FLUSH MOUNT MICROWAVE DALI SENSOR 99 190 22
Installation and Instruction Manual

1. Technical Specifications

Product type	Independent microwave DALI sensor (Daylight harvest)
Operating voltage	220~240VAC 50/60Hz
Switched power	Maximum 20pcs devices Maximum 40mA
Power consumption	< 0.5W
Detection angle	360°
Detection area (DxH)	12 x 6m (Maximum)
Detection range	10% / 50% / 75% / 100%
Hold time	2s / 30s / 1min / 5min / 10min / 15min / 20min / 30min
Stand-by time	0s / 10s / 1min / 5min / 10min / 30min / 1h / + ∞
Stand-by dimming level	10% / 20% / 30% / 50%
Daylight threshold	50 ~ 500Lux , Disable
Warmming-up time	20s
Operating temperature	-20°C ~ +60°C

3. Rotary Switch Settings

A rotary switch is built inside the sensor for scene selection / fast programming. Total 16 channels available:

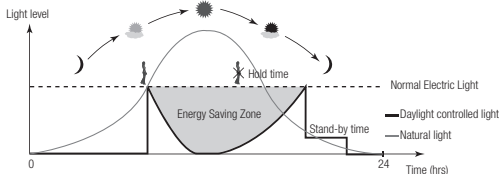Rotary switch preset (Please see the location in 2. Installation)

Channel	Detection range	Hold time	Stand-by time	Stand-by dimming level	Daylight threshold
0	100%	5s	10s	10%	Disable
1	100%	1min	5min	10%	50Lux
2	100%	5min	10min	10%	50Lux
3	100%	5min	+∞	10%	75Lux
4	100%	5min	+∞	10%	100Lux
5	100%	5min	+∞	30%	200Lux
6	100%	10min	30min	10%	50Lux
7	100%	10min	+∞	10%	75Lux
8	100%	10min	+∞	10%	100Lux
9	100%	10min	+∞	30%	200Lux
A	100%	20min	1h	10%	100Lux
B	100%	20min	+∞	30%	200Lux
C	100%	30min	+∞	10%	100Lux
D	100%	30min	+∞	30%	200Lux
E	100%	30min	+∞	50%	400Lux
F	100%	5s	10s	10%	100Lux

Note: settings can also be changed by remote control 99 190 27. The last action controls.

4. Functions

4.1 Daylight Harvest (Daylight Regulating)

Daylight sensor measures the available surrounding natural light, calculates how much electrical light is needed to reach the total lux expected. The demand is given to the LED driver by DALI signal, so as to deliver the needed amount of electric light.
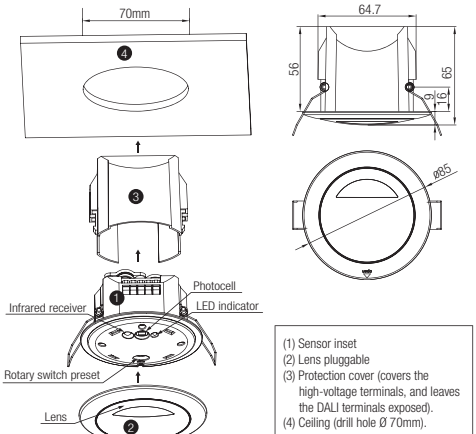

4.2 Lux Off Function

The built-in daylight sensor can read ambient natural light and switch off the fixture automatically whenever artificial light is not required (natural light lux level exceeds daylight threshold).
Note: if the stand-by time is preset at "+∞", the fixture never switches off even when natural light is sufficient.

2. Installation

⚠ **Warnings:**
1. Installation of the sensor involves connecting it to the mains supply. This work must be carried out by a specialist in accordance with electrotechnical regulations.
2. Disconnect supply before installing.

Infrared receiver
Photocell
LED indicator
Rotary switch preset
Lens

(1) Sensor inset
(2) Lens pluggable
(3) Protection cover (covers the high-voltage terminals, and leaves the DALI terminals exposed).
(4) Ceiling (drill hole Ø 70mm).

Varning!
Stäng av strömmen, ta ut säkringen på elcentralen eller ställ automatsäkringen till läge "AV", innan installationsarbetet påbörjas.
Skall installeras av behörig installatör och i enlighet med gällande föreskrifter.

4.3 Semi-auto Function (Absence Detection)

The motion sensor is employed, but only activated on the manual press of the push switch, light keeps on in the presence, and dims down in the absence, and eventually switches off automatically in the long absence.

4.4 Ambient Daylight Threshold

Switch the power supply to the sensor two times within 2 seconds, the ambient lux level is sampled and set as the new daylight threshold. Both the settings on rotary switch and the ambient lux level sampled can overwrite each other. This feature enables the daylight sensor to be commissioned to the environment in which it is installed. The last adjustment remains in memory.

4.5 8H Manual ON Mode For LED Lamp

Turn off/on the power supply three times within 3 seconds, the light will be turned on for 8 hours, even there is no motion detected, then go back to sensor mode automatically.
Note: this 8H manual on mode can be cancelled by turning off/on the power supply one time within 1 second.

4.6 Manual Override

With the help of push-switch, this sensor maybe over-ridden by the end-users to switch on/off the lights manually, or adjust the light brightness during motion hold-time. This makes the product more user-friendly and offers more options to fit for extra-ordinary demands.
* Short push (<1s): on/off function;
   ON → OFF: the light turns off immediately and cannot be lighten for a certain time (equals to hold time preset) even there is movement is detected. After this period, the sensor goes back to auto sensor mode.
   OFF → ON: the light turns on 100% and goes to auto sensor mode, even when ambient Lux level exceeds the daylight threshold.
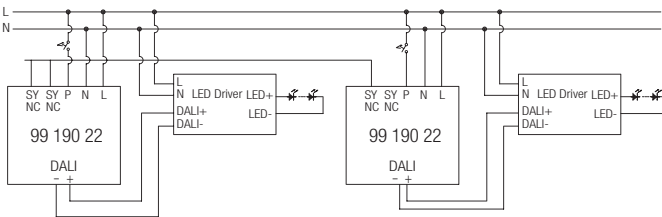* Long push (>1s): adjust the target lux level by turning the light up or down. Both the adjustment on remote control and push switch can overwrite each other, the last adjustment remains in memory.
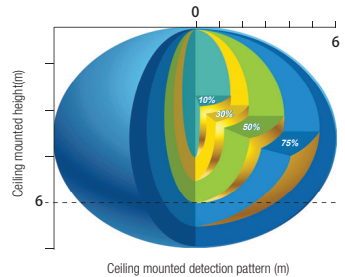* If no end-user adjustment is desired, simply leave this terminal disconnected.

4.7 Synchronization Function

By connecting the "SYNC" terminals in parallel (see wiring diagram), no matter which sensor detects motion, all 99 190 22 in the group will turn on the lights when surrounding natural light is below the daylight threshold. The sensor module is shared and the detection area could be widely enlarged in this way.
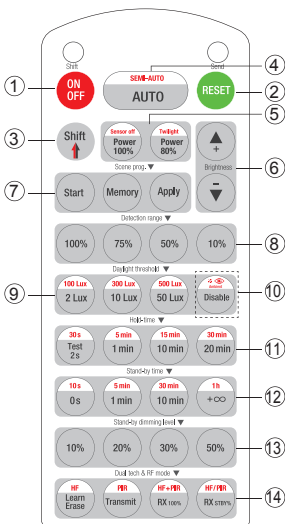
MALMBERGS

5. Wiring Diagram

L
N

SY SY P N L
NC NC
99 190 22
DALI
− +

L LED Driver LED+
N
DALI+ LED-
DALI-

SY SY P N L
NC NC
99 190 22
DALI
− +

L LED Driver LED+
N
DALI+ LED-
DALI-

6. Detection Pattern

Ceiling mounted height(m)

0

6

10%
30%
50%
75%

6

Ceiling mounted detection pattern (m)

7. Description of the Button Functions
(remote control 99 190 27)

99 190 27

Permanent ON/OFF [button ①]
Press button ①,to select permanent ON or permanent OFF mode.
* Press button ②/ ④ to resume automatic operation.

RESET[button ②]
Press button ② , all settings go back to the rotary switch settings.

Shift [button ③]
Press button ③ , the LED on the top left corner is on for indication.
All values / settings in RED are in valid for 20 seconds.

Auto Mode [button ④]
Press button ④ to initiate automatic mode.The sensor starts working
and all settings remain as before the light was switched ON/OFF.

Semi-auto Mode [button ③ & ④]
1. Press button ③ Shift (the red LED is on for indication).
2. Press button ④ to initiate semi-auto mode. The fixture is manually
   on by push-switch and automatically off in semi-auto mode.

Power output [button ⑤]
Press button ⑤ , the light output shifts between 80% and 100%.
Note: the function of "Sensor off" and "Twilight" are disabled.

Brightness +/- [button ⑥]
Press button ⑥ to adjust the light brightness to rest the target lux level.

Scene prog. [zone ⑦] (One-key-commissioning)
1. Press button "Start" to program.
2. Select the buttons in ⑧ "Detection range", ⑨/⑩ "Daylight threshold",
   ⑪ "Hold time", ⑫ "Stand-by time", ⑬ "Stand-by dimming level" to
   set all parameters.
3. Press button "Memory" to save all the settings programmed in the
   remote control.
4. Press button "Apply" to set the settings to each sensor unit(s).
   For example, to pre-set detection range 100%, daylight threshold
   Disable, hold time 5min, stand-by time +∞, stand-by dimming level
   30%, steps should be:
   Press button ⑦ Start, button ⑧100%,⑩ Disable, ③ Shift, ⑪ 5min,
   ③ Shift, ⑫ +∞, ⑬ 30%,⑦ Memory. By pointing to the sensor unit(s)
   and pressing ⑦ Apply, all settings are passed on the sensor(s).

Detection range [zone ⑧]
Press buttons in zone ⑧ to set detection range at 100% / 75% /
50% / 10%.

Daylight threshold [zone ⑨]
Press buttons in zone ⑨ to set the daylight sensor at 50Lux / 100Lux
/ 300Lux / 500Lux or Disable as threshold / target Lux level.
Note: 2Lux / 10Lux are disabled.
      To set daylight sensor at 100Lux / 300 Lux / 500Lux, press
      button ③Shift at first.

Ambient daylight threshold [button ⑩]
1. Press button ③Shift, the red LED is on for indication.
2. Press button ⑩, the ambient lux level is sampled and set as
   daylight threshold / target Lux level.

Hold time [zone ⑪]
Press buttons in zone ⑪ to set the hold time at 2s / 30s / 1min /
5min / 10min / 15min / 20min / 30min.
Note: 1.To set hold-time at 30s / 5min / 15min / 30min, press button
      ③Shift at first.
      2. 2s is for test purpose only, stand-by period and daylight
      sensor settings are disabled in this mode.
*To exit from Test mode, press button ② or any button in zone ⑪ .

Stand-by time [zone ⑫]
Press buttons in zone ⑫ to set the stand-by period at 0s / 10s /
1min / 5min / 10min / 30min / 1h / +∞.
Note: "0s" means on/off control; "+∞" means bi-level control, 100%
on when motion detected, and remains at the stand-by dimming
level when no presence after hold-time.

Stand-by dimming level [zone ⑬]
Press buttons in zone ⑬ to set the stand-by dimming level at 10% /
20% / 30% / 50%.

Dual tech & RF mode [zone ⑭]
All buttons in zone ⑭ are disabled.

8. Trouble Shooting

MALFUNCTION CAUSE REMEDY	CAUSE	REMEDY
The fixture does not light up	Incorrect daylight threshold setting	Adjust daylight threshold setting
	Faulty fixture	Replace fixture
	No power supply	Check power to sensor
	Detection zone not targeted	Check detection area setting
The fixture is always on	Continued movement in the detection zone	Check detection area setting
The fixture is on when it should not	Sudden change in temperature due to weather (wind, rain, snow) or air expelled from fans, open windows	Adjust zone, change installation site