

e-Multisensor AutoOnOff

Stand-Alone motion sensor and light sensor for lighting control

Product reference: MS.503201-000

e-Multisensor AutoOnOff is a stand-alone multisensor for ceiling mounting, designed for energy saving applications inside buildings, which includes a high sensibility motion sensor for occupancy detection and a light sensor for adjusting light value.

The devices perform the switch on lighting for motion detection when daily light level is lower than a pre-set value. The switch off lighting is performed for an extra daily light incidence or by a timer until last valid detection.

EN

Instruction Sheet



Product description

e-Multisensor AutoOnOff is an innovative stand-alone multisensor which has a motion and light sensor to perform a digital control to switch on / off one zone lights, optimizing the energy installation consumption.

The device has a high accurate motion sensor to detect people in motion and switch on the lights when movement is detected and the zone light level is under the pre-defined minimum value. With this feature the device guarantees that lights will

only switch on when it detects any movement and there is not enough daily light in the zone.

While lights are switched on, the device is measuring the light level at any time and it is capable to switch off the lights when daily light level is above the pre-set minimum light value, achieving a highly efficient energy saving with non dimmable lights. On the other hand, the device also switches the lights off after a time with no motion detection.

Functional description

Motion Sensor

The motion sensor has a detection area defined on the device detection diagram section. The sensor length depends on the installation height and detection sensibility could be modified throughout a potentiometer which allows to adjust it to each kind of environment and avoids performing false detections. In stand-by, the relay output contact will be open and power won't be present on the output terminals L'-N, for that reason the lights will be off. Relay output will switch on when motion will be detected and at the same time lights will switch on to their maximum value. After a preset time from last valid detection, the relay output will switch off automatically. This switch off time could be predefined throughout a potentiometer.

When power supply is applied on the device, motion sensor requires a stabilization time while the device is in a non-detection state (refer to *Technical features*).

Light Sensor

Light sensor is constantly measuring the light level inside the defined area of the radiation diagram of the sensor. Throughout the front pushbutton, it is possible to configure the natural light threshold from which it should switch lights on when any motion is detected.

Being lights switched on, when the device detects that there is enough natural light, it switches the lights off automatically for energy saving. Light threshold is the one configured for switching the lights on.

Refer to Device configuration section to adjust the light threshold for switching the lights on and off.

Auxiliary Input

The device has an auxiliary input for phase commutation (refer to *installation diagram*) which can be configured as a switch or a pushbutton mode. When input is set to switch mode, the contact activation switches the lights on in a permanent way, activating input and disabling sensors functionality. The

device switches the lights off and enables again the sensors by switching it off again into the original position. When the input is set to pushbutton mode, pressing it, gives the same effect as a motion detection: If there is not enough natural light the device switches on the relay during the time predefined in the time potentiometer. When the input is activated, timeout resets its countdown for disconnecting the output to switch off the lights, just in case motion is detected or pushbutton is pressed again.

Front pushbutton is used to set the input's mode configuration (Refer to the *Device Configuration* section).

LED indicator

The built in LED indicator is a red light that blinks each time the motion sensor performs a detection. When any motion is detected, LED switches on and comes back to its stand-by state switching it off again when there is no motion detected. LED indicator can be enabled/disabled by using the front pushbutton on the device (refer to *Device Configuration* section). Default LED indicator state is enabled.

When device is supplied, led indicator remains switched on during the motion sensor stabilization.

LED indicator is also used to configure device parameters (refer to *Device Configuration*).

Front pushbutton

Front pushbutton is used to set the following parameters:

- 1) Relay output activation to verify its functionality
- 2) Enable/disable LED indicator
- 3) Light level threshold configuration
- 4) Auxiliary Input mode configuration

Refer to *Device Configuration* section to set up the different parameters.

Functional description (continue)

Potentiometer for detection sensibility adjustment

The device has a high accurate electronic circuit which allows high sensitive motion detection. Throughout a potentiometer located on the device side, it is possible to adjust the sensibility level detection.

Installer has to set the sensitivity level depending on the installation.

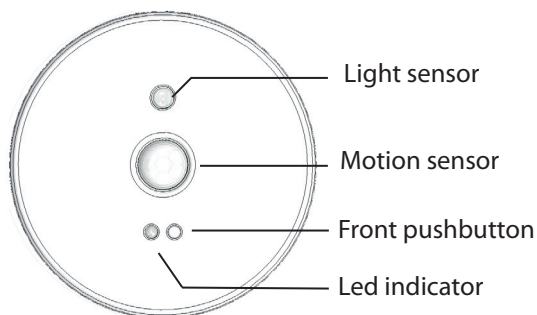
Potentiometer for time adjust to switch lighting off

The device has another potentiometer on its side to adjust time to automatically switch off the lights. The preset time starts to count down until the last valid detection, after that time the lights will automatically switch off.

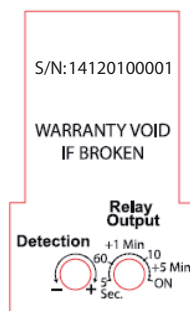
Adjust potentiometer according to installation requirements.

Mechanical description

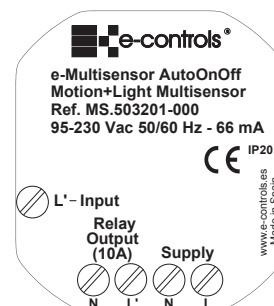
Front view



Side view

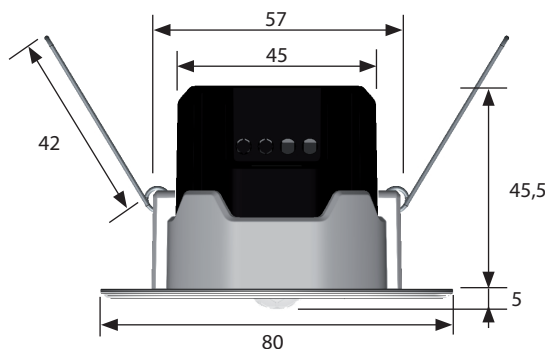


Rear view



(*) Graphs without scale

Dimensions

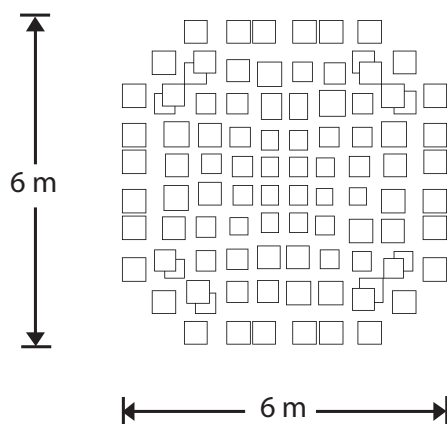


Units mm

Motion sensor

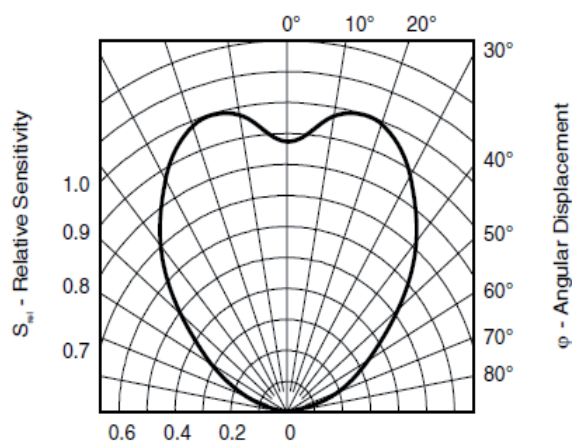
Detection diagram

Plan view (install 2,5 mts high)



Light sensor

Sensibility diagram



Front pushbutton functionality

Definitions:

- Short push: $t < 2 \text{ Sec.}$
- Long push: $2\text{Sec.} < t < 5\text{Sec.}$
- Extra Long push: $t > 5\text{Sec.}$

1) Relay output activation to verify its functionality

- Supply the device
- Set the auxiliary input in an open state
- Make a short press on the front pushbutton
- Relay output will activate for 5 seconds
- The LED indicator will temporarily switch on for 5 seconds

NOTE: the relay activation will only switch on if it is previously deactivate and if the auxiliary input is not switched on (in switch mode). The relay will switch on for 5 seconds, or even more if the motion sensor detects any motion.

2) LED indicator activation / deactivation

- Supply the device
- Set auxiliary input in an open state
- Make a long press on the front pushbutton and leave it.
- LED indicator will activate or deactivate depending on configuration

3) Auxiliary input configuration

- **Scene** mode (switch mode)::
 - SSet switch in a close state
 - Press front pushbutton and supply the device
 - LED indicator will start to blink
 - Remain pressing front pushbutton for 2 to 5 seconds.
 - Leave pushbutton and LED indicator will switch on during 3 seconds
- **Dimmer** Mode (pushbutton mode):
 - Set pushbutton of auxiliary input in open state
 - Press front pushbutton and supply the device
 - LED indicator will start to blink
 - Remain pressing front pushbutton for 2 to 5 seconds.
 - Leave pushbutton and LED indicator will switch off.

NOTE: The auxiliary input is preset in scene mode (in switch mode) by default.

4) Light threshold configuration

- Supply the device
- Set the auxiliary input in an open state
- Make an extra long press to enter in the configuration threshold state.
- The LED indicator will start blinking when the device turns to configuration state.
- Keep the pushbutton pressed to modify light threshold level. The blinking frequency value of LED indicates the light threshold. If it blinks in a low frequency indicates that threshold is fixed for a low lighting level. When motion is detected it will activate the output in case light level will be under the threshold (in other words, when there isn't enough natural light). If it blinks in a high frequency indicates that threshold is fixed for a high lightlevel. When motion is detected it will activate independently of the light level.

The following table shows blinking LED time associated to set point value configured.

Multisensor Setpoint	Surface Setpoint	Led Blinking (mSec)
20	100	1000
30	150	990
40	200	980
50	250	970
60	300	960
70	350	950
80	400	940
90	450	930
100	500	920
160	800	860
220	1100	800
280	1400	740
340	1700	680
400	2000	620
460	2300	560
520	2600	500
580	2900	440
640	3200	380
700	3500	320
760	3800	260
820	4100	200
880	4400	140
940	4700	80
1000	5000	20

When entering in configuration mode, keep the pushbutton pressed and the threshold level will increase its value. Relay will switch on or off depending on threshold value will be higher or lower than the natural light value. While threshold will be raising up LED blinking will be faster.

When the device will reaches the threshold maximum value, the LED indicator will be at maximum blinking. Without releasing pushbutton, the threshold value will start to decrease as well as LED blinking frequency. If released and pressed pushbutton again before 20 seconds, the threshold configuration will continue on the other direction.

- Release the pushbutton when the desire light level is reached.
- Wait for 20 seconds until LED indicator stops blinking.
- The configuration process terminates automatically after that 20 seconds and LED indicator switches on for 3 seconds recording the threshold value on the device memory.

NOTES:

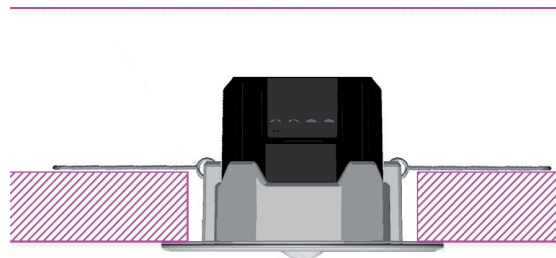
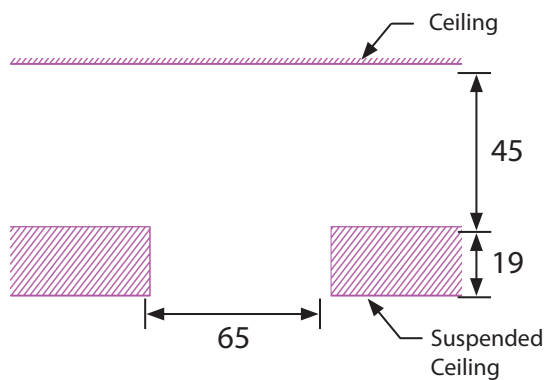
1. If you wish to interrupt the configuration process without recording the threshold value, it is necessary to disconnect the device from supply before finishing the last step.
2. If you wish that lights switches on always when motion is detected, it is necessary to configure the threshold in a high light level value (maximum blinking frequency).

Mounting instructions

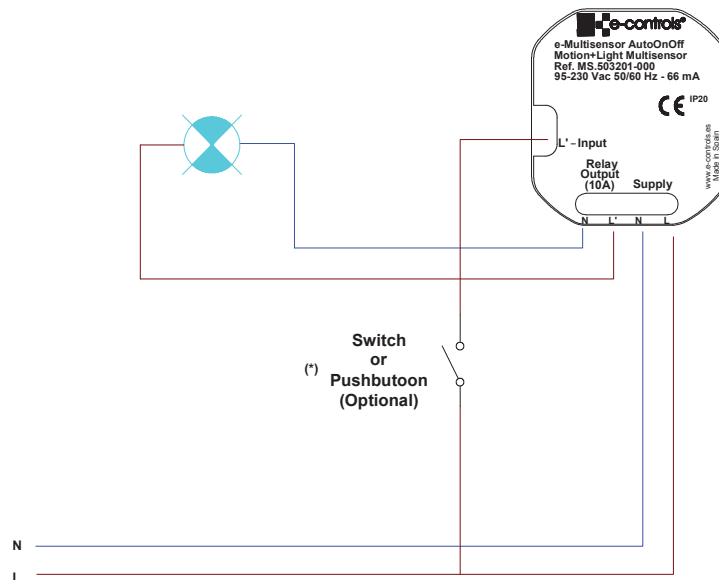
1. Drill a 65mm diameter hole on the ceiling.
2. Connect wires on the correct terminals:
 - Connect the power supply in the L and N terminals.
 - Connect the L' and N relay output to the luminary terminals.
 - Optionally connect the auxiliary input to a pushbutton or switch depending on the installation requests.
3. Adjust the potentiometer of the relay switch on time placed on the side of the device, to the desired value.
4. Adjust sensibility detection potentiometer on the side of the device, to the desired value.
5. Clip the springs and insert the product into the hole, releasing the springs when placed in (see figure).
6. Power up the supply voltage. Check the relay output by short pressing the front Pushbutton.
7. Configure light set-point depending on desired level.

Caution

- The device can't be installed over shelves, behind curtains, near heat/cool air handling units and avoid direct sun radiation over the device.
- Disconnect the device from the power supply before mounting or moving the sensor.
- Do not leave cables peeled or turned around the device.
- Do not connect the device with the hands wet.
- Do not open or hole the device.
- Keep the device and cables away from humidity and dust.
- Clean the front cover with a water moisture soft cloth.



Wiring Diagram



Technical features

Supply Power

Operating Voltage. 95-250Vac / 50-60 Hz
Operating nominal current 66 mA

Motion Sensor

Technology PIR (Infrared)
Number of pyro elements. 4
Number of detection zones. 88
Detection angle (X, Y) +/- 50°
Detection range (at 2,5mts from floor) 6 m
Maximum detection distance 10 m
Pattern detection See fig. 1
Max. time for stabilization. 60 sec.
Output signal. Relay (See Outputs)

Light Sensor

Sensor type Silicon phototransistor with built-in
correction filter for visible radiation
Detection range 0 to 2000 lux
Range of spectral bandwidth. 400 to 800 nm
Max. sensitivity wavelength. 570 nm
Sensitivity pattern See fig. 1

Light Contact Output

Output type. Relay
Max voltage output. 250Vac
Max. current (resistive load at 250Vac) 10 Amp
Switching ON time Adjustable by potentiometer
Terminals L' - N

Auxiliary Input

Input type. Phase conmutation
Contact. Configurable switch or pushbutton
Terminals L'

Led indicator

Color Red
Indication By motion detection
Pressing pushbutton

Pushbutton

Short push Activates output relay (5 sec)
Long push. Device configuration

Relay switching time

Configuration By potentiometer
Time adjust 5 Sec to 30 min
Adjust resolution From 5 Sec to 60 sec: 5 sec
From 1 min to 10 min: 1 min
From 10 min to 30 min: 5 min

Sensibility adjust motion sensor

Configuration By potentiometer

Mechanical Installation

Installation Flush mounting on ceiling
Fixing. 2 metal springs
Hole diameter 65 mm
Max ceiling thickness. 19 mm
Internal height on ceiling 45 mm

Mechanical features

Dimensions 80x50mm (ØxH)
Weight 80 gr
Color (front). RAL 9016
Enclosure material. PP
Terminals Screw type
Wire section 0,5 mm² - 2,5 mm² (14 AWG)

Temperature

Operating 0°C to +50°C (32°F to 104°F)
Storage. -20°C to +85°C (-4°F to +185°F)

Humidity (no condensation)

Operating 10% to 90% RH at 50°C
Storage. 95% RH at 50°C

Product Family Standards

Automatic electrical controls for household and similar use.
General requirements.. . . . EN 60730-1

CE Conformity

Low Voltage Directive 2006/95/EC
Electromagnetic Compatibility Directive 2004/108/EC
Marking CE

Safety

Standards EN 60730-1
IEC Protection Class. Class III
Environmental protection level IP20

EMC

Emissions EN 61000-6-3
Immunity EN 61000-6-1

NOTES:

- 1) The device is not intended for use as part of a security system detector.
- 2) Installer should adjust the sensibility potentiometer to the environment where device will be installed, for an optimal detection of the motion sensor.
- 3) If device loses power supply with lights switch on, when it will recover power, lights will switch on during 1 second and then it will switch off until movement detection stabilization time would finish. After that time lights will switch on if movement will be detected.

Product references

e-Multisensor AutoOnOff, Motion detector and light sensor with relay output MS.503201-000
Flush mounting box AC.000001-000

Related documents

Wiring Diagram DEC
Configuration Manual DMCEN