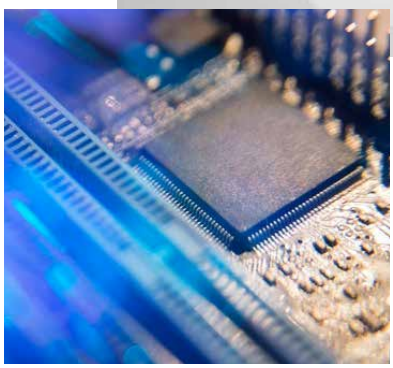
AERECO

S-PRE/Day-Night/T Modbus

Occupancy sensor with light and temperature sensors for Modbus communication



Modbus

S-PRE/Day-Night/T Modbus

Occupancy sensor with light and temperature sensors for Modbus communication

- Accurate device to detect presence and motion
- 3-in-1 device (Occupancy, light and Temperature
- Day*-Night** detection
- Smart design (extra flat)
- Modbus communication
- Networkability up to 15 sensors
- Energy saving
- Two prong on the detector make attachment on the false ceiling easy
- Compact design, simple to install, ready to use
- No maintenance

Application aeras

HVAC Systems

Office, corridor, stairways, restrooms, classrooms, meeting room, open plan office

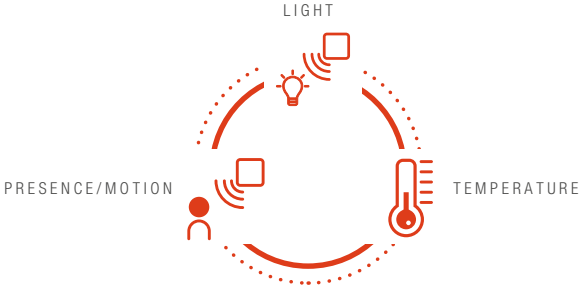
Occupancy sensing for better comfort & energy efficiency

One of the biggest challenges, that we are encountering today is the balance between comfort, security and the efficiency of energy. When it comes to occupants' comfort in an indoor area, both residential as well as non-residential markets, the building constructors are providing a best in class experience for the occupants with well-equipped building automation solutions.

Indeed, the occupancy sensors helps to control different types of appliances such as ventilation, air conditioning, alarms etc... according to the presence of the occupants inside the building. This provides many benefits such as low energy consumption, less carbon dioxide emissions, life-span extension of devices and decrease in electricity cost.

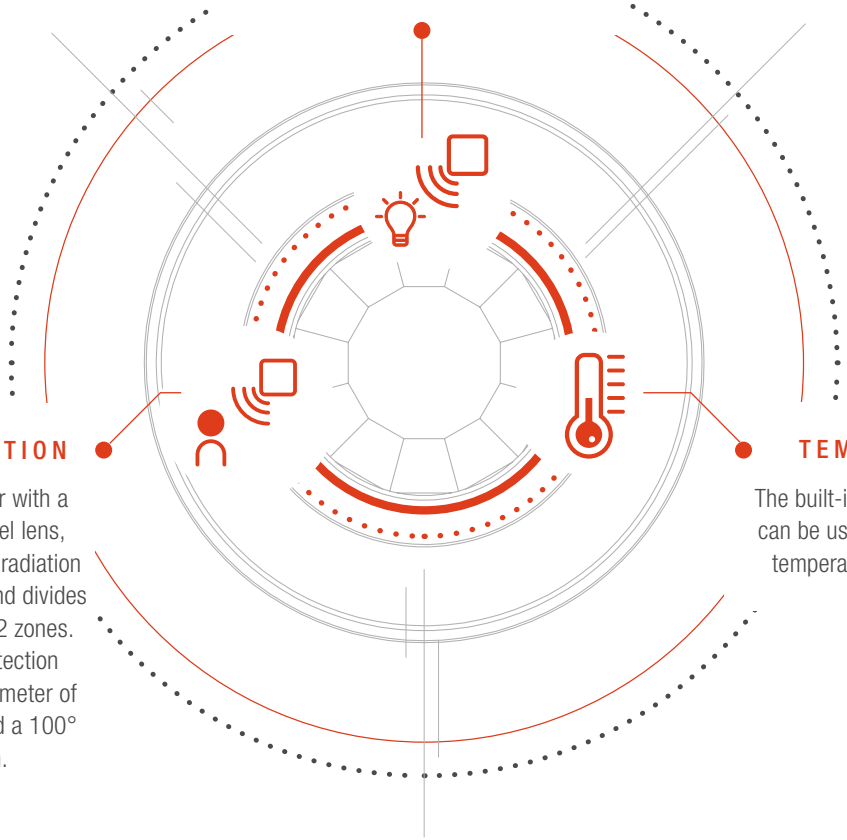
A multi-sensing device designed to ensure ultimate comfort

The S-PRE/Day-Night/T is a multi-sensing device, which ensures an accurate detection of occupancy. It is composed of presence/motion sensor with built-in light and temperature sensors. The detector includes a LED indicator that displays the detections in order to inform the users. When luminosity in the room is very low, the LED is automatically switched off.



LIGHT

The built-in light sensor detects the level of light intensity in the area,which helps to identify the light and darkness in order to optimise the occupancy sensing.



PRESENCE / MOTION

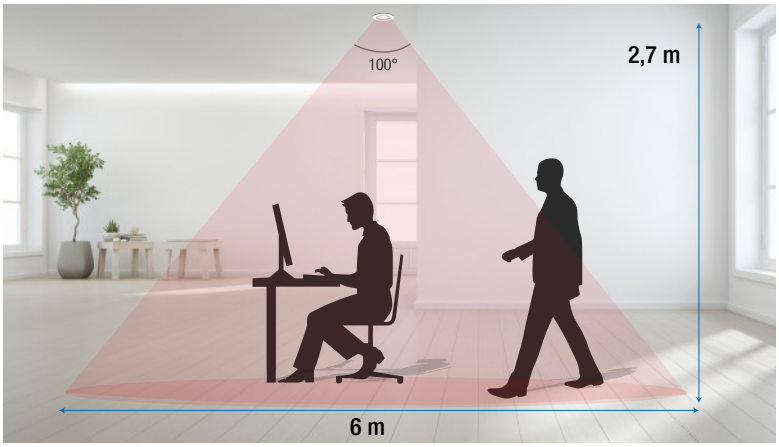
The pyroelectric detector with a 31 pairs of facets Fresnel lens, concentrates the infrared radiation emitted by human body and divides the detection field into 62 zones. It has a 4 meters of detection distance, 6 meters of diameter of detection on the floor and a 100° angle of detection.

TEMPERATURE

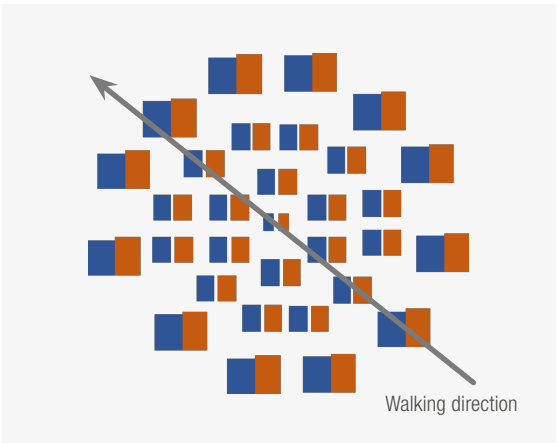
The built-in temperature sensor can be used for monitoring the temperature level in a zone.

COVERAGE PATTERN

Side view



Top view



HOW THE OCCUPANCY SENSOR AND BUILT-IN SENSORS WORKS TOGETHER TO ENHANCE THE COMFORT LEVEL OF THE OCCUPANTS?

Manage energy more efficiently and provide a better comfort for the occupants

Example of application : Ventilation System

The illustration below shows how the occupancy and light sensor can be used with an automation system in order to optimise the ventilation system in a room:

Occupancy: Providing a good ventilation in the room

The occupancy sensor detects a movement into the detection field,therefore the automation system will turn “ON” (occupied mode) the ventilation system to enhance the indoor air quality for the wellbing of the occupants.

Inoccupancy: Optimising the ventilaion system

The occupancy sensor did not detect any movement into the detection field, therefore the automation system will remain “OFF” or get into the unoccupied mode to optimise energy use.

Day & night detection algorithm:

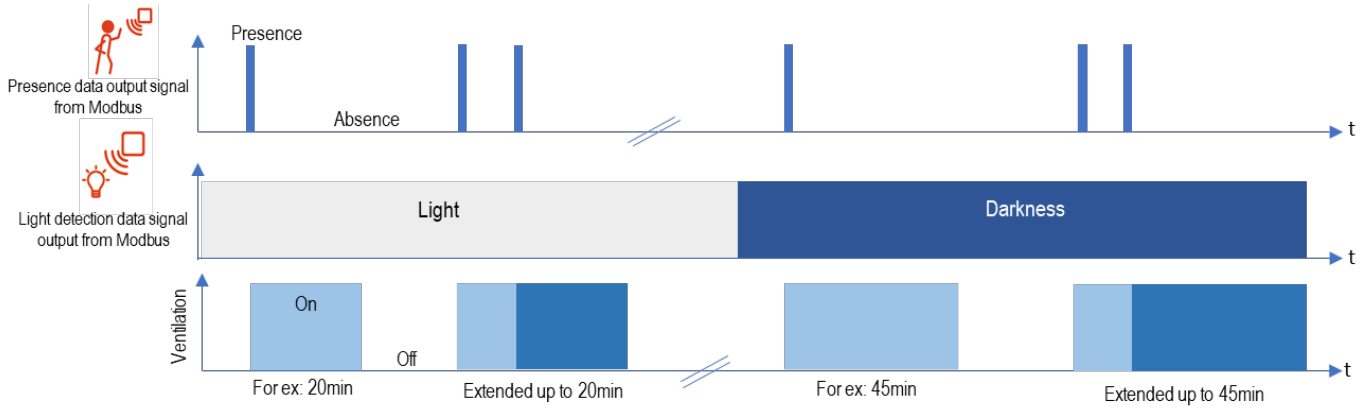
When there is occupancy there is certainly a need for **ventilation** and a **good air quality is vital for the wellbeing of the occupants**. But the need for **renewal of the air flow rate vary according to the situation** (day* & night**).

Why we need to adapt the ventilation for day and night?

During the daytime, there will be **lots of movements** because people are more active, therefore we need to modulate the air flow rate according to the occupancy level and provide an excellent air quality inside the room.

On the contrary, **during the night-time** there will **be less movements**, because people are not much active (sleeping and watching TV etc.), therefore, we need to modulate the air flow rate according to the situation, in this case we must renewal the air a little more than a day time.

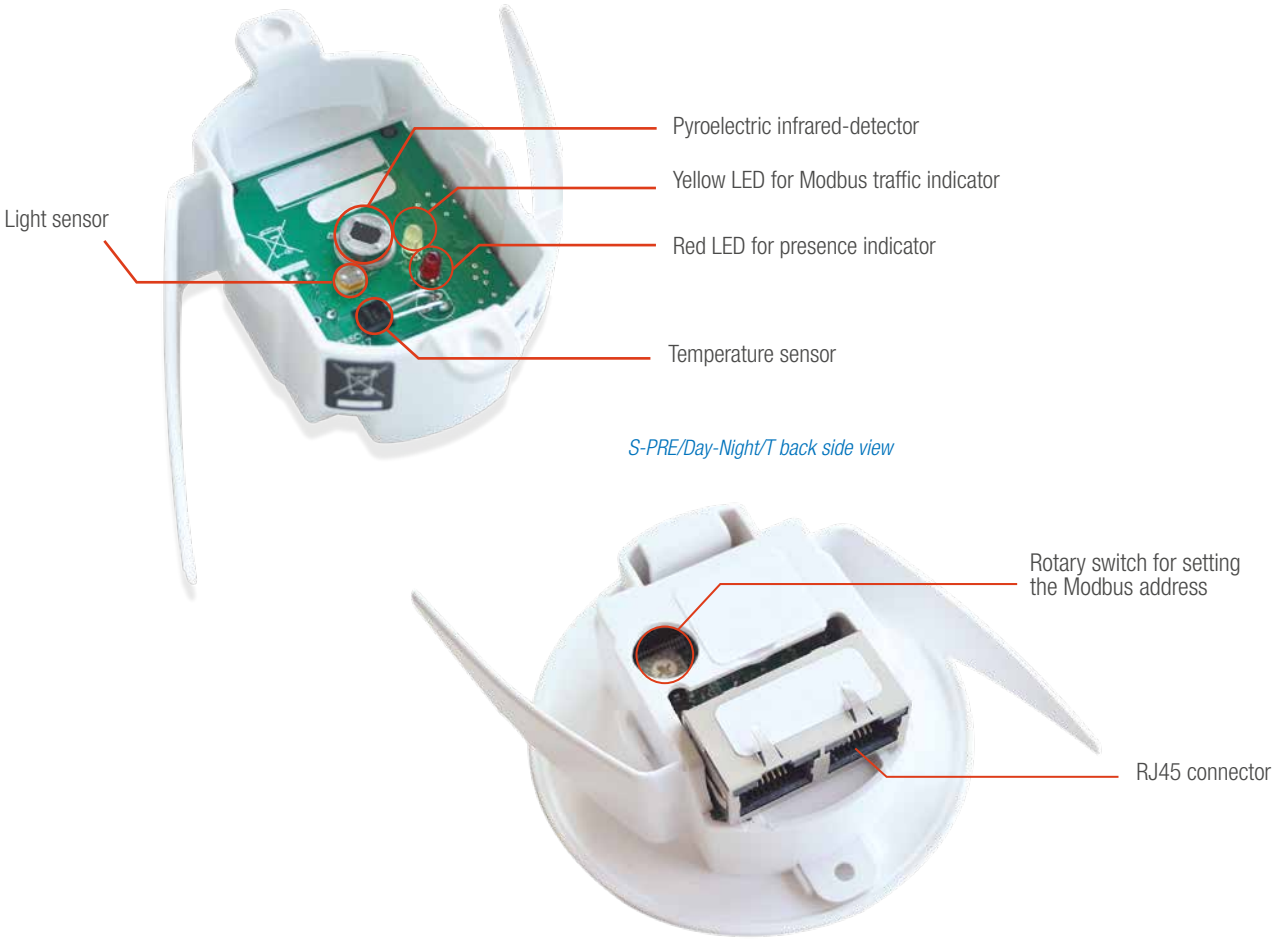
Indeed, the S-PRE/Day-Night/T is equiped with a **special algorithm** based on the light and darkness **threshold** in order to identify the day-night situation. The example below shows how the occupancy sensor and built-in light sensor **works together to modulate a ventilation system**. Thanks to its muti-sensing technology.



In this diagram, we can notice that the **duration of the ventilation varies according to the day* and night** situation.**
For more details on the modbus data output signals,please refer to the modbus register table.

** « Day »: detection of the presence of light (naturel light or artificial light)*
*** « Night »: detection of the absence of light (absence of naturel light or artificial light)*

S-PRE/Day-Night/T sensor inside view



S-PRE/Day-Night/T back side view

Easy connectivity and data transfer

The S-PRE/Day-Night/T sensor is equipped with a **Modbus interface**, which provides **easy setup** and integration into large process control and automation systems. Indeed, the sensors measurements can be **read in real-time** over **RS485 local network via the Modbus RTU protocol** with Master-slave approach. The S-PRE/Day-Night/T acts as a slave, and it allows for **building network of up to 15 slaves**. Moreover, the data of S-PRE/Day-Night/T is accessible via the **Modbus register table**.

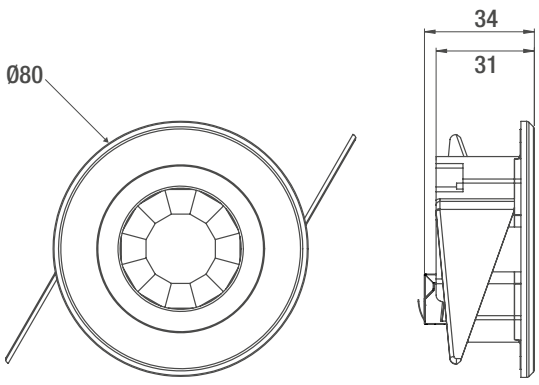
S-PRE/Day-Night/T Modbus

Occupancy sensor with light and temperature sensors for Modbus communication

	S-PRE/Day-Night/T Modbus sensor
Standard code	**CAP1669**
Data points	**Presence, light and temperature**
Occupancy sensor specifications	
Sensor Type	Pyroelectric
Fresnel lens	
Number of facets	31
Detection angle	100 degree
Detection distance	4 meter
Diameter of detection on the floor (for 2,7M ceiling height)	6 meter
Built-in light sensor	
Output	Day*-Night** detection
Response Time @1fc (ms,typ.)	>500ms
Built-in temperature sensor[1]	
Temperature working range	2°C to 50°C
Accuracy	0.5°C ensured at 25°C
Conversion Gain	10mV/°C
LED Indicators	Yellow LED for Modbus traffic indicator Red LED for presence indicator
Electrical specifications	
Power supply	12 VDC
Power consumption (standby mode)	2mA Max
Power consumption (detection mode)	3mA Max
Connection Type	2xRJ45 shielded
Operating and Storage Temperature	0° to 100°
Communication	
Protocol type	**Modbus RTU, RS485 physical layer**
Baud rate	9600 bps
Data length	16 bits
Housing	
Material	ABS
Color	White
Protection	IP 20
Weight	34 g
Installation type	Ceiling-mounted,indoor

[1] In case, if the sensor was installed into the false ceiling, it is recommended to do not use the temperature sensor as an input to the room temperature control loop.

Dimensions in mm



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