WT-SPI

WT-SPI RGB/RGBW SPI LED Controller

- Multi-pixel RGB/RGBW LED strip controller with SPI signal output, Tuya APP cloud control.
- Voice control, support for Amazon ECHO, Google, Tmall Genie and Xiaodu smart speakers.
- Compatible with RGB or RGBW LED strips with 49 kinds chip,
  the chip type and R/G/B/W color sequence can be set through the APP.
  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).
- 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.
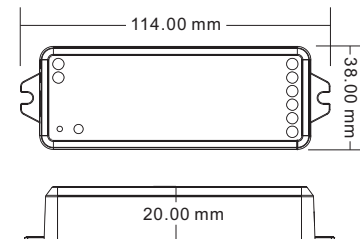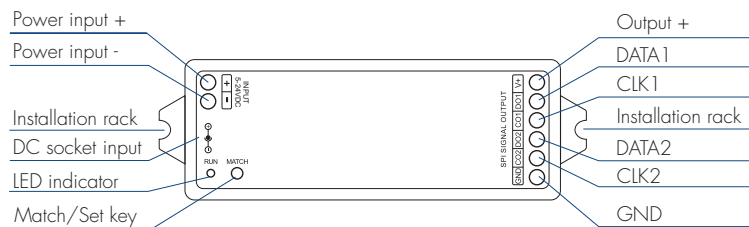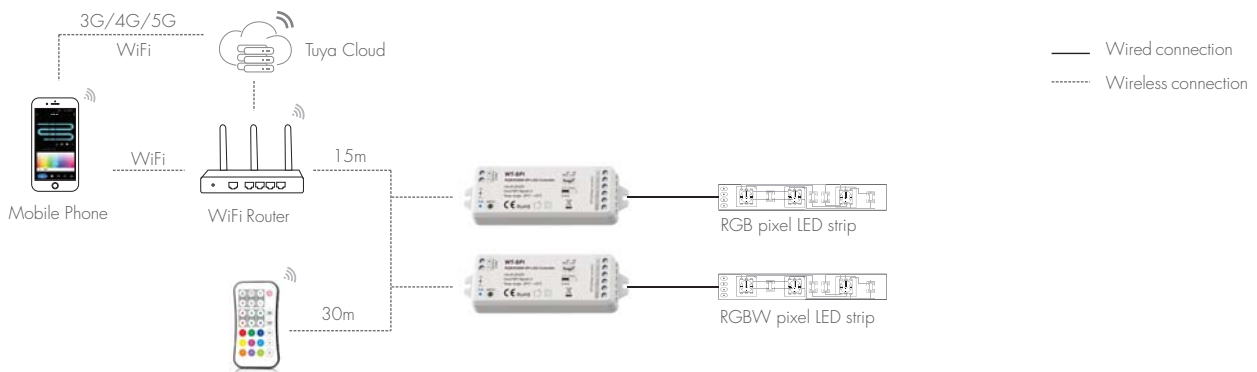- Match with RF 2.4G RGB remote control optional.

CE RoHS emc LVD

Technical Parameters

Input and Output		Safety and EMC		Environment	
Input voltage	5-24VDC	EMC standard (EMC)	ETSI EN 301 489-1 V2.2.3 ETSI EN 301 489-17 V3.2.4	Operation temperature	Ta: -30℃ ~ +55℃
Input Current	8A			Case temperature (Max.)	Tc: +65℃
Input signal	Tuya APP + RF 2.4GHz	Safety standard(LVD)	EN 62368-1:2020+A11:2020	IP rating	IP20
Output signal	SPI(TTL) x 2	Certification	CE,EMC,LVD	Package	
Scenario Mode	44 default and 10+ customizations	Warranty		Size	L120 x W43 x H27mm
Pixel Dots	MAX.1000	Warranty	5 years	Gross weight	0.066kg

Mechanical Structures and Installations

Power input +
Power input -

Installation rack
DC socket input
LED indicator
Match/Set key

Output +
DATA1
CLK1
Installation rack
DATA2
CLK2
GND

114.00 mm

38.00 mm

20.00 mm

System wiring

3G/4G/5G
WiFi
Tuya Cloud

WiFi

Mobile Phone

WiFi Router

15m

30m

Wired connection
Wireless connection

RGB pixel LED strip

RGBW pixel LED strip

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 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.

RF RGB/RGBW

Ultrathin RGB/RGBW RF Remote Controller

● Apply to RGB or RGBW LED controller.

● Each remote can match one or more receiver.

● CR2032 battery powered.

● Operate with LED indicator light.
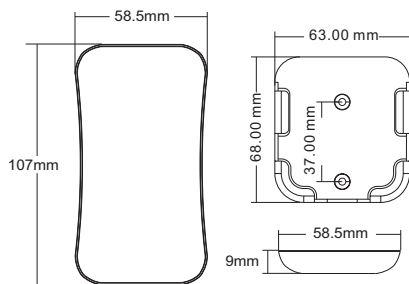
● White & Black available.

$C\epsilon$ **RoHS** emc **RED**

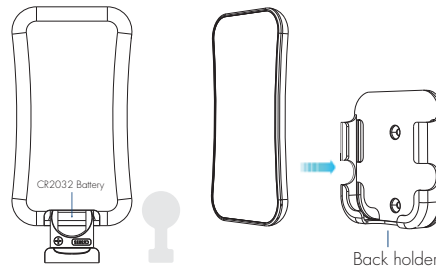1 zone RGB or RGBW / 27 key / Wireless remote 30m distance / CR2032 battery

Technical Parameters

Input and Output		Safety and EMC		Environment	
Output signal	RF(2.4GHz)	EMC standard (EMC)	ETSI EN 301 489-1 V2.2.3	Operation temperature	Ta: -30 $^\circ$C ~ +55 $^\circ$C
Working voltage	3VDC(CR2032)		ETSI EN 301 489-17 V3.2.4	**Package**	
Working current	<5mA	Safety standard	EN 62368-1:2020+A11:2020	Size	L114 x W65 x H20mm
Standby current	<2μA	Radio Equipment(RED)	ETSI EN 300 328 V2.2.2	Gross weight	0.058kg
Standby time	1 year	Certification	CE,EMC,RED	**Warranty**	
Remote distance	30m(Barrier-free space)			Warranty	5 years

Mechanical Structures and Installations

58.5mm

63.00 mm

68.00 mm

37.00 mm

107mm

58.5mm

9mm

CR2032 Battery

Back holder

To fix the remote, two options are offered for selection:
Option 1:
fix the remote' back holder on the wall with two screws.
Option 2:
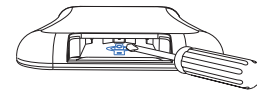adhere the remote' back holder to the wall with paster.

Note:
1. Before the first use, please remove the protective film on the battery.
2. If the LED indicator is not on when press key,
it is due to dead battery or bad contact caused by multiple plugging,
please replace the battery, or raise the battery shrapnel with a screwdriver.

Match Remote Control (two match ways)

End user can choose the suitable match/delete ways. Two options are offered for selection:

Use the controller's Match key

Match:

Short press match key, immediately press on/off key on the remote.
The LED indicator fast flash a few times means match is successful.

Delete:

Press and hold match key for 5s to delete all match,
The LED indicator fast flash a few times means all matched remotes
were deleted.

Use Power Restart

Match:

Switch off the power, then switch on power, repeat again.
Immediately short press on/off key 3 times on the remote.
The light blinks 3 times means match is successful.

Delete:
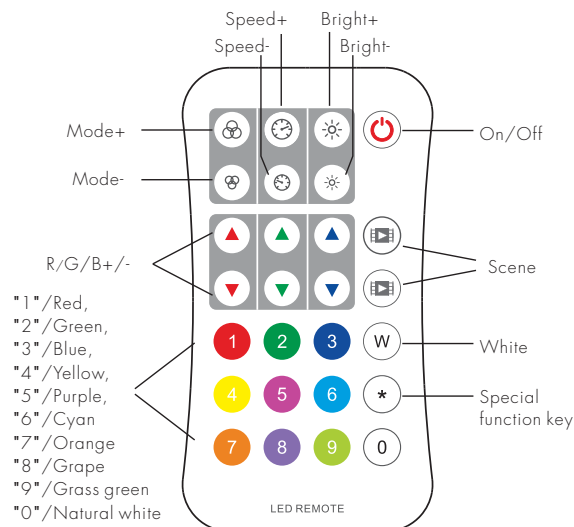
Switch off the power, then switch on power, repeat again.
Immediately short press on/off key 5 times on the remote.
The light blinks 5 times means all matched remotes were deleted.

Key function

Pull out the plastic battery barrier sheet from the battery compartment located on the bottom of the remote before key operation.

```
              Speed+   Bright+
              Speed-   Bright-
Mode+ ————  ⊛   ⊘   ☼   ⏻  ———— On/Off
Mode- ————  ⊛   ⊘   ☼

              ▲   ▲   ▲   ▣
R/G/B+/- ——                        ———— Scene
              ▼   ▼   ▼   ▣

"1"/Red,      1   2   3   W  ———— White
"2"/Green,
"3"/Blue,     4   5   6   *  ———— Special
"4"/Yellow,                        function key
"5"/Purple,   7   8   9   0
"6"/Cyan,
"7"/Orange         LED REMOTE
"8"/Grape
"9"/Grass green
"0"/Natural white
```

Mode+/-: Short press switch dynamic mode built in controller,
long press 2s Mode+ run mode cycle, long press 2s Mode- run the first mode.
Default 32 dynamic modes, long press the Mode+ key for 2s will automatically get the current number of dynamic modes of the controller.
Speed+/-: Adjust dynamic mode speed,
short press 10 levels, long press 2s get the fastest / slowest speed.
Bright+/-: Adjust brightness,
short press 10 levels, long press 1-6s for continuous 256 levels adjustment.
R/G/B+/-: Adjust R/G/B brightness respectively, short press 10 levels,
long press 1-6s for continuous 256 levels adjustment to achieve millions of colors.
White: Adjust white color, for RGB light, short press turn on/off white(RGB mix),
long press 1-6s adjust saturation continuously.
For RGBW light, press W key will adjust W channel brightness.
short press turn on/off W channel,
long press 1-6s adjust W channel brightness continuously.
Scene: Short press recall the scene, long press 2s save the current color into the scene. The LED indicator will light up longer when save OK.

Use R9 remote set SPI digital LED strip length, chip type and RGB order

● Set LED strip length [Pixel number(8~1024)]. *** + 3 number + *** for example:
   032 set pixel number to 32.
   600 set pixel number to 600.
   1024 set pixel number to 1024.

● Set LED strip chip type. *** + 2 number + ***
  11: TM1803
  12: TM1809, TM1804, TM1812, UCS1903, UCS1909, UCS1912, SK6813, UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, SM16703P
  13: TM1829
  14: TLS3001, TLS3002
  15: GW6205
  16: MBI6120
  17: TM1814B(RGBW)
  18: SK6812(RGBW), WS2813(RGBW), WS2814(RGBW)
  19: UCS8904B(RGBW)
  21: LPD6803, LPD1101, D705, UCS6909, UCS6912
  22: LPD8803, LPD8806
  23: WS2801, WS2803
  24: P9813
  25: SK9822
  31: TM1914A
  32: GS8206,GS8208
  33: UCS2904
  34: SM16804
  35: SM16825
  36: SM16714(RGBW)
  37: UCS5603
  38: UCS2603
  39: SM16714D
  41: UCS7604(RGBW)
  42: UCS7804(RGBW)

● Set LED strip RGB order. *** + 1 number + ***
  1: RGB, ***2*:** RBG, ***3*: GRB,** ***4*:** GBR, ***5*:** BRG, ***6*:** BGR.
● Set RGBW LED strip RGB and W order.
 7: W after RGB
 9: W before RGB
Example: *1* + *7* set RGBW order, *1* + *9* set WRGB order.

You need to enter 3 settings on the WP−SPI for Pixel using ∗ and number keys on the remote control.

∗12∗ (Chip Setting)
∗3∗ (RGB Setting)
∗number of led∗ (# of led Setting)

example 1: to connect 300 pixel:
   ∗12∗
   ∗3∗
   ∗300∗
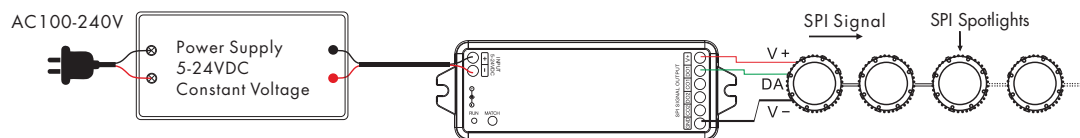example 2: to connect 120 pixel:
   ∗12∗
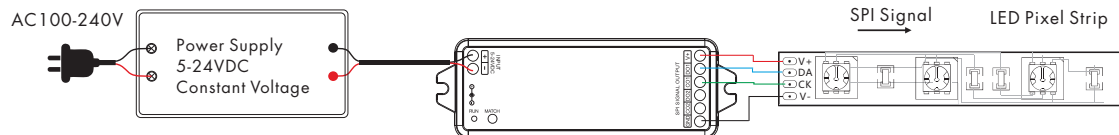   ∗3∗
   ∗120∗

Safety information

1. Read all instructions carefully before you begin this installation.
2. When installing battery, pay attention to the battery positive and negative polarity.
   A long time without the remote control, remove the battery.
   When remote distance becomes smaller and insensitive, replace the battery.
3. If no response from the receiver, please re-match the remote.
4. Gently handle remote, beware of falling.
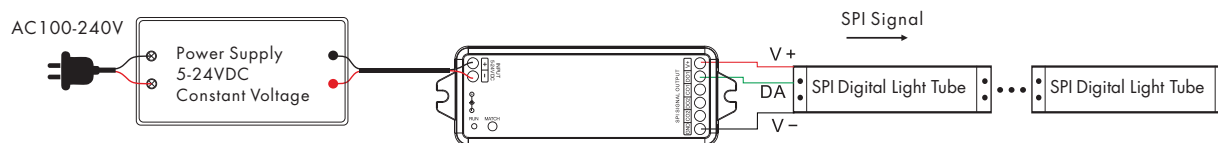5. For indoor and dry location use only.

Wiring Diagram

● WT-SPI connect with SPI spotlights (TM1803)

● WT-SPI connect with SPI pixel strips (LPD6803)

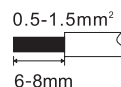● WiFi-SPI connect with SPI digital light tube (TM1809)

Note:
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 4 LED strips.
2. When the load of the light strip exceeds 8A, 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.

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.
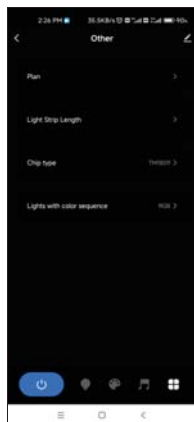
0.5-1.5mm²

6-8mm

Tuya APP network connection

Push twice Match key fastly, or press and hold Match key for 2s:
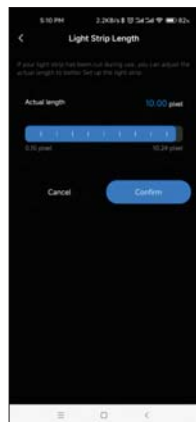clear previous network connection, enter Smart config mode, LED indicator flash fastly.

Press and hold Match key for 5s:
Clear previous network connection, enter AP config mode, LED indicator flash slowly.
If smart config failed, please try AP config.

If Tuya APP network connection succeed, the RUN LED indicator will stop flash, and in Tuya APP, you can find RGB-SPIs device .

Other interface

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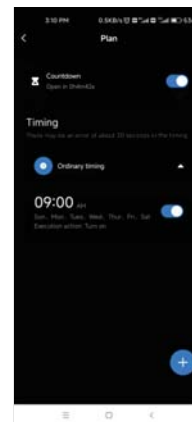set LED strip length,
chip type and color sequence.

Light Strip Length interface

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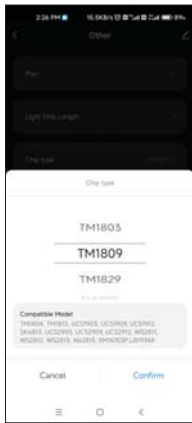of pixels according to the actual
length of the strip, 10 -1000.

Lights with color sequence interface

Select the corresponding
R/G/B/W sequence according to
the color sequence of the light strip.
(RGB, RBG, GRB, GBR, BRG, BGR,
RGBW, RBGW, GRBW, GBRW, BRGW,
BGRW, WRGB,WRBG, WGRB, WGBR,
WBRG, WBGR)

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.

Chip Type	Compatible Chip
TM1803	
TM1809	TM1804, TM1812, UCS1903, UCS1909, UCS1912, SK6813,UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, SM16703P
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)	
UCS5603	
UCS2603	
SM16714D	
UCS7604(RGBW)	
UCS7804(RGBW)	

Tuya APP interface

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.

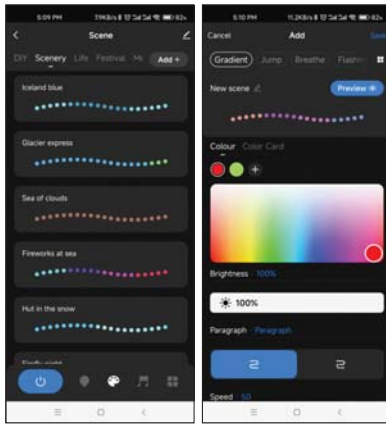 Color Fill: Change the color of the full segment of the LED strip.

 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.
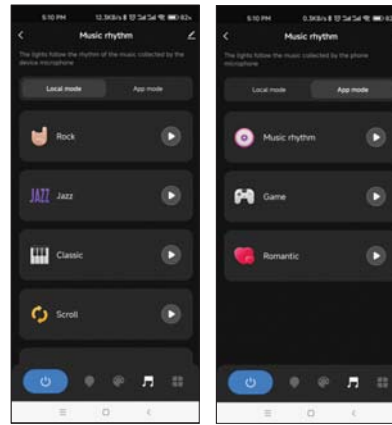
Match R9 remote control

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.

Installation Precautions

1. 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.
2. 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.
3. 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.
4. Each signal output port (DATA/CLK) can only be connected to one set of light strips.
5. 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.