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Best Practise
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ERS Series

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LoRaWAN® Wireless Sensor

A Best Practise Guide

Executive summary

We created this paper to our customers and other stakeholders with the purpose to inform, facilitate, and optimize the installation and use of ELSYS sensors to help achieve the most enjoyable experience with our sensors.

In this paper, we will go over some good-to-know-information regarding sensor features and the installation process.


Measuring temperature, humidity, occupancy, light, sound, and CO_2 levels can help you to observe and create an excellent indoor quality that is essential for the worker's well-being and productivity. Strategically placed sensors can help you collect valuable information about your facility. With this information at hand, you can better allocate your resources, optimize staffing, reduce costs, monitor your indoor climate, monitor room and desk occupancy, movement, and more. One of the many advantages of using ELSYS sensors is that they are battery-driven. There is no need for wiring or other expensive start-up costs. All ELSYS sensors have replaceable batteries with a battery life of up to ten years.

ERS Series

The ERS Series are indoor sensors perfect for Smart Building Management. The sensors can measure temperature, light, humidity, motion, CO_2, sound, and room and desk occupancy.

For best RF and measurement performance, make sure you mount the sensor with the ventilation openings vertically (see image).

- Avoid placing the sensor near metal and air ventilation.
- Keep in mind your data of interest when placing the sensor and choose a location according to this. For example, avoid placing the sensor near heat sources for accurate temperature-readings.
- For motion detection, please see the datasheet of the ERS sensor to get more information on the PIR detection pattern.
- The PIR can cause self trigger if sensors are to close to each other. Keep this in mind when you mount or test the sensors.
- All our sensors are compatible with any LoRaWAN server and LoRaWAN gateway.
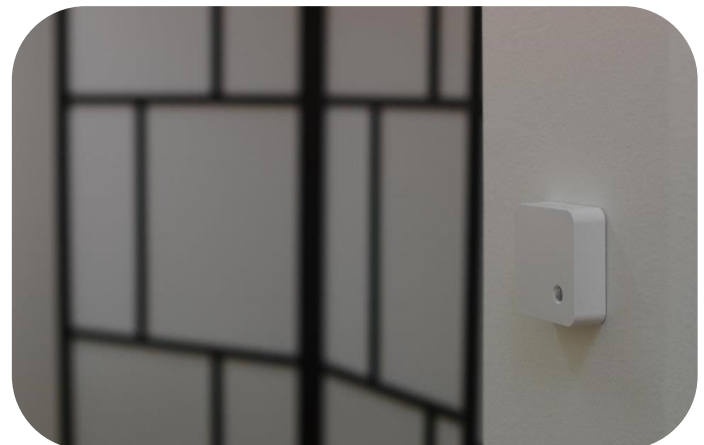
ERS CO_2

The natural level of carbon dioxide (CO_2) is around 400 ppm (parts per million) in the outdoor environment. With the ERS CO_2, you can easily monitor the CO_2 levels in your facility and can help you create the best possible indoor environment for your employees or customers.

The ERS CO_2 has an internal automatic baseline calibration (ABC) routine. The ABC takes the lowest value read in eight days and sets it to 400 ppm. For this to work correctly, the sensor must be exposed to well-ventilated air at least once every eight days.

It is worth to mention that it takes the ABC approximately one month before it has calibrated the sensor enough to give you correct values. When you first receive your sensor, it can show strange values due to mechanical stress from the transport. If you do a manual calibration before installing the sensor, you will receive correct values instantly.

If there are people present 24/7, we recommend that you turn off the ABC and manually calibrate the sensor once a year. To do so, you need to take the sensor outside for about 10 minutes.

Do not place the sensor near air vents.

ERS Eye

With the ERS Eye sensor, you can not only detect people by movement but also by heat. Additional to the PIR, the ERS Eye also has a Panasonic Grid Eye infrared sensor that detects heat signatures. It is perfect for installations in conference rooms or when you are interested in room occupancy.

The Grid Eye sensor has an 8x8 temperature matrix with a Field of View of 60° and a range of 5 meters for detecting humans. Keep this in mind when you place the sensor and make sure that you have enough sensors to cover your whole desired area.

Preferably place the ERS Eye in the ceiling at between 2.2 to 5 meters height, or high up on the wall. Do not place the sensor so it faces windows or moving heat sources; this can cause a false positive reading.

ERS Desk

Mount the sensor under the desk at approximately 10-40 cm from the edge with the temperature sensor pointed towards the chair (see image).

ERS Sound

Think carefully about the placement of the sensor. Do not install it near loud sound sources such as doors, machines (e.g., printer, coffee machine) or in other areas where there are loud sounds. Such placements will give false sound values, both peak, and average.