Signify

EasyAir SNM212 MC

MasterConnect

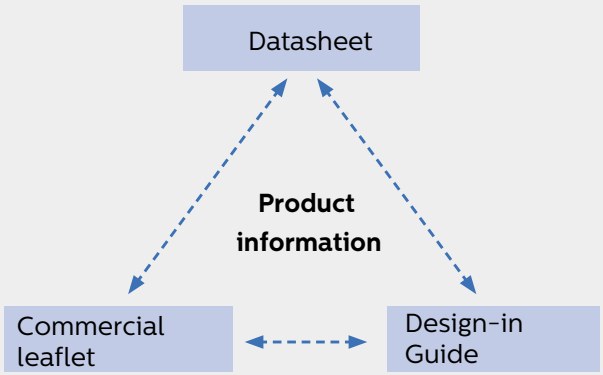
Design-in guide

Introduction to this guide

Thank you for choosing the Philips EasyAir SNM212 MC. This document provides necessary information to design in this product into a luminaire and configure it to suit specific applications. This design-in guide covers sensor functionality, mechanical mounting, wiring details, application notes and frequently asked questions. For sensor specifications, please see the datasheet.

More information or support
For more information or support, please consult your local Philips sales representative or visit:

https://www.lighting.philips.co.uk/oem-emea/products/connected-lighting/masterconnect



Contents

Warnings and instructions

- EasyAir SNM212 MC is a mid-bay sensor that must be used with a D4i or SR driver, e.g. a Xitanium SR driver, or with the Xitanium SR Bridge.
- Do not apply mains power directly to the sensor.
- Make sure that the sensor, especially the occupancy detection lens, is not damaged during shipment and handling.
- The application area of EasyAir SNM212 MC is an indoor mid-bay environment, typically production areas, transition areas or warehouses. Such application areas should be normally ventilated.
- The EasyAir SNM212 MC has no protection against aggressive chemicals.
- Make sure that there is no metal close to a side of EasyAir SNM212 MC (<10mm). SNM212 MC can be mounted on a metal surface, but metal objects next to the side of the sensor compromise RF communication.
- External infrared sources can have a negative impact on occupancy detection.
- Ensure that the sensor area defined for occupancy detection is not blocked by any obstacles. Misalignment of sensor might influence occupancy detection and daylight regulation.

Introduction of EasyAir SNM212 MC

Signify EasyAir SNM212 MC

The Signify EasyAir SNM212 MC is a compact sensor for wireless per-luminaire control of mid-bay luminaires. It combines occupancy sensing, daylight harvesting and task tuning in a single package for easy OEM luminaire assembly. EasyAir SNM212 MC operates with the established D4i open standard digital interface to make a simple two-wire connection between sensor and driver, thus eliminating the need for multiple components and auxiliary devices. The result is a cost-effective and easy-to-design-in solution ideal for energy-savings. An intuitive app called Philips MasterConnect allows for quick and easy commissioning via Bluetooth along with configuration during and after installation.

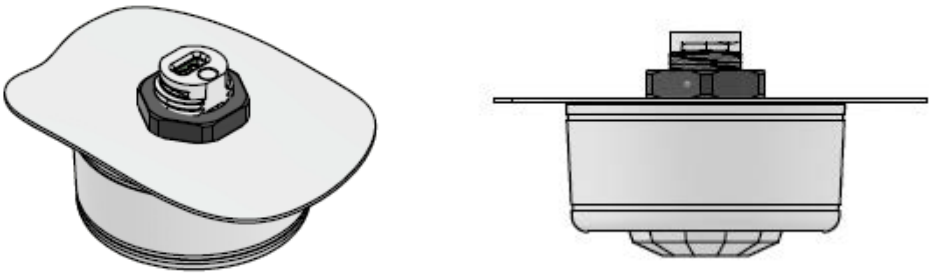
EasyAir SNM212 MC allows luminaires to be grouped with each other for occupancy sharing (i.e., luminaires within a group can be programmed to remain at prescribed light levels so long as occupancy is detected anywhere in the group) and daylight depending light regulation.

The sensor is equipped with an RF antenna for Zigbee and Bluetooth Low Energy communication, a PIR occupancy sensor, a daylight sensor, IR receiver for reset and an indicator LED visible through the lens of the sensor.

Mechanical design-in

How to install the sensor

EasyAir SNM212 MC is intended to be mounted at a 22mm hole in the front side of the luminaire. It is fixed with a nut. The mounting surface must be flat. The recommended torque to tighten the nut is 2.0 Nm; the maximum torgue is 5.5 Nm.



Installing sensor to luminaire

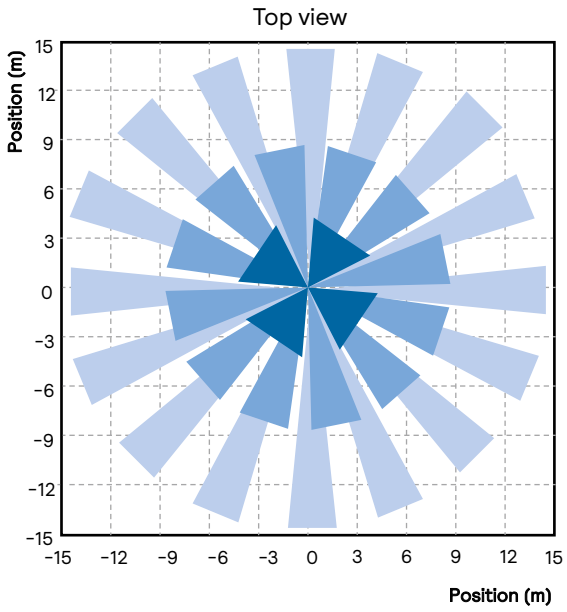
Using the installer code labels

Three labels with the ZigBee Mac address of the sensor are attached to the sensor. The labels can be used to mark the location of lights on a floorplan. The last 4 digits of the ZigBee Mac address are also shown in the MasterConnect app.

1. One label should be placed on the sensor or close to it
2. The second label can be put on the luminaire
3. The third label can be used for the floorplan

Labels with unique Zigbee Mac address

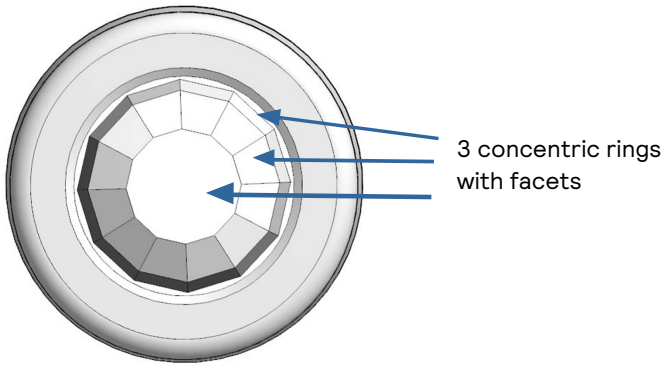
Presence detection

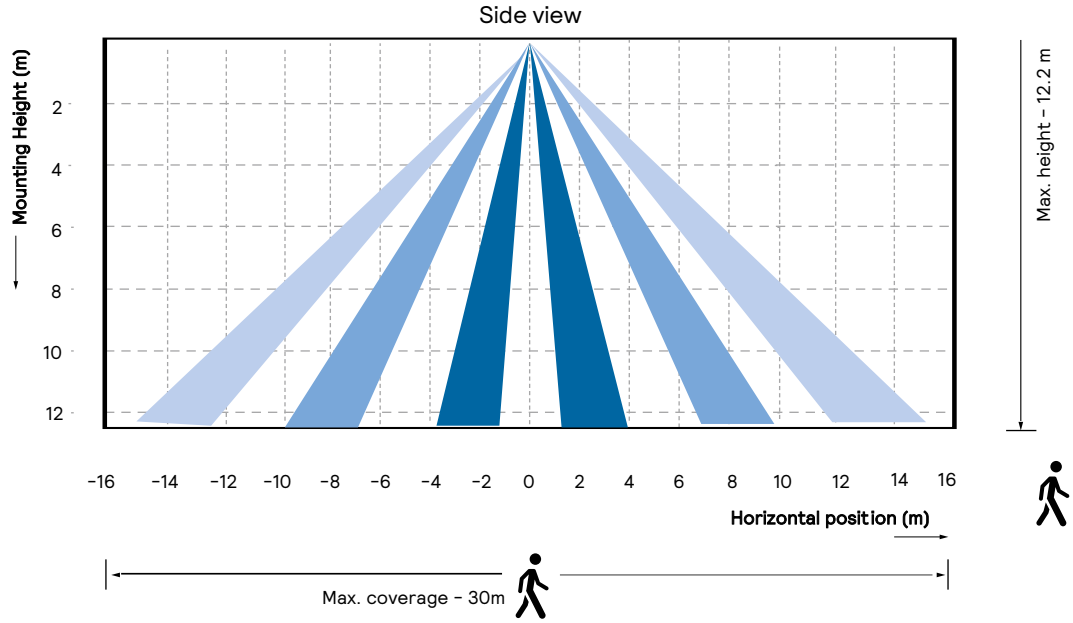


Top coverage pattern of EasyAir SNM212 MC.

Motion detector

The occupancy sensor is a PIR (Passive Infrared) sensor that detects movement with a circular cross-area up to an angle of 55°. This PIR sensor has 3 concentric rings to help detect movement – the innermost with 4 facets, the middle with 12 facets and the outermost with 16 facets.





Side coverage pattern of EasyAir SNM212 MC at height of 12.2m

The occupancy coverage is based on NEMA test, an industry standard.
In the side view it is visible that the coverage ratio of diameter at ground level divided by mounting height is 2.5:1. For example if the mounting height is 12m, the maximum diameter coverage is 30m.

Disclaimer:

1. In these plots, the white areas are blind spots and the detection is based on subject's motion. An idle subject may not continue to trigger occupancy detection once the hold time expires.
2. As PIR based sensing works on temperature difference between the subject and the ground level, the occupancy detection could vary due to clothing and size of subject.

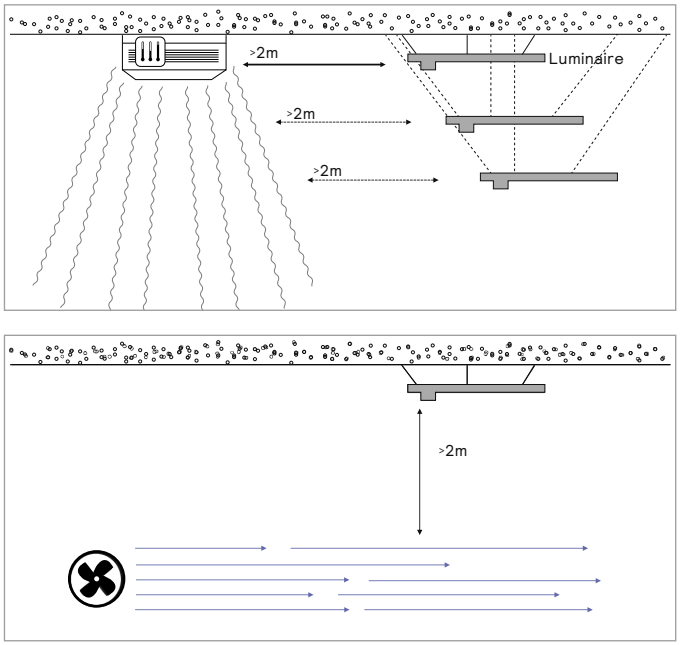
Presence detection

Light shield for corridor mode

Light shield that restricts the field of view to one side

Lens shield

To restrict the field of view of the occupancy sensor a light shield - included in the box - can be clicked on. The shield needs to be configured for the application need, e.g. corridor mode or one-side view. A utility knife is recommended to cut out the parts for the opening.



Required distances to air vents

Warning:

To avoid false triggers, place heat radiating devices outside of the monitoring cone and avoid drafts (e.g. from ventilators or heating systems).
EasyAir SNM212 MC with motion detector enabled must be mounted more than 2 meters away from air vents in all directions, see figures on the left.

Daylight based regulation

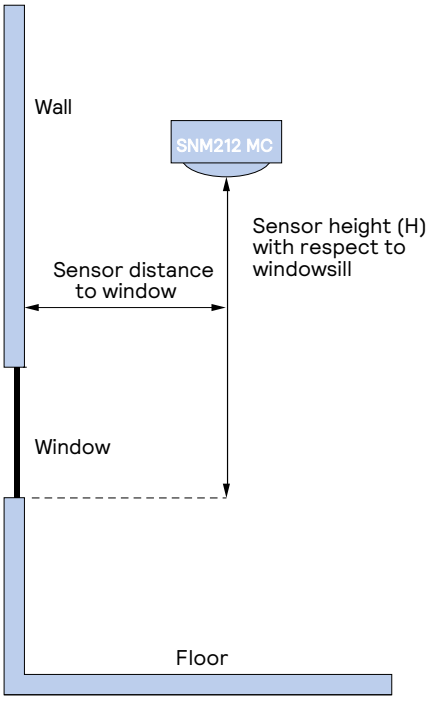
Daylight sensor

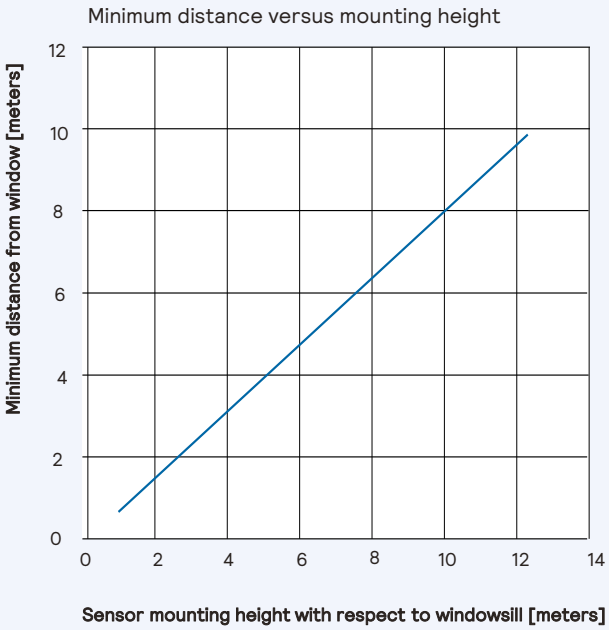
The light sensor measures the total amount of light with an opening angle of 55° whereas PIR has 51°, all calculated from normal. The following aspects should be observed during installation:

- Minimum distance from the window - refer below graph
- Sensor should not be mounted lower than the top of the window
- Prevent light reflections from outside entering the sensor (for example sunlight reflection from a car/truck bonnet) as this will lead to incorrect light regulation.

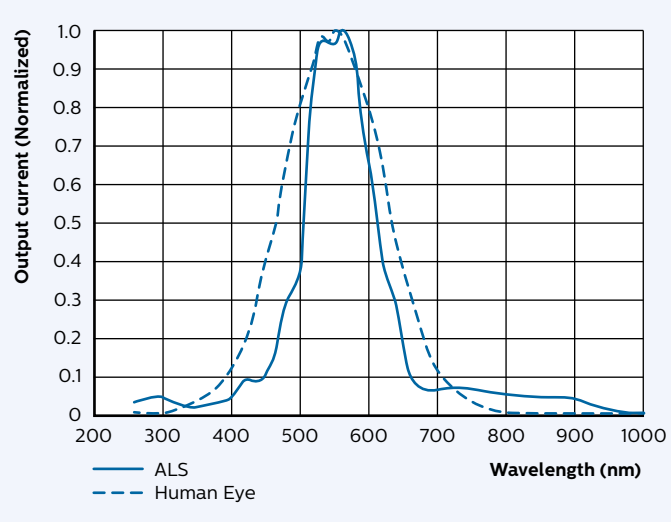
As a guideline the formula 0.8 x H can be used to calculate the minimum horizontal distance between the window and sensor whereby H is the height measured from the bottom of the window to the sensor.

Photosensor spatial reponse





Photosensor spectral reponse



Daylight regulation and calibration

When daylight-based light regulation is enabled, the light output of a luminaire is dimmed in the presence of daylight. For full control of light levels in the working area it is recommended to calibrate the lighting in the application.

Daylight regulation without calibration

When daylight-based control is switched on and no calibration is performed, the light output adjusts approximately to 200 lux times the value set for the Eco-on level. If the Eco-on level is set to 80% for example, the light output from the luminaire adjusts to approximately 80 lux in the working area.

The sensor doesn't read lux levels in the working area directly but measures the amount of reflected light that it captures. In the presence of daylight the sensor keeps the detected level constant by adjusting the light output of the luminaire.

The reflective properties of the surfaces in the field of view of the sensor, e.g. light or dark floors, impact the amount of light that is directed towards the sensor and consequently influence the luminaires light output and actual lux levels in the working area. In case the reflective properties of objects below the luminaires of a room vary, the luminaires can show different light output, even in absence of daylight. Luminaires above dark surface areas emit more light than those above light areas.

How to set the light level:

- In a dark environment adjust the output current of the luminaire and the Eco-on value for the required lux value in the working area. It is recommended to measure the value with a lux meter.

Daylight regulation with calibration

Any time after configuration a calibration routine can be initiated. When the calibration routine is run the light level adjusts to the full light output (given by the operating current of the luminaire) times the percentage value set for the Eco-on level.

In a dark environment all luminaires configured with the same Eco-on level show the same light output, independent of the reflective properties of surfaces below the luminaires. The individual sensors store the dark reading of the daylight sensor and keep the value constant in the presence of daylight by adjusting the light output of the luminaires.All luminaires react individually on the amount of daylight in the field of view of their sensor.

How to set the light level:

- Disable daylight regulation in the MasterConnect app.
- In a dark environment adjust the output current of the luminaire and the Eco-on value for the required lux value in the working area. It is recommended to measure the value with a lux meter.
- Keep the smartphone close to the working area for Bluetooth connection. Enable daylight regulation in the app again and press "Calibrate Daylight Sensor". Leave the room.
- To calibrate, the light output of the luminaires first goes to a low level and to a high level before it regulates to the set light level.

Warning:

Make sure no objects are blocking the sensor's view and no surface reflection changes occur in the sensor's view during calibration. For example, do not position a forklift truck in the sensor view area during calibration.

Other

Torchlight triggering

When commissioning lights with the Philips MasterConnect app, SNM212 MC devices can be selected for grouping using a torchlight. See also the MasterConnect installer manual at https://www.lighting.philips.com/prof/led-electronics/masterconnect-system/masterconnect-sensors/LP_CF_9218075_EU/family.

Direct the light of the torch towards the sensor and move it over the sensor. The sensor is triggered by a sudden change from relatively low light level to a higher light level.

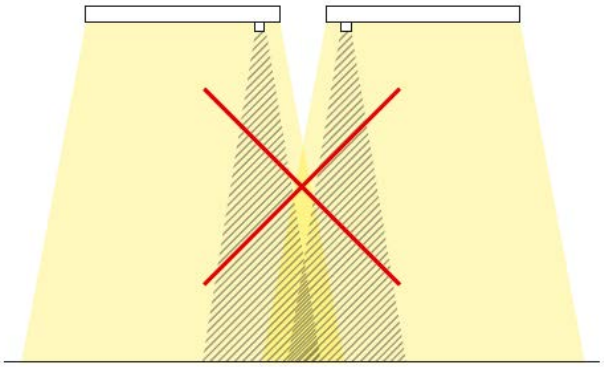
A torch with well defined light cone needs to be used. For applications higher than 6m a strong (military) torch is neccessarry. It is recommended to keep ambient light in the room low during commissioning with torchlight triggering.

Wire distance for remote mounting

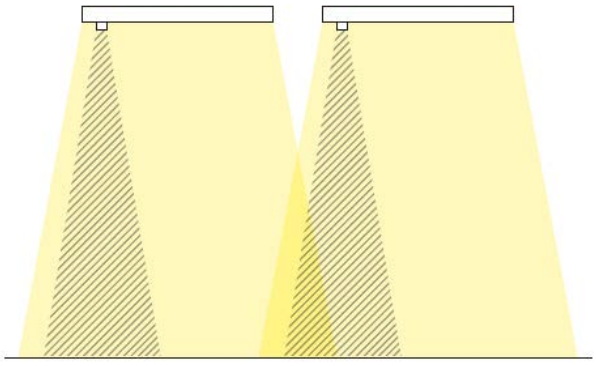
In case of remote mounting of the sensor it is recommended to keep the wire distance from sensor to Xitanium SR/D4i LED driver driver less than 2 m and meet the wire gauge requirement to guarantee the performance.

Luminaire-to-luminaire distance

If multiple luminaires with EasyAir SNM212 MC are used in the same area, the arrangement should avoid that sensors are placed close to each other to minimize a sensor from “seeing” the light variation of neighbouring luminaires and reacting.



Sensors placed too close



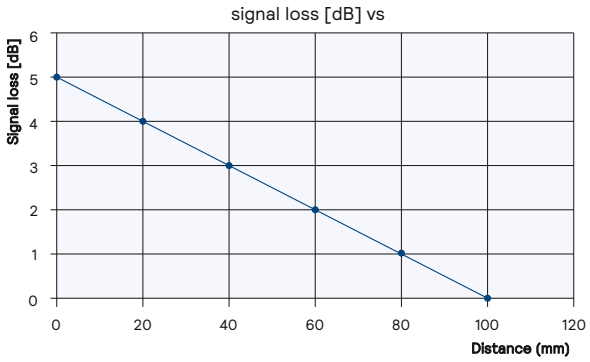
Proper distance between sensors

Other

Recommendations to design-in SNM212 MC with good RF signal

It is recommended to keep the EasyAir SNM212 MC antenna at a distance >100mm from nearest metal side wall to avoid a drop of RF signals. It is assumed that other side walls are further away.

SNM212 MC is designed for mounting on metal surfaces, but at the sides of the sensor metal objects can impact radio performance.



Transmission signal loss [dB] with distance to metal side wall [mm]. Closer the metal wall, higher the signal loss.

SNM212 MC with multiple LED drivers (1:N application)

When multiple Xitanium SR/D4i drivers are used in a single luminaire, they can be controlled with a single sensor.

It is also possible to use one sensor to control multiple luminaires that need to be operated at the same level. In this case DALI drivers need to be connected to the sensor via an SR-bridge.

If a single sensor is connected to drivers in different luminaires without an SR bridge, the total cable length must not exceed 15m. 2-4 of the drivers must have SR power supply enabled, but not more. The sensor cable must be clearly separated from mains cables to avoid interferences.

EasyAir SNM212 MC sends commands to all connected drivers (using DALI broadcast command); it does not have capabilities for addressing individual drivers. The light commands are sent as broadcast commands, so occupancy-/daylight-based lighting control and task tuning operate the same on all connected drivers. The readout of energy information from the driver will not function.

EasyAir SNM212 MC

MasterConnect

Disclaimer

Note that the information provided in this document is subject to change.

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