

ERS Eco

LoRaWAN Wireless Sensor

ERS Eco is a LoRaWAN indoor climate sensor that measures temperature and humidity. This sensor is an environmentally friendly option, with an organic solar cell as the only power source and an enclosure made from biodegradable material.

Removing batteries from a wireless IoT device significantly reduces the environmental impact and maintenance costs. Eco has a Scandinavian design, which fits nicely in any application.

The sensor can last up to 50 days in the dark depending on the sample interval, transmit interval, data rate, and environmental factors. It can be used with a self-adapting feature, which results in lower current consumption and better performance.



Product features

- Temperature and humidity sensor
- Powered by organic indoor solar cell
- Made from biodegradable material
- Wireless and battery-free
- Scandinavian design
- Lasts up to 50 days in the dark
- Self-adapting feature
- Easy configuration

Device specifications

Mechanical specifications

Weight	50 g
Dimensions	66 x 66 x 17 mm
Enclosure	Biodegradable material, Biodolomer®
IP rating	IP20
Mounting	Screw/Adhesive tape

Operating conditions

Temperature	0 to 50 °C
Humidity	0 to 85 % RH
Usage Enviroment	Indoor

ElektronikSystem i Umeå AB

Tvistevägen 48
907 36 Umeå
Sweden

 +469010050
 info@elsys.se

 www.elsys.se
 elsysumea

Device Power Supply

Battery Type	Lithium-ion capacitor (LIC)
Expected Battery Life	Up to 50 days in the dark. Depending on the sample interval, transmit interval, data rate, and environmental factors.

Device Logging Function

Sampling Interval	10 min (Default), Configurable via NFC and Downlink
Data Upload Interval	10 min (Default), Configurable via NFC and Downlink

Radio / Wireless

Wireless Technology	LoRaWAN® 1.0.4
Wireless Security	LoRaWAN® End-to-End encryption (AES-CTR), Data Integrity Protection (AES-CMAC)
LoRaWAN device type	Class A (configurable) End-device
Supported LoRaWAN® features	OTAA, ABP, ADR, Adaptive Channel Setup
Supported LoRaWAN® regions	EU863 – 870, IN865
Link budget	137 dB (SF7) to 151 dB (SF12)
RF transmit power	14 dBm

Sensors

Temperature

Resolution	0.1 °C
Accuracy	± 0.2 °C (see figure 1)

Humidity

Resolution	1 % RH
Accuracy at 25 °C	± 2 % RH (see figure 2) See figure 3
Accuracy of humidity over temperature	

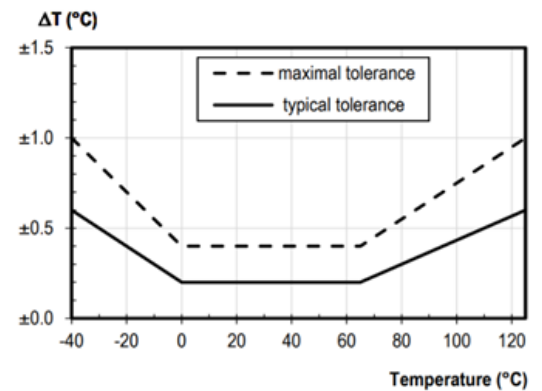


Figure 1

The self-adapting feature

The feature is optional but recommended. With the feature activated, the sensor will adapt the transmission rate if the measured data is unchanged. This will result in lower current consumption, lower network load, and less redundant data sent.

The biodegradable material

Biodolmers' biodegradable material is carefully chosen for the making of the enclosure. The material consists of bio-based biodegradable ester mixed with fiber, calcium carbonate, and vegetable oils.

The solar cell

The indoor solar cell is Epishine's Organic Indoor Light Energy Harvesting Module. The cell is adapted for an indoor environment and is sensitive to high light intensities. Direct sunlight for a prolonged time may degrade performance and lifetime. Occasional short exposure (~2h/day) to strong light intensities, such as sunlight through a window, should not affect the cell.

How to recycle

Remove the back panel and then separate the circuit board from the enclosure. Sort the enclosure into your food waste and the circuit board with the solar cell in electronic waste.

Avoid

- » Using the sensor outside.
- » Placing the sensor where it constantly is exposed to direct sunlight.
- » Removing the back panel.

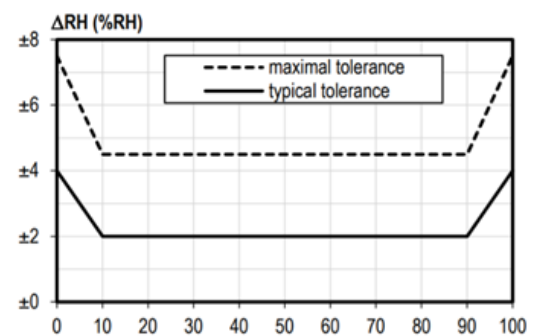


Figure 2

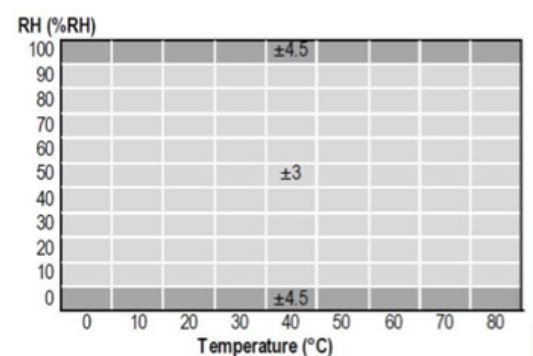


Figure 3

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