

DMX512-SPI Decoder and RF Controller

- DMX512 to SPI decoder and RF controller with digital display.
- Compatible with 47 kinds of digital IC RGB or RGBW LED strip, IC type and R/G/B order can be set.  
Compatible ICs: TM1803, TM1804, TM1809, TM1812, UCS1903, UCS1909, UCS1912, SK6813, UCS2903, UCS2909, UCS2912, WS2811, WS2812, WS2813, WS2815, TM1829, TLS3001, TLS3002, GW6205, MBI6120, TM1814B(RGBW), SK6812(RGBW), SM16714(RGBW), SM16703P, SM16714D, WS2813(RGBW), WS2814(RGBW), UCS8904B(RGBW), LPD6803, LPD1101, D705, UCS6909, UCS6912, LPD8803, LPD8806, WS2801, WS2803, P9813, SK9822, TM1914A, GS8206, GS8208, UCS2904, SM16804, SM16825, UCS5603, UCS2603.
- DMX decode mode, stand-alone mode and RF mode selectable.
- Standard DMX512 compliant interface, set DMX decode start address by buttons.
- Under stand-alone mode, change mode, speed or brightness by buttons.
- Under RF mode, match with RF 2.4G RGB/RGBW remote control.
- 32 kinds dynamic mode, include horse-race, chase, flow, trail or gradual change style.

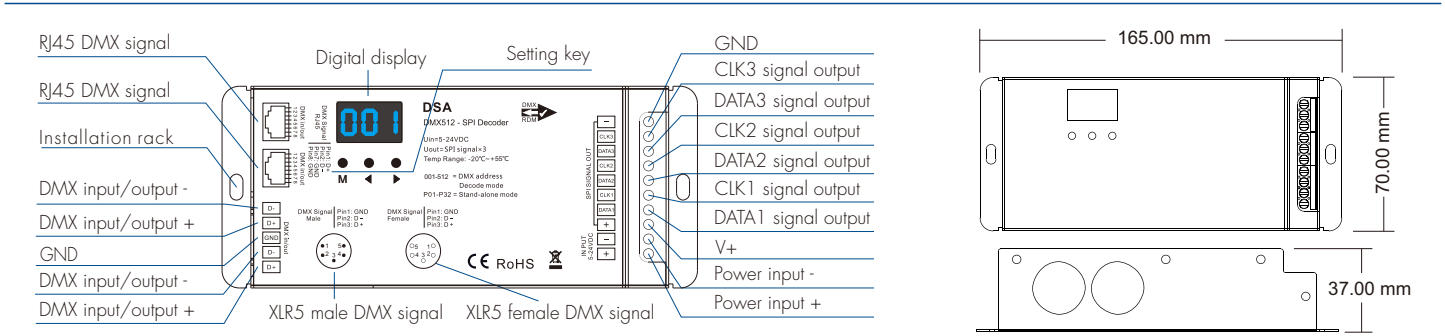


CE RoHS emc RED

Technical Parameters

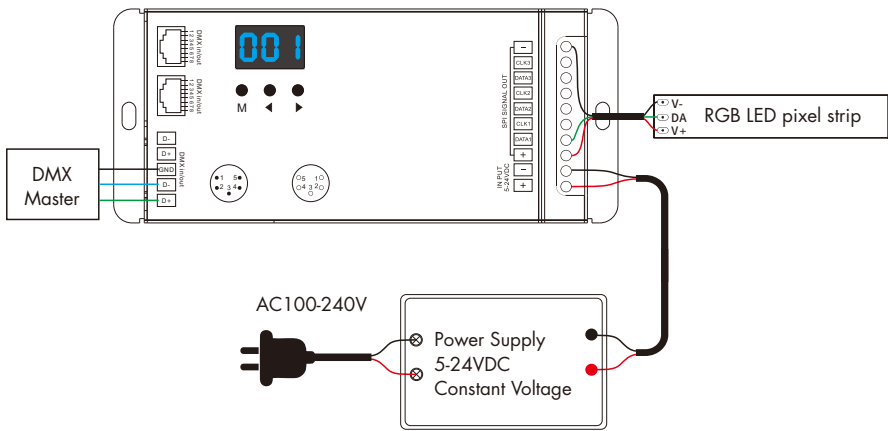
| Input and Output  |                                          | Safety and EMC       |                            | Environment             |                    |
|-------------------|------------------------------------------|----------------------|----------------------------|-------------------------|--------------------|
| Input voltage     | 5-24VDC                                  | EMC standard(EMC)    | ETSI EN 301 489-1 V2.2.3   | Operation temperature   | Ta: -20°C ~ +55°C  |
| Input current     | 10A                                      |                      | ETSI EN 301 489-17 V3.2.4  | Case temperature (Max.) | Tc: +65°C          |
| Power consumption | 1W                                       | Safety standard      | EN 61347-1:2015+A1:2021    | IP rating               | IP20               |
| Input signal      | DMX512 + RF 2.4GHz                       |                      | EN 61347-2-13:2014+A1:2017 | Package                 |                    |
| Output signal     | SPI(TTL) x 3                             | Radio Equipment(RED) | ETSI EN 300 328 V2.2.2     | Size                    | L175 x W80 x H45mm |
| Dynamic mode      | 32                                       | Certification        | CE, EMC, RED               | Gross weight            | 0.397kg            |
| Control dots      | 170 pixels (RGB 510 CH)<br>Max 900pixels | Warranty             | 5 years                    |                         |                    |

Mechanical Structures and Installations

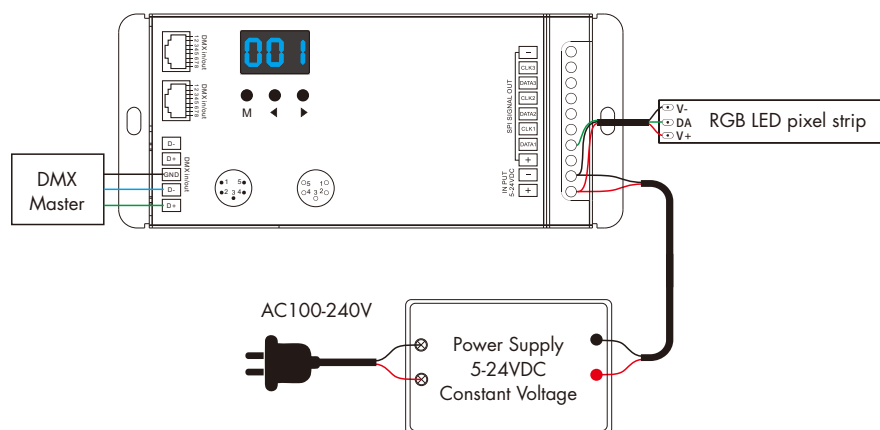


Wiring Diagram

- Strip load≤10A



- Strip load > 10A



**Note:**

- If the SPI LED pixel strip is single-wire control, the DATA and CLK output is same, we can connect up to 6 LED strips.
- If the SPI LED pixel strip is two-wire control, we can connect up to 3 LED strips.
- When the controller and the strip share a common power supply, if the strip load current exceeds 10A, the power input line of the strip is directly connected to the power output, and only the DATA/CLK/GND line is connected between the controller and the strip.

## Operation

### IC type, RGB order and pixel length length setting

- You must first assure IC type, RGB order and pixel length of the LED strip is correct.
- Long press M and ◀ key, prepare for setup IC type, RGB order, pixel length, automatic blank screen, Short press M key to switch four item.  
Press ◀ or ▶ key to setup value of each item.  
Long press M key for 2s, or timeout 10s, quit setting.



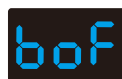
IC type



RGB order



pixel length



disable automatic blank screen

- IC type table:

| No. | 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          |
| C16 | MBI6120                                                                                                          | DATA          |
| C17 | TM1814B(RGBVV)                                                                                                   | DATA          |
| C18 | SK6812(RGBVV),WS2813(RGBVV),WS2814(RGBVV)                                                                        | DATA          |
| C19 | UCS8904B(RGBVV)                                                                                                  | 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      |
| C31 | TM1914A                                                                                                          | DATA          |
| C32 | GS8206,GS8208                                                                                                    | DATA          |
| C33 | UCS2904                                                                                                          | DATA          |
| C34 | SM16804                                                                                                          | DATA          |
| C35 | SM16825                                                                                                          | DATA          |
| C36 | SM16714(RGBVV)                                                                                                   | DATA          |
| C37 | UCS5603                                                                                                          | DATA          |
| C38 | UCS2603                                                                                                          | DATA          |
| C39 | SM16714D                                                                                                         | DATA          |

- RGB order: O-1 - O-6 indicate six order (RGB, RBG, GRB, GBR, BRG, BGR).
- Pixel length: Range is 008-900.
- Automatic blank screen: enable ("bon") or disable("boF") automatic blank screen.

DMX decode mode

There are three DMX decode modes selectable.

DMX decode mode 1: the DMX data change light directly;

DMX decode mode 2: switch dynamic modes, brightness grade and speed grade via 3 DMX data.

DMX decode mode 3: the DMX data change light directly (One data copy triple, control one pixel, for SPI type white light strip).



DMX decode mode

Long press M, ◀ and ▶ key at the same time, prepare for setup DMX decode mode.

Press ◀ or ▶ key to switch between DMX decode mode 1 (display"d-1" ), DMX decode mode 2 (display"d-2" ) and DMX decode mode 3 (display"d-3" ).

Long press M key for 2s, and then return to DMX address interface.

DMX decode mode 1:

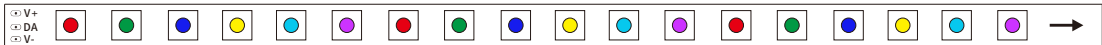
- Short press M key, when display 001-512, enter DMX decode mode.
- Press ◀ or ▶ key to change DMX decode start address(001-512), long press for fast adjustment.
- Long press M key for 2s, prepare for setup decode number and multiple of pixels.  
Short press M key to switch two item.  
Press ◀ or ▶ key to setup value of each item.  
Decode number(display "dno") : DMX decode channel number, range is 003-600(for RGB).  
Multiple of pixels(display "Pno") : Each 3 DMX channel control length(for RGB), range is 001- pixel length.  
Long press M key for 2s, or timeout 10s, quit setting.
- If there is a DMX signal input, will enter DMX decode mode automatically.

For example, the DMX-SPI decoder connect with RGB strip:

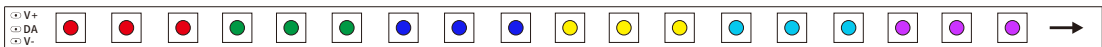
DMX data from DMX512 console:

| DMX CH   | 1   | 2 | 3 | 4 | 5   | 6 | 7 | 8 | 9   | 10  | 11  | 12 | 13 | 14  | 15  | 16  | 17 | 18  |
|----------|-----|---|---|---|-----|---|---|---|-----|-----|-----|----|----|-----|-----|-----|----|-----|
| DMX Data | 255 | 0 | 0 | 0 | 255 | 0 | 0 | 0 | 255 | 255 | 255 | 0  | 0  | 255 | 255 | 255 | 0  | 255 |

DMX-SPI decoder output (start address: 001, decode channel number: 18, each 3 channel control length: 1):



DMX-SPI decoder output (start address: 001, decode channel number: 18, each 3 channel control length: 3):



DMX decode mode 2:

- Short press M key, when display 001-512, Press ◀ or ▶ key to change DMX decode start address(001-512), long press for fast adjustment.  
For example, when the DMX start address is set to 001. The address 1 of DMX console is for dynamic light type setting (32 modes), address 2 is for brightness setting (10 levels), address 3 is for speed setting (10 levels).  
Long press M key for 2s, or timeout 10s, quit setting.

• Address 1 of DMX console : dynamic light mode

|             |             |             |             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1: 0-8      | 2: 9-16     | 3: 17-24    | 4: 25-32    | 5: 33-40    | 6: 41-48    | 7: 49-56    | 8: 57-64    |
| 9: 65-72    | 10: 73-80   | 11: 81-88   | 12: 89-96   | 13: 97-104  | 14: 105-112 | 15: 113-120 | 16: 121-128 |
| 17: 129-136 | 18: 137-144 | 19: 145-152 | 20: 153-160 | 21: 161-168 | 22: 169-176 | 23: 177-184 | 24: 185-192 |
| 25: 193-200 | 26: 201-208 | 27: 209-216 | 28: 217-224 | 29: 225-232 | 30: 233-240 | 31: 241-248 | 32: 249-255 |

• Address 2 of DMX console : Brightness (when address 2<6, turn off the light )

|                 |                 |                 |                 |                   |
|-----------------|-----------------|-----------------|-----------------|-------------------|
| 1: 6-25 (10%)   | 2: 26-50 (20%)  | 3: 51-75(30%)   | 4: 76-100(40%)  | 5: 101-125(50%)   |
| 6: 126-150(60%) | 7: 151-175(70%) | 8: 176-200(80%) | 9: 201-225(90%) | 10: 226-255(100%) |

• Address 3 of DMX console : Speed

|                 |                 |                 |                 |                   |
|-----------------|-----------------|-----------------|-----------------|-------------------|
| 1: 0-25(10%)    | 2: 26-50(20%)   | 3: 51-75(30%)   | 4: 76-100(40%)  | 5: 101-125(50%)   |
| 6: 126-150(60%) | 7: 151-175(70%) | 8: 176-200(80%) | 9: 201-225(90%) | 10: 226-255(100%) |

DMX decode mode 3:

- Short press M key, when display 001-512, enter DMX decode mode.
- Press ◀ or ▶ key to change DMX decode start address(001-512), long press for fast adjustment.
- Long press M key for 2s, prepare for setup decode number and multiple of pixels.  
Short press M key to switch two item.  
Press ◀ or ▶ key to setup value of each item.  
Decode number(display “dno”) : DMX decode channel number, range is 001-512.  
Multiple of pixels(display “Pno”) : Each one DMX channel control length, range is 001- pixel length.  
Long press M key for 2s, or timeout 10s, quit setting.
- If there is a DMX signal input, will enter DMX decode mode automatically.

The DMX-SPI decoder connect with white strip, one DMX data control three lamp beads:  
For example, DMX data from DMX512 console:

|          |     |     |     |    |   |     |
|----------|-----|-----|-----|----|---|-----|
| DMX CH   | 1   | 2   | 3   | 4  | 5 | 6   |
| DMX Data | 255 | 192 | 128 | 64 | 0 | 255 |

DMX-SPI decoder output (start address: 001, decode channel number: 6, each one channel control length: 1):

|             |     |     |     |     |     |     |     |     |     |    |    |    |   |   |   |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|---|---|---|-----|-----|-----|
| Output data | 255 | 255 | 255 | 192 | 192 | 192 | 128 | 128 | 128 | 64 | 64 | 64 | 0 | 0 | 0 | 255 | 255 | 255 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|---|---|---|-----|-----|-----|

DMX-SPI decoder output (start address: 001, decode channel number: 6, each one channel control length: 2):

|             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |   |   |   |   |   |   |     |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|---|---|---|---|---|---|-----|-----|-----|-----|-----|-----|
| Output data | 255 | 255 | 255 | 255 | 255 | 255 | 192 | 192 | 192 | 192 | 192 | 192 | 128 | 128 | 128 | 128 | 128 | 128 | 64 | 64 | 64 | 64 | 64 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 255 | 255 | 255 | 255 | 255 | 255 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|---|---|---|---|---|---|-----|-----|-----|-----|-----|-----|

Stand-alone mode

- Short press M key, when display P01-P32, enter stand-alone mode.
- Press ◀ or ▶ key to change dynamic mode number(P01-P32).
- Each mode can adjust speed and brightness.  
Long press M key for 2s, prepare for setup mode speed and brightness.  
Short press M key to switch two item.  
Press ◀ or ▶ key to setup value of each item.  
Mode speed: 1-10 level speed(S-1, S-9, S-F).  
Mode brightness: 1-10 level brightness(b-1, b-9, b-F).  
Long press M key for 2s, or timeout 10s, quit setting.
- Enter stand-alone mode only when DMX signal is disconnected or lost.



Dynamic mode list

| No. | Name                                  | No. | Name             | No. | Name                       |
|-----|---------------------------------------|-----|------------------|-----|----------------------------|
| P01 | Red horse race white ground           | P12 | Blue White chase | P23 | Purple float               |
| P02 | Green horse race white ground         | P13 | Green Cyan chase | P24 | RGBW float                 |
| P03 | Blue horse race white ground          | P14 | RGB chase        | P25 | Red Yellow float           |
| P04 | Yellow horse race blue ground         | P15 | 7 color chase    | P26 | Green Cyan float           |
| P05 | Cyan horse race blue ground           | P16 | Blue meteor      | P27 | Blue Purple float          |
| P06 | Purple horse race blue ground         | P17 | Purple meteor    | P28 | Blue White float           |
| P07 | 7 color multi horse race              | P18 | White meteor     | P29 | 6 color float              |
| P08 | 7 color horse race close + open       | P19 | 7 color meteor   | P30 | 6 color smooth sectionally |
| P09 | 7 color multi horse race close + open | P20 | Red float        | P31 | 7 color jump sectionally   |
| P10 | 7 color scan close + open             | P21 | Green float      | P32 | 7 color strobe sectionally |
| P11 | 7 color multi-scan close + open       | P22 | Blue float       |     |                            |

Restore factory default parameter

- Long press ◀ and ▶ key, restore factory default parameter, display “RES”.
- Factory default parameter: DMX decode mode 1, DMX decode start address is 1, decode number is 510, multiple of pixels 1, dynamic mode number is 1, chip type is TM1809, RGB order, pixel length is 170, disable automatic blank screen, without matched RF remote.

RF mode

Match: Long press M and ▶ key for 2s, display “RLS”, within 5s, press on/off key of the RGB remote, display “RLO”, match is successful, then use the RF remote to change mode number, adjust speed or brightness.  
Delete: Long press M and ▶ key for 5s, until display “RLE”, delete all matched RF remote.