DALI2 SENSOR E-SP03D

PIR occupancy detection and ambient light sensor with DALI control

E-SP03D is DALI sensor with PIR and ambient light sensor. It can detect the human presence and ambient light. With the integrated PIR and Dual ambient light sensors, it can save the energy and achieve autonomy of lighting control to home and office with easy way.

Feature
_ One DALI output channel
_ With two installment way, recess or surface installment
_ PSU integrated with 16V50mA
_ Daylight and Presence sensor
_ IR remoter control and configuration
_ Dual ambient light sensor to achieve higher resolution
_ Push Dim function
_ Parameters setting via the rotary knob
_ Adjustable Standby power, Occupancy power
_ Adjustable Delay time, Standby time
_ Adjustable Detection scale, Lighting intensity
_ Function indicator with LED

Technical data
Input

Supply voltage	220-240 VAC
Frequency	50 Hz
System wattage	<1.0 W

DALI Output

Voltage range	14-18 VDC
Communication distance	100m
Output current	50 mA
Maximum number of drivers connected	25 pcs

Parameter Setting

Occupancy power	Default 100%, Adjustable
Hold time	5 sec – 60 min, Default 5 min
Standby power	0-30%, Default 20%
Standby time	5 sec – infinity, Default 5 min
Intensity	5 – 1000 Lux
Detection range	Minimum, Medium, High, Maximum
	Default Maximum

Operating Conditions

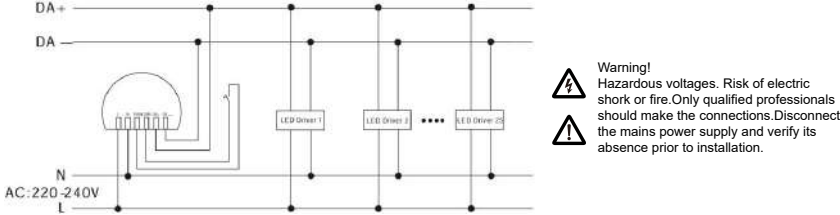|	
Ambient temperature	ta: -20...+50 °C
Max. case temperature	tc: +70 °C
Storage temperature	-25...+75 °C
Max. relative humidity	0...80%, non-cond.

Connectors

Wire range, solid & stranded	0,5-1,5 mm^2 16-20 AWG
Wire strip length	6-7 mm
Tightening torque	0,4 Nm/4 Kgf.cm/2,6 Lb-In

Mechanical Data

Dimensions	105 x 105 x 73.6 mm –Recess
	105 x 105 x 58.7 mm –Surface
Weight	TBD
Degree of protection	IP20 (indoor use only)

Installation

Warning!
Hazardous voltages. Risk of electric shork or fire.Only qualified professionals should make the connections.Disconnect the mains power supply and verify its absence prior to installation.
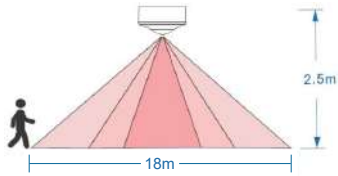
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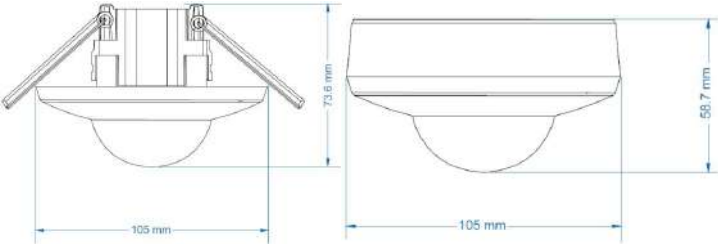
Detection

H	Φ
2.5m	18m
3.0m	20m
4.0m	23m

ON/OFF -> Switches on and off permanently.
When you press the button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. The sensor turns off the light fitting. If you press the button again, the sensor turns on the light fitting and goes back to the last setting made.

RESET -> Reset. When you press the RESET button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. The light switches on and off, and then the sensor resumes to the default setting.

Default value:
➢ Mode: M3-PC, Occupancy mode
➢ Sensitivity detection: Max.
➢ Hold Time (after last movement): 5 minutes (approx.)
➢ Standby Power: 20%
➢ Standby Time: 5 minutes (approx.)

NOTES:
- The operation mode can be changed via remote (programmable).
- In default mode, only Occupancy function, the sensor does NOT DIM up or down according to the external ambient lux level. Don't have the function of daylight harvesting.

If you don't want the default Mode M3-PC, Occupancy without daylight harvesting, you can choose one of the following modes:

M1-AT = Automatic (Occupancy + Daylight harvesting function)
Default referring lux level is 500lux. The real output value is relative with the instalment of the sensor and the decoration of the room. The value can be programmed with the remote.

M2-PM = PIR + Moon (Occupancy function under twilight)
Default referring twilight lux level is 500lux.

M4-LC = Lux + Controls (Daylight harvesting function only)
Default referring lux level is 500lux. The real output value is relative with the instalment of the sensor and the decoration of the room. The value can be programmed with the remote.

MANUAL -> After pressing the MANUAL button, the sensor's green LED flashes 2 times indicating that it is receiving the transmitted orders and the light switches on and off 4 times. The MANUAL mode only activates the Manual DIM +, DIM -, ON and OFF functions. To exit this mode: press M1-AT, M2-PM, M3-PC, M4-LC or RESET.

DIM + / DIM - -> By pressing the DIM+ or DIM- button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. The light intensity of the light fitting raises up or down when you press DIM+ or DIM-.

TESTE 2S -> This function is used to test the occupancy range of the sensor. By pressing the TEST 2S button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders, and the output light dims to 20% waiting for triggering. After detecting movement, it turns on and then stays off for around 2 seconds. If there is no movement after 30 seconds, it returns to the previous programming.

MIN. **SET** -> When you press the MIN. SET button, the sensor's green LED flashes twice to indicate that it is receiving the transmitted orders. The function is to set the minimum power of the light fitting, which can be from 0 to 100% power. The desired minimum power is set by pressing the MIN. SET button, and then using the DIM + or DIM - buttons to set the desired minimum light intensity. To save it, press the MIN . SET buttonagain. You can thus obtain 2 results:

1. Switch off the light fitting when the ambient light is greater than the referring lux of the room.
2. Keep the light fitting not completely switched off, even though the ambient light is greater than referring lux of the room, for example 10% of power. To do this, MIN .SET must be set t o10%.

ECO SET -> When you press the ECO SET button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. This is an energy-saving function that can adjust the maximum power of the light fitting. By pressing the ECO SET button and then pressing DIM + or DIM - for the desired level and pressing ECO SET again, it is recorded. The light flashes twice and it is programmed.

SENSITIVITY -> When you press the SENSITIVITY button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. The degree of sensitivity of the sensor's detection is set. We have 4 modes: Low, Medium, High, Max. This detection sensitivity correlates with the detection distance.

LUX READ -> When you press the LUX READ button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. It serves to record the current degree of LIGHT intensity. After recording, the sensor will raise or lower the intensity of artificial light to maintain the desired level under the mode of M1-AT, and M4-LC. With the mode of M2-PM, it will adjust the twilight level which the light fitting will be turn on when the sensor is triggered.

10LUX, 20LUX, 50LUX, 100LUX, 200LUX, 500LUX, 1000LUX -> When you press one of these lux buttons, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. This refers to the desired degree of ambient lux. Press one of the buttons corresponds to the degree of Lux which is desired.

> NOTE: these are approximate values as they can always be influenced by the way of the instalment and the decoration. If you want to have a precise lux, use a luxmeter to measure the ambient light, dim up and down to get the desired lux value, then press the LUX READ button and the ambient lux at this moment will be recorded. Then in 5 seconds, click the button that you want to assign to the corresponding lux value.
> The recorded lux will be assigned to the lux button.

STBY OFF -> When you press the STBY OFF button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. This STBY OFF button deactivates the standby stage function, which is a function that sets the percentage of lux intensity that the light fitting emits into the room, after the time preset in the "Hold Time" function has elapsed.

STBY 10%, 20%, 30% -> When you press one of the STBY 10%, 20% or 30% buttons, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. These buttons set the output percentage of lux intensity in Standby stage. Press the desired percentage of 10%, 20% or 30%. These values are approximate.

HOLD TIME 30sec., 3min, 5min, 10min, 30min and 60min -> When you press one of the HOLD TIME buttons, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. This button sets the duration time when the light keeps on after the last movement. This time varies from 30sec, 3min, 5min, 10min, 30min and 60min. These values are approximate.

STBY TIME 30sec., 1min, 5min, 10min, 15min and 60min -> When you press one of the STBY TIME buttons, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. These buttons set the duration time for the light fitting with some dimming level at the stage of standby. This time varies from 30sec, 1min, 5min, 10min, 15min and 60min. These values in seconds and minutes are approximate.

SCENE 1, SCENE 2, SCENE 3, SCENE 4 -> When you press one of the SCENE 1, SCENE 2, SCENE 3 or SCENE 4 buttons, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. These are SCENE settings according to the table below.

	Hold time	Standby time	Standby power	Mode	Sensitivity	Daylight harvesting
SCENE1	30sec	30sec	20%	Occupancy	100%	No
SCENE2	1min	1min	20%	Occupancy	100%	No
SCENE3	15min	1min	20%	Occupancy	100%	No
SCENE4	30sec	Infinite	20%	Occupancy	100%	No

M1-AT -> Automatic (Occupancy + Daylight harvesting function)
When you press the M1-AT button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. When the room is unoccupied, the light fitting is kept off. Once occupied, the light fitting will be turned on, and then the sensor run into the daylight harvesting function (raise up or down to maintain the ambient lux to desired value). After the last detection, the sensor goes to hold time stage. Then, run into standby stage with standby time and power. Finally, if there is no trigger, the sensor will turn off the light fitting.

> Default referring lux level is 500lux. The real output value is relative with the instalment of the sensor and the decoration of the room. The value can be programmed with the remote.

M2-PM -> PIR + Moon (Occupancy function under twilight)
Occupancy function is only active at the twilight (this happens in the condition that ambient lux is not enough for regular work), once the room is occupied, the sensor will turn on the light fitting with max. power. DOESN'T have daylight harvesting function. Vice versa, if the ambient lux is enough, even though the room is occupied, the light fitting keep off. In this mode, there is no daylight harvesting. This twilight value can be changed as required.

M3-PC -> Occupancy without daylight harvesting

Occupancy function, ignore the influence of daylight. When you press the M3-PC button, the sensor's green LED flashes twice, indicating that it is receiving the transmitted orders. The occupancy function is activated whatever the ambient lux. To activate this function, simply press RESET or M3-PC.

M4-LC -> Lux + Controls (Daylight harvesting function only)
As the daylight goes inside/away, the artificial light goes down/up according to the reference level. It will result in the power saving.
Important information: In any of the mode, M1-AT, M2-PM or M4-LC the default lux is 500lux. If you want to change this value, simply press the button corresponding to the desired value (10lux, 20lux, 50lux, 100lux, 200lux, 500lux or 1000lux).

> Default referring lux level is 500lux. The real output value is relative with the instalment of the sensor and the decoration of the room. The value can be programmed with the remote.

Push-button switch -> It makes it easier for the user to switch the sensor on or off directly, without using the remote control. To install this switch, the sensor already comes with 2 terminal to connect the switch. This push-button switch enables 4 functions: on, off, DIM + and DIM - (dimming to the desired light intensity of the light fitting).
Bearing in mind that the light fitting is switched on:

OFF -> If you want to switch it off permanently, simply press the push-button switch once.
ON -> If you want to switch the light fitting on, press the push-button switch once. The sensor comes back to previous working mode.
DIM down -> If you want to DIM down via the push-button switch, simply press and hold the push-button switch so that the light starts to dim until to the minimum power of the light fitting.
DIM up -> If you want to DIM up via the push-button switch, simply repeat the action above (DIM down) and press and hold the push-button switch, and the light will start to increase, up to the maximum intensity.
By these two actions (DIM up and DIM down) you can stabilise the desired intensity of the light fitting at any time during the process, via simply stopping pressing the push-button switch.
Reverse the direction of DIM UP/Down -> Press and release the push button, the dimming direction will be reversed. DIM UP->DIM DOWN, vice-versa.
The last dimming level will be momoried automatically