Manuals+ — User Manuals Simplified.

SKYDANCE ES-D Dual PIR Sensor Plus Dual Push Button SPI Controller Owner's Manual

Contents

SKYDANCE ES-D Dual PIR Sensor Plus Dual Push Button SPI Controller

Specifications

- **Input Voltage:** 5-24VDC
- **Input Current:** 15A
- **Output Signal:** 2XSPI(TTL)
- **Pixel Number:** Max 960 PIR sensor + Push-button
- **Warranty:** 5 years
- **Operation Temperature:** -30°C to +55°C
- **Case Temperature (Max.):** +65°C
- **IP Rating:** IP20
- **Package Size:** L175 x W120 x H35mm
- **Gross Weight:** 0.27kg

Product Usage Instructions

Mechanical Structures and Installations:
Follow the provided wiring diagram for installation.

- **Step 1: Stair Light Application with PIR Sensor**

  Connect the PIR sensor as per the wiring diagram for color or white light flow control.

- **Step 2: Stair Light Application with PIR Sensor**

  Connect the PIR sensor according to the wiring diagram for color or white light step control.

- **Step 3: Sequential Switching Control**

  Connect one push switch with multiple controllers for sequential switching control following the wiring diagram.

ES-D

Dual PIR Sensor + Dual Push Button SPI Controller

- Dual PIR sensor + dual push button input RGB or white light SPI controller features daylight sensor.
- Two groups same SPI(TTL) signal output, drive 28 kinds of IC digital RGB or white LED strip, IC type, and R/G/B order can be set.

  Compatible ICs:

  TM1804, TM1809, TM1812, UCS1903, UCS1909, UCS1912,UCS2903,UCS2909, UCS2912, WS2811, WS2812, TM1829, TM1914A, GW6205,GS8206,GS8208,LPD6803, LPD1101,D705, UCS6909, UCS6912,

LPD8803,LPD8806, WS2801, WS2803, P9813, SK9822, SM16703P.

- When applied to stair light, supports four output modes: color fow, white fow, color step, and white step.
- Sequential switching control is realized when multiple SPI controllers are connected to a single self-resetting push switch button.
- Multiple light colors and change types are selectable with adjustable speed and brightness.

Technical Parameters

| Input and Output		Sensor data		Safety and EMC	
Input voltage	5-24VDC	Sensitive field	≤3m	EMC standard (EMC)	ETSI EN 301 489-1 V2.2.3
Input current	15A	Sensitivity angle	30°(±10°)		ETSI EN 301 489-17 V3.2.4
Output signal	2 X SPI(TTL)	Environment		Safety standard	EN 62368-1:2020+A11:2020
Pixel number	Max 960	Operation temperature	Ta: -30°C ~ +55°C	Certification	CE,EMC
Input signal	PIR sensor + Push button	Case temperature (Max.)	Tc: +65°C	Package	
Warranty		IP rating	IP 20	Size	L175 x W120 x H35mm
Warranty	5 years			Gross weight	0.27kg

Mechanical Structures and Installations
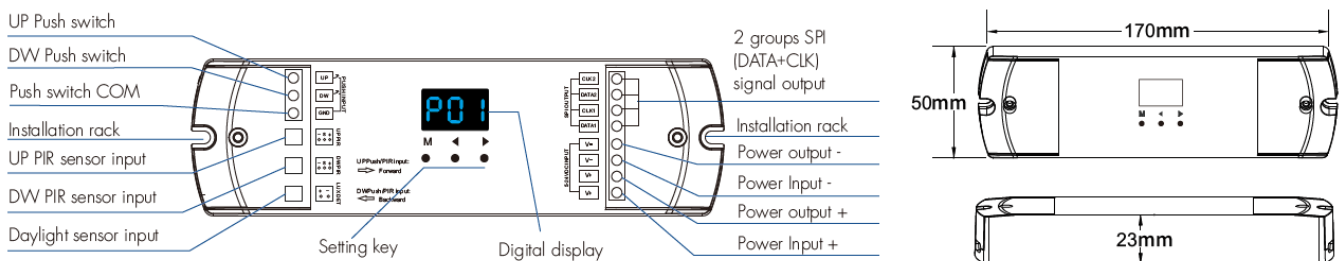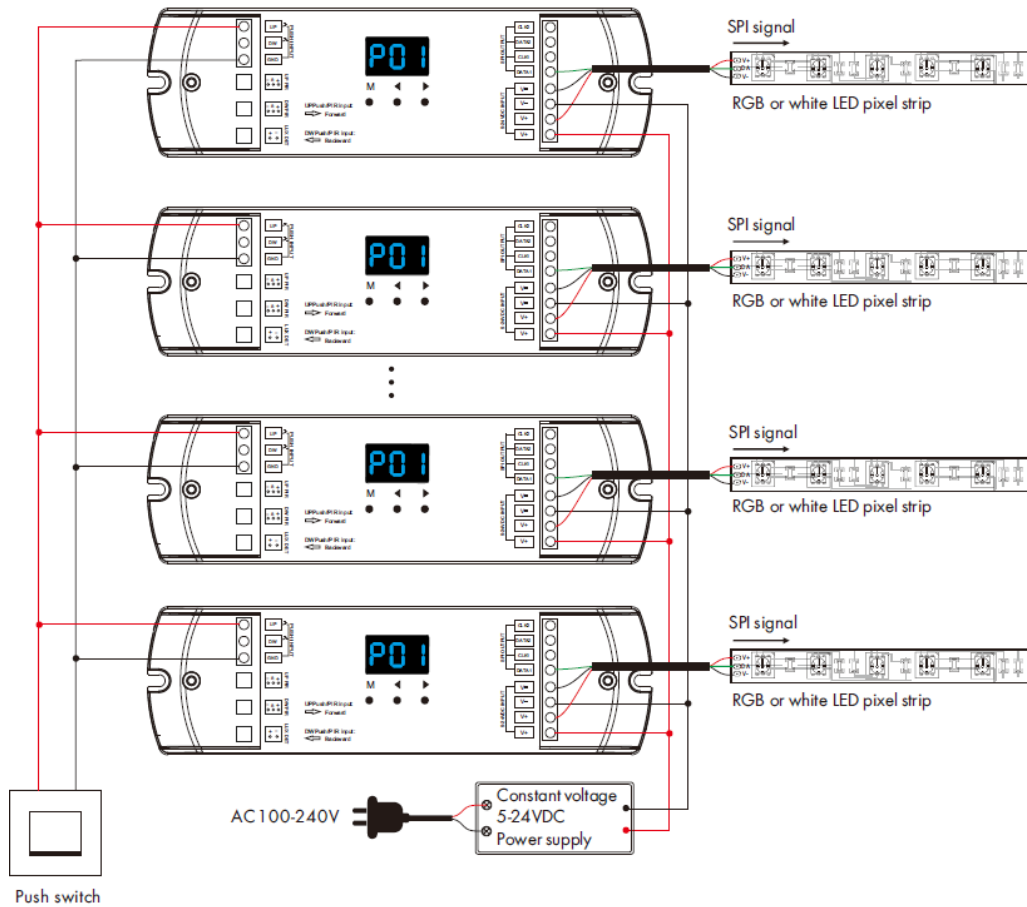

Wiring Diagram

1. Stair light application, connect with PIR sensor, color or white light flow control
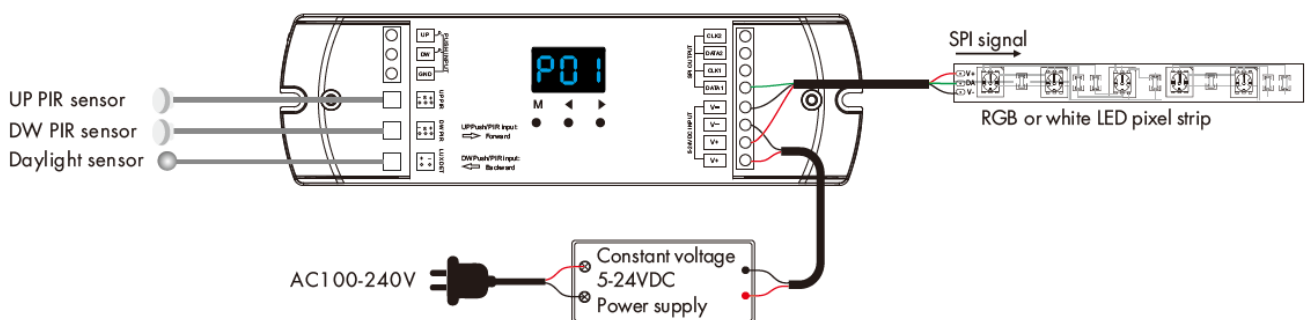
2. Stair light application, connect with PIR sensor, color or white light step control
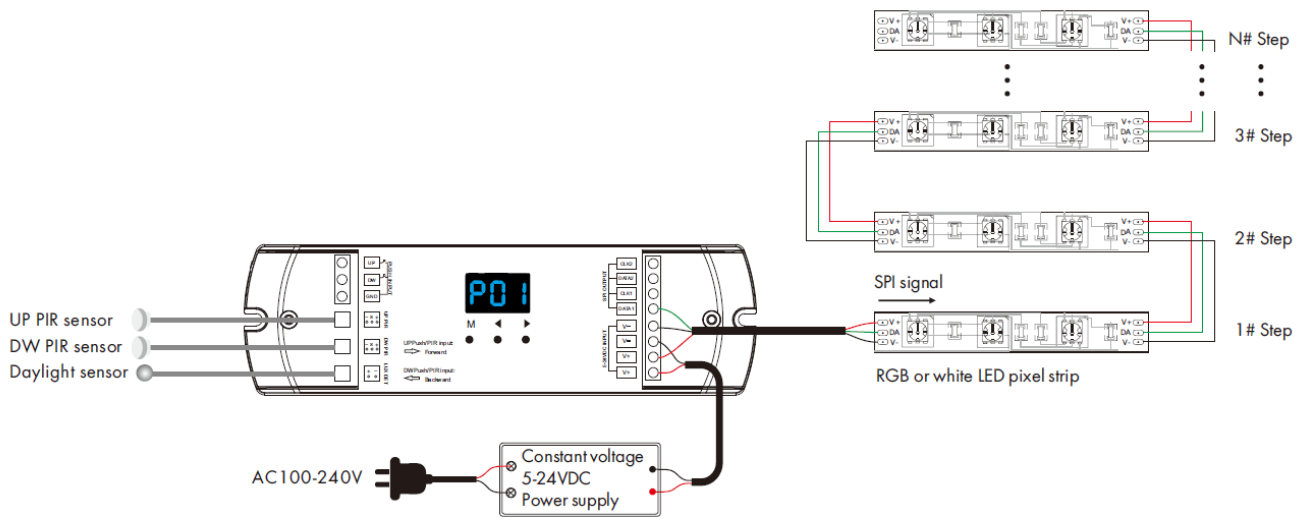
3. One push switch connects with multiple controllers for sequential switching control

Note:

1. If the SPI LED strip is a single-wire control method, the DATA and CLK signal line outputs of the controller are the 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 strip load does not exceed 15A, the same power supply can simultaneously power the ES-D controller and the SPI strip at the same time.

   When the load on the SPI strip exceeds 15A, separate power supplies are required for the ES-D controller and the SPI strip.

   Only DATA and GND signal lines are connected between the ES-D controller and SPI strip.

4. The PIR sensor can be replaced with a stair infrared reflection sensor(ES-T) or other sensors that output 5V

level signals.

5. The color or white light flow model can control up to 960-pixel points of the SPI strip.
6. The color or white light step model defaults to 30 steps with 10 pixels per step. The step number x pixel length per step must be ≤ 960.

Parameters Setting

Long press the M and ◄ keys for 2s simultaneously, and enter the light parameters setting state: set the light type, and LED strip connection mode (flow or step). Pixel length, step number, light on/off mode, sensor turn off light delay time, daylight detection, self-reset push switch turn on or off light delay time.

1. **Light typesetting**

   Short press the M key to enter the light type setting interface;

   Short press ◄ or ► key to switch light type.
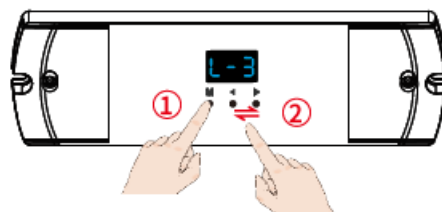
   **3-bead white light:** 1 pixel with 3 same data, control 3-bead white LED, display "L-1".

   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".

2. **LED strip connection mode setting**

   Short press the M key to enter the LED strip connection mode setting interface;

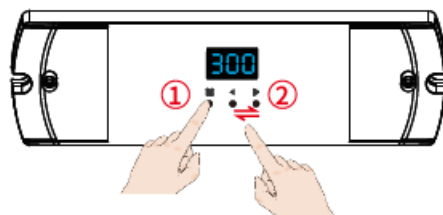   Short press the ◄ or ► key to switch LED strip connection mode.
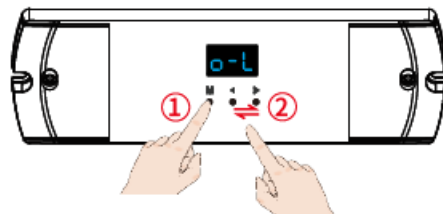
   Flow mode: Straight line digital pixel LED strip connection mode, display "o-L".

   Step mode: Z-shape digital pixel LED strip connection mode, display "o-S".

3. **Pixel length setting**

   Short press the M key to enter the pixel length setting interface;

   Short press the ◄ or ► key to set the pixel length.

   Pixel length:

   For color or white flow mode, set the number of pixel points, the range is 032-960, and display "032"-"960".

4. **Step number and step pixel length setting**

   Short press the M key to enter the step number setting interface;

   Short press the ◄ or ► key to set the step number.

Short press the M key to enter the step pixel length setting interface;

Short press the ◀ or ▶ key to set the step pixel length.

Step numbers and step pixel length:

For color or white step mode, set the number of steps and pixel dot number of each step. Step number: the range is 8-99, display "S08"-"S99";

Pixel dot number of each step: the range is 2-99, display "L02"-"L99".

The step number x pixel dot number of each step number must ≤ 960.

5. **Light on/off mode setting(i.e., set the sensor activated and self-reset button to turn on or off the light mode (Table 1)**

Short press the M key to enter the light on the setting interface;

Short press ◀ or ▶ key to switch two lights on mode:

Sequential light on:

The light turns on sequentially from the beginning to the end, displaying "onS". Synchronized light on:

The light turns on synchronously, and displays "onC" .

Short press the M key to enter the light off-setting interface;

Short press ◀ or ▶ key to switch three lights off mode:

Sequential light off:

The light turns off sequentially from the beginning to the end, displaying "oFS". Sequence light off in reverse:

The light turns off sequentially from end to beginning, displaying "oFb". Synchronized light off: The light turns off synchronously, and displays "oFC" .


List of ways to turn on/off light combinations:

Display	Name
onS + oFS	Sequential light on, sequential light off
onS + oFb	Sequential light on, sequential reverse light off
onS + oFC	Sequential light on, synchronized light off
onC + oFS	Synchronized light on, sequential light off
onC + oFb	Synchronized light on, sequential reverse light off
onC + oFC	Synchronized light on, synchronized light off

6. **Sensor delay off-time setting**

Short press M key enter sensor delay off time setting interface;

Short press the ◄ or ► key to switch 10 levels of delay time.
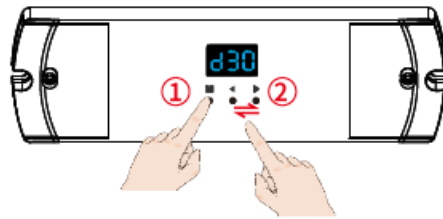
Sensor delay off time:

5sec (d05), 10sec (d10), 30sec (d30), 1min (01d), 3min (03d), 5min (05d), 10min (10d), 30min (30d), 60min (60d), cancel (d00), set cancel means not turn off the light.

7. **Daylight detection setting**

Short press the M key to enter the daylight detection setting interface;

Short press the ◄ or ► key to switch 6 levels of daylight detection.
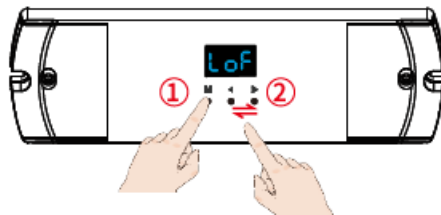
Daylight detection:

Set the light sensing detection threshold (6 levels):

10Lux (Lu1), 30Lux (Lu2), 50Lux (Lu3),100Lux (Lu4), 150Lux (Lu5), 200Lux (Lu6), Off (LoF). Factory default light sensing detection is Off (LoF).

When light sense detection is on, PIR sense turns on the light only

when the ambient light is lower than a threshold value.

8. **Self-reset push switch turn on or off light delay time setting**

Short press the M key enter the push switch turn on the light delay time setting interface;

Short press the ◄ or ► key to set the delay time.

Short press M key enter push switch turn off light delay time setting interface;

Short press ◄ e r ► key to set the delay time.
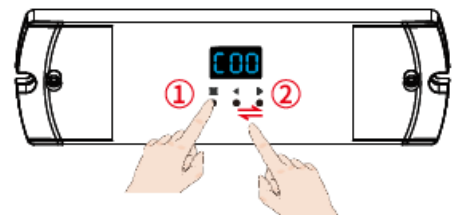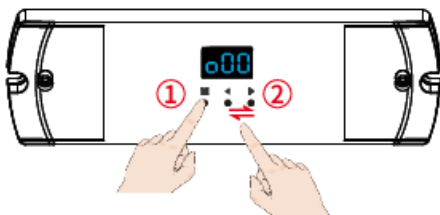
Self-reset push switch turn on light delay time:

Setting range 0-15.5s, the smallest unit 0.5s, display "o00"-"o95"-"oF5", A-F indicates that 10-15s.

Setting 0s means turning on the light immediately.

Self-reset push switch turns off light delay time:

Setting range 0-15.5s, the smallest unit 0.5s, display "c00"-"c95"-"cF5", A-F indicates that 10-15s.

Setting 0s means turning off the light immediately.

Long press the M and ► keys for 2s simultaneously,and enter the LED strip parameters setting state: set the chip type and RGB color order.

1. **Chip typesetting**

Short M key enters the chip type setting interface;

Short press ◀ or ▶ key to switch chip type (Table 2).
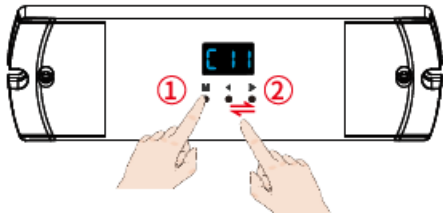
LED strip IC types list:

No.	IC type	Compatible IC type	Output signal
C11	TM1809	TM1804,TM1812,UCS1903,UCS1909, UCS1912, UCS2903,UCS2909,UCS2912, WS2811,WS2812, SM16703P	DATA
C12	TM1829		DATA
C13	TM1914A		DATA
C14	GW6205		DATA
C15	GS8206	GS8208	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

2. **RGB color order setting**

Short press M to enter the RGB order setting interface;

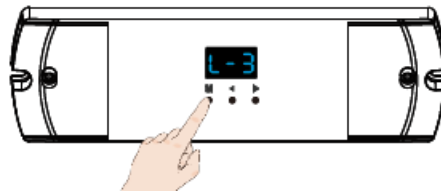Short press the ◀ or ▶ key to switch the R/G/B order (Table 3).
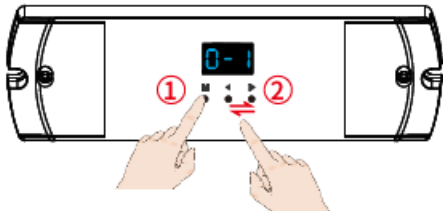
LED strip RGB color order:

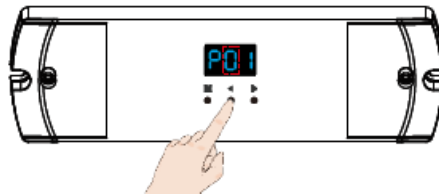| R/G/B order	RGB	RBG	GRB	GBR	BRG	BGR
Digital display	0-1	0-2	0-3	0-4	0-5	0-6

3. **Quit the parameter setting.**

Long press the M key for 2s or wait for 15, and quit the parameter setting state.
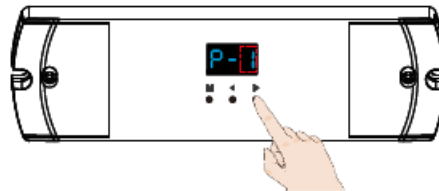
Light effect settings

1. **Light color setting**

   Short press the ◄ key to switch 10 light colors in sequence (Table 4).

2. **Light change type setting**

   Short press ► key to switch 5 light change types in sequence (Table 5).

3. **Light effect parameter setting (i.e., speed, brightness, Self-defined R/G/B color)**

   Short press the M key to switch three parameter items;

   Short press the ◄ or ► key to adjust the value of each parameter item.

   Speed, brightness, and self-defined R/G/B color parameter value description:

   Speed: 1-8 levels adjustable, display "S-1"-"S-8", S-8 is the maximum speed.
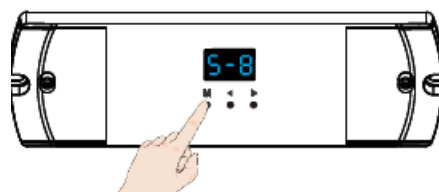
   Brightness: 1-10 level adjustable, display "b10"-"bFF", bFF means maximum brightness 100%. Self-defined
   R/G/B color: 0-255 (00-FF) adjustable.

   R channel displays "100"-"1FF"; G channel displays "200" – "2FF"; B channel displays "300"-"3FF".
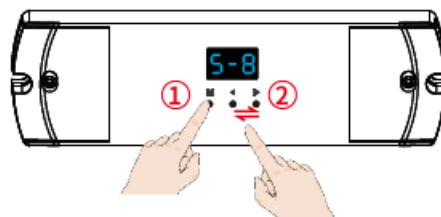
4. **Quit the light effect parameter setting.**

   Long press the M key for 2s or wait for 15, and quit the light effect parameter setting state.

Note:

1. White flow / white step mode does not support a self-defined R/G/B color function.

2. For color flow/color step mode, the light color and light change type are combined to form 50 kinds of light

effects.

3. For color flow/color step / white flow / white step mode, can be adjusted in speed and brightness.

Factory Default Parameter setting

- Long press ◀ and ▶ keys for 2s simultaneously, restore factory default parameters, and display "RES".
- Factory default parameters: RGB color light flow output, 300 pixels, sequential light on, sequential light off, 30s delay off time, disable daylight detection, push switch turn-on delay and turn off delay is 0s, chip type TM1809, RGB order.

Color Flow/Color Step mode, the digit shows P01~P95.

White Flow/White Step mode, the digit shows P-1~P-5.

Color type (2nd digit):

NO.	Name
0	Rxxx Gxxx Bxx x User de ne
1	Red
2	Orange
3	Yellow
4	Green
5	Cyan
6	Blue
7	Purple
8	R/G/B 3 color
9	7 color

Color/white light change type (3rd digit):

NO.	Name
1	Flow
2	Chase
3	Float
4	Trail
5	Trail+black section

Typical application

1. **Dual PIR sensing**

   Connect two PIR sensors to realize automatic staircase light control.

   The UP PIR sensor is installed at the bottom of the staircase, when sensing a person, the digital tube instantly displays "-u-", the light is automatically turned on, and the light is turned off with a delay.

   The DW PIR sensor is installed at the top of the staircase, when sensing a person, the digital tube instantly displays "-d-", the light is automatically turned on, and the light is turned off with a delay.

   If you set the daylight sensor detection on, the light will be turned on only in darker environments or at night.

2. **Dual self-reset push switch control**

   Connect two push switches for manual control of stair lights.

   The UP push switch is installed at the bottom of the stairs; the DW push switch is installed at the top of the stairs.

   Set the self-reset push switch to 0s for both light on delay and light off delay.

   Short press the self-reset push switch to turn on the light, display the current light effect mode;

   short press the self-reset push switch again, turn off the light, and display "OFF".

   Long press the UP self-reset push switch to adjust the brightness, range 10-100%, digital tube display "b10"-"bFF". Note: The DW self-reset push switch does not have the function of adjusting the brightness.

   Using a self-reset push switch control will ignore the daylight sense detection.

3. **Self-reset switch connects multiple controllers for sequential switching control.**

   Multiple controllers are connected to one or two push switches at the same time to realize sequential switching control.

   Set the self-reset push switch light on/off delay time of multiple controllers to incremental or decremental values, for example:

   set 1-4# controllers' push switch light on delay time to 0s, 1s, 2s, 3s respectively, and push switch light off delay time to 3s, 2s, 1s, 0s respectively. In this way, 1-4# controllers will turn on the lights in the same order, and turn off the lights in the reverse order.

   Short press the self-reset push switch to turn on the lights sequentially. During the delayed light on time, digital display "don".

   When the light is on, display the current light dynamic mode.

   Short press the self-reset push switch again to turn off the lights sequentially. During the delayed light off time, the digital display "doF".
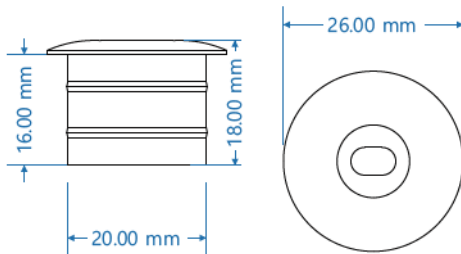
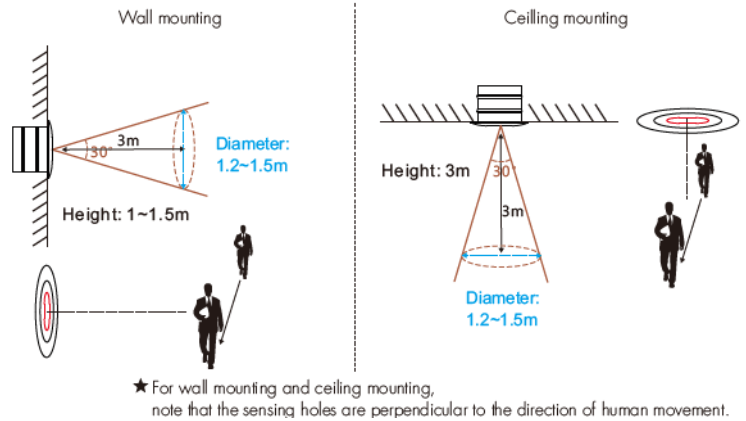   When the lights are off, the digital display is "OFF".

Note:

- When the lighting effects of multiple controllers are confused, it can be quickly restored by double-clicking the self-reset push switch.
- Using the self-reset switch to control multiple controllers will ignore the sensordelay-offf timeand daylight detection settings.

Installtion of PIR sensor

Size of detector:

26.00 mm
16.00 mm
18.00 mm
20.00 mm

PIR sensor detection scope (±10° Error):

Wall mounting
30°
3m
Diameter: 1.2~1.5m
Height: 1~1.5m

Ceiling mounting
Height: 3m
30°
3m
Diameter: 1.2~1.5m

★ For wall mounting and ceiling mounting, note that the sensing holes are perpendicular to the direction of human movement.

Notice for installation of PIR sensor

1. Recommended for wall mounting.
2. If the sensor is exposed to direct sunlight, an interference signal will be introduced.
3. The sensor should be installed in a dry environment and kept away from windows, air conditioners, and fans.
4. Make sure that the sensor stays away from resourceless such as countertops, kitchen appliances that generate hot steam, walls, and windows in direct sunlight, air conditioners, heating, refrigerators, stoves, and so on.
5. We recommend the wall-mounted installation height is 1-1.5 meters and the ceiling mounting height is no more than 3 meters.
6. There should not be shelter(screen, furniture, large bonsai) within the range of detection.

Packing List

LED Controller
1 pcs
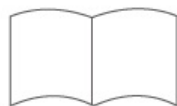
User Manual
1 pcs

Daylight sensor (30cm)
1 pcs

PIR sensor
2 pcs

PIR sensor extension line (5m)
2 pcs

Frequently Asked Questions

- **Q: What is the warranty period for the product?**
  A: The product comes with a 5-year warranty.
- **Q: What is the operating temperature range of the product?**
  A: The product can operate in temperatures ranging from -30°C to +55°C.
- **Q: What is the maximum pixel number supported by the product?**
  A: The product supports a maximum of 960 PIR sensor + Push button pixel number input.

Documents / Resources
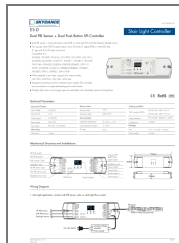
SKYDANCE ES-D Dual PIR Sensor Plus Dual Push Button SPI Controller [pdf] Owner's Manual
ES-D, ES-D-1, ES-D Dual PIR Sensor Plus Dual Push Button SPI Controller, ES-D, Dual PIR Sensor Plus Dual Push Button SPI Controller, Dual Push Button SPI Controller, Push Button SPI Controller, Button SPI Controller

References

- **User Manual**