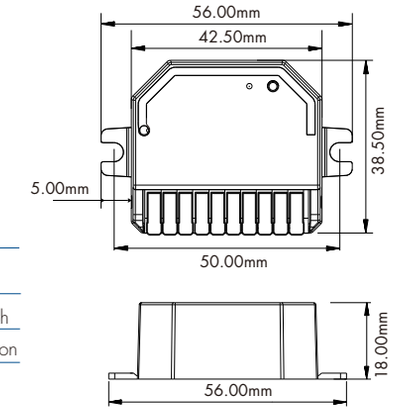
Package	
Size	L60 x W60 x H40mm
Gross weight	0.041kg

Safety and EMC	
EMC standard	EN IEC 55015/ EN IEC 61547 ETSI EN 301 489-1/-3/-17
Safety standard	EN 61347-1/-2
Radio equipment	ETSI EN 300 328 ETSI EN 300 440
Certidcation	CE RoHS

Warranty	
Warranty	5 years

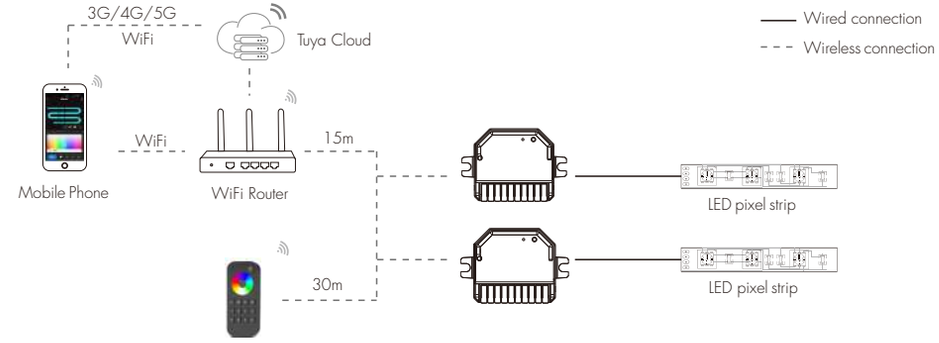
Mechanical Structures and Installations





Note: The mounting ear on both sides can be broken along the indentation, to suit different mounting needs.

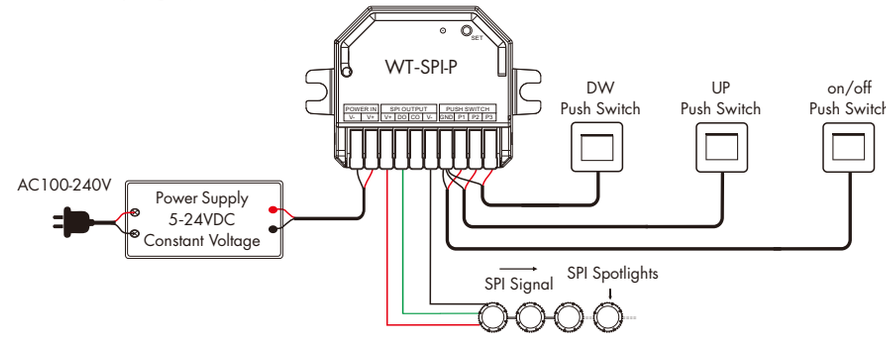
System Wiring



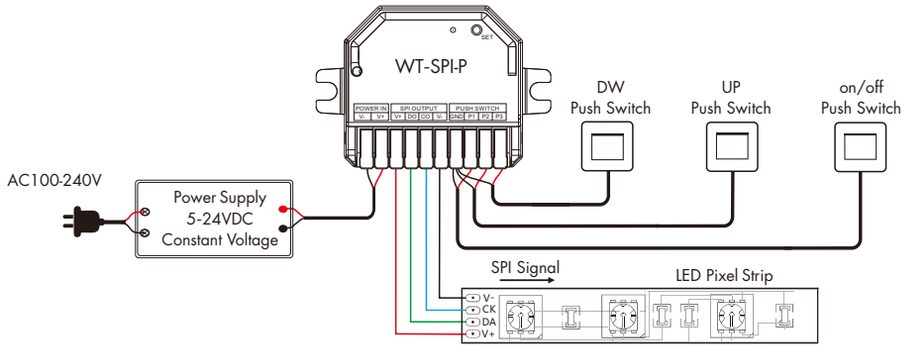
Note:
1. The above distance is measured in spacious(no obstacle) environment, Please refer to the actual test distance before installation.
2. Please check if the WiFi router net in 2.4G band, the 5G band is not available, and do not hide your router network.
3. Please keep the distance between WT-SPI-P devices and router close, and check the WiFi signals.
4. WiFi signal strength detection: open the main interface of social security, click ✎ enter the device interface, click "check device network" for testing.

Wiring Diagram

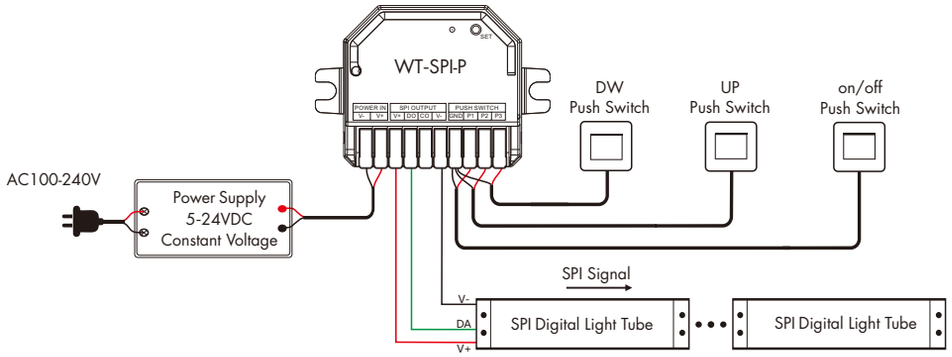
- Connect with SPI spotlight (TM1803)



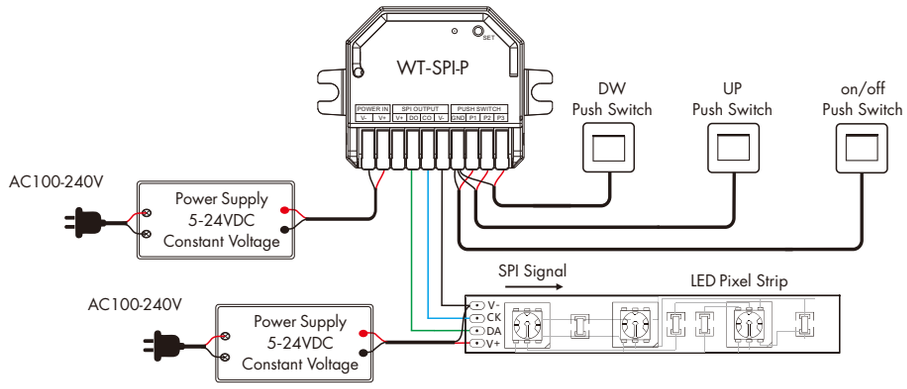
● Connect with one SPI pixel strip (WS2801)



● Connect with SPI digital light tube (TM1809)

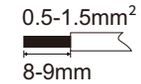


● Connect with one SPI pixel strip (Load over 5A)



Wire Preparation:

1. The wiring can be solid or stranded with a cross-sectional area of 0.5 to 1.5 mm². Conventional 1mm² can withstand 10A output current.
2. When wiring is installed, the terminals must be tightened. If they are not tightened, the contact point resistance will be too high and the terminals will easily burn due to heat when used at full load for a long time.



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 2 LED strips.
2. When the load of the light strip exceeds 5A, the light strip needs to be powered by another power supply (the light strip and the power supply must share the same ground), and only the DATA/CLK and GND lines are connected between the controller and the light strip.
3. The output power of the constant voltage power supply is at least 1.2 times that of the output load (light strip), otherwise the full power output of the load will easily cause the lights to flicker or shake automatically.
4. The voltage of the power supply needs to be the same as the voltage of the light strip to avoid the phenomenon of the light strip not being lit or slightly lit.
5. When installing, the length of the signal line (DATA/CLK) needs to be ≤ 10 metres, and if it exceeds 10 metres, it needs to be connected to an SPI signal amplifier (common ground) for signal amplification, to avoid signal interference due to the line being too long.
6. When installing, the SPI signal lines (DATA, CLK) need to be separated from the strong power (100~240VAC) lines at a distance of ≥15cm to avoid the magnetic field generated by the strong power from interfering with the signal transmission.
7. Each signal output port (DATA/CLK) can only be connected to one set of light strips.
8. The light strip is always on without control, it may be that the signal line (DATA/CLK) is open or the chip of the light strip is damaged, it is recommended to replace the signal line or the light strip.

Set Key Function

1. Light Type Setting

User need to set the correct light type via the SET key before APP connecting and matching the RF remote control.
Long press the SET key to switch 4 light types sequentially, every long press 2s to switch one,
the LED indicator turns to the corresponding color, flash once.

Light type	DIM	RGB	RGBW	RGBCCT
LED indicator color	white	red	green	blue

2. Match RF Remote Control

Match: Short press on the match key, immediately press on/off key of the remote.
The LED indicator fast flash a few times means match is successful.
Delete: Press and hold match key for 10s to delete all match, The LED indicator fast flash a few times means all matched remotes were deleted.

3. Tuya Smart APP Network Connection

Push twice setup key, or press and hold setup key for 5s, enter WiFi connecting mode,
clear previous network connection, the LED indicator flash purple fastly.

If Tuya Smart APP network connection succeed, the LED indicator will stop flash.
In Tuya Smart APP, you can find RGB-SPI/RGBW-SPI/RGBCCT-SPI device.
Note: When connecting DIM LED strips, the displayed device is RGB-SPI.

When controlling the light with Tuya Smart/Smart Life APP,
if the network connection is poor, you can control the light with Bluetooth connection
within the Bluetooth control range.
Note: The light can not be directly controlled by Bluetooth without WiFi configuration.

Smart Life Tuya Smart

4. Restore Factory Default Setting

Restore factory default parameters: RGB light type, pixel length 300, TM1809 chip type.

- Long press the set key for 10s, restore factory default parameters, the LED indicator flash once, set RGB color light and W white light cannot be turn on at the same time (When setting RGBW light).
- Long press the set key for 15s, restore factory default parameters, the LED indicator flash twice, set RGB color light and W white light can be turned on at the same time (When setting RGBW light).

Tuya Smart APP Interface



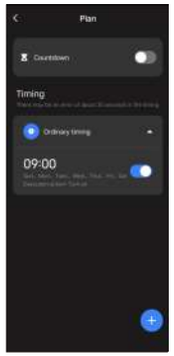
Other interface
For the first time use,
set LED strip length,
chip type and color sequence.



Light Strip Length interface
Strip length setting:
Select the appropriate number
of pixels according to the actual
length of the strip, 10 -1000.



Lights with color sequence interface
Select the corresponding
R/G/B/W/C sequence according to
the color sequence of the light strip
(For Table 1).



Plan interface
Countdown:
Customize the countdown time
(Max.24 hours) to perform the on/off action.
Timer: Customize multiple times
to perform the on/off light action.



Chip type interface
Select the corresponding chip according
to the chip type of the light strip(For Table 2).

Lights with color sequence (Table 1):

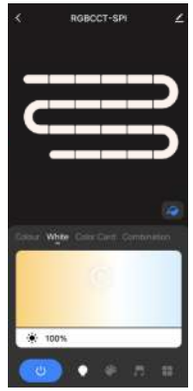
Light Type	R/G/B/W/C Sequence
RGB	RGB, RBG, GRB, GBR, BRG, BGR
RGBW	RGBW, RBGW, GRBW,GBRW,RGW, BGRW, WRGB, WRBG, WGRB, WGBR, WBRG, WBGR,
RGBCCT	RGBWC, RBGWC, GRBWC, GBRWC, BRGWC, BGRWC, RGBCW, RBGCW, GRBCW, GBRCW, BRGCW, BGRCW, WRGBC, WRBGC, WGRBC, WGBRC, WBRGC, WBGRC, CRGBW, CRBGW, CGRBW, CGBRW, CBRGW, CBGRW

List of Chip Type (Table 2):

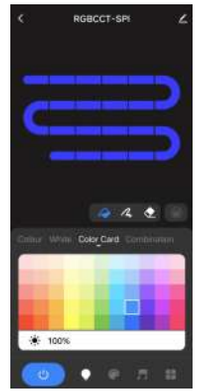
Light Type	Chip Type	Compatible Chip	Output Signal
White/RGB	TM1803		DATA
	TM1809	TM1804, TM1812, UCS1903, UCS1909, UCS1912, SK6813, UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, SM16703P	DATA
	TM1829		DATA
	TLS3001	TLS3002	DATA
	GW6205		DATA
	MBI6120		DATA
	LPD6803	LPD1101, D705, UCS6909, UCS6912	DATA CLK
	LPD8803	LPD8806	DATA CLK
	WS2801	WS2803	DATA CLK
	P9813		DATA CLK
	SK9822		DATA CLK
	TM1914A		DATA
	GS8206	GS8208	DATA
	UCS5603		DATA
	UCS2603		DATA
	SM16714D		DATA
RGBW	UCS2904		DATA
	SM16804		DATA
	TM1814B		DATA
	SK6812	WS2813, WS2814	DATA
	UCS8904B		DATA
	SM16714		DATA
	UCS7604		DATA
	UCS7804		DATA
RGBCCT	SM16825		DATA
	SM18605E		DATA
	UCS2905		DATA
	FW1906		DATA
	WS2805		DATA



Colour:
Touch the color rectangle to adjust color and saturation. Touch the brightness slide to adjust brightness.



White:
Touch the color rectangle to adjust color temperature. Touch the brightness slide to adjust brightness.



Color Card:
Touch the color card array to select many different colors. Touch the brightness slide to adjust brightness.



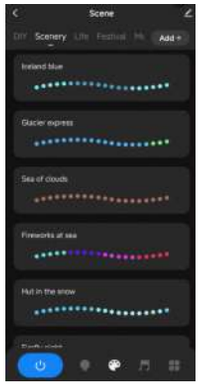
Combination:
Select a proportional distribution of multi-color circle, evenly distribute these colors on the LED strip.

Colour Fill: Change the color of the full segment of the LED strip.

color pen: change the color of a single segment of the LED strip.

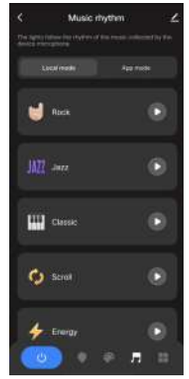
Eraser: Erase the color of a single segment of the LED strip, i.e., turn off the light.

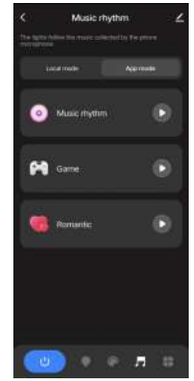
Color transition: When there are multiple colors in the LED strip, you can set to turn on or off the color segment gradient transition.





Scene interface
44 predefined scenarios and 10+ custom dynamic scenarios selectable. The custom scenarios can select 16 types variations (fade, jump, breath, flash, flow, rainbow, shooting star, pile-up, floating down, chasing light, floating, flashing, bouncing, shuttle, chaotic flashing, open and close),
the 1-8 colors, full or segment control, forward or reverse motion direction, adjustable brightness and speed.





Music rhythm interface
6 local music modes (rock, jazz, classical, rolling, energy, spectrum) selectable.
3 APP modes (music rhythm, game, romance) selectable.
Adjustable sensitivity of the received sound.
The light follows the rhythm according to the music collected by the phone microphone.
Note: the controller only supports App mode.

Notes.
1. In APP, a light strip is fixed with 20 segments, strip length (total number of pixel points) ÷ 20 segments = number of pixel points per segment.
2. The maximum length of the light strip is 1000 pixels, for example, a light strip of 5 meters long with 60 pixels per meter, you can set the length to 300 pixels. The whole light strip is divided into 20 segments, each segment has 15 pixels.
3. When the light strip length is less than or equal to 20 pixels, for example, 10-20, each pixel sequentially corresponds to each segment from the beginning.
4. When the light strip length is not an integer multiple of 20, the remainder of the strip will display the color of the last segment.
5. When the actual light strip length is not an integer multiple of 20, it is recommended to set the length longer and increase the value to a multiple of 20.
6. When the set of the light strip length is less than the actual length, the back part of the light strip can not be controlled.
7. When the selected dynamic mode cycle running interval is too long, please reset the correct pixel length.
8. When the static or dynamic mode color display is not consistent with the APP interface, please re-select the light strip color sequence.

Push Switch Dimming

1. On/off push switch(P1)
Short press: Turn the light on/off (lights on/off at the same time).
Double click: Switch multi-color types in sequence(see Table 4,Table 5).
Simultaneously enter the state of switching change types in sequence by long-pressing for 2s (see Table 3),
After 10s timeout, it will automatically return to the long press brightness adjustment status.
Long press(1-6s): Adjust brightness continuously (5-100%).

2. UP push switch(P2):
Short press: Turn the light on/off (the lights turn on in forward sequence and turn off at the same time).
Long press(1-6s): Adjust brightness continuously (5-100%).

3. DW push switch(P3):
Short press: Turn the light on/off (the lights turn on in reverse sequence and turn off at the same time).
Long press(1-6s): Adjust brightness continuously (5-100%).

Change type (Table 3):

No.	Name	No.	Name
1	Static	9	Bouncing
2	Flow	10	Shuttle
3	Chasing light	11	Jump
4	Chase	12	Fade
5	Pile-up	13	Breath
6	Floating	14	Chaotic flashing
7	Tail dragging	15	Flicker
8	Tail dragging + black segment	16	Flash

RGB/RGBW color type (Table 4):

No.	Name	No.	Name
1	Red	9	R/G/B 3 color
2	Orange	10	7 color
3	Yellow	11	Red + yellow
4	Green	12	Red + purple
5	Cyan	13	Green + yellow
6	Blue	14	Green + cyan
7	Purple	15	Blue + cyan
8	White	16	Blue + purple

RGBCCT color type (Table 5):

No.	Name	No.	Name
1	Red	12	7 color
2	Orange	13	Red + yellow
3	Yellow	14	Red + purple
4	Green	15	Green + yellow
5	Cyan	16	Green + cyan
6	Blue	17	Blue + cyan
7	Purple	18	Blue + purple
8	White	19	WW + CW
9	Warm white	20	W + WW
10	Cool white	21	W + CW
11	R/G/B 3 color	22	WW + W+ CW

Note: Color types 19-22 are suitable for dynamic change type applications.