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DATA SHEET

EMS LoRa

Produal

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Datasheet
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EMS

LoRaWAN Wireless Sensor

Description

With a size slightly larger than an AA-battery, EMS can be used as a regular indoor temperature/humidity sensor or for more advanced applications. The small size makes it ideal for mounting on door frames, under desks or any other limited surface area.

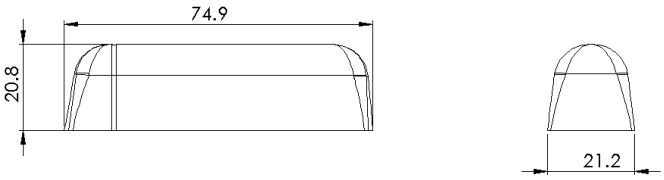


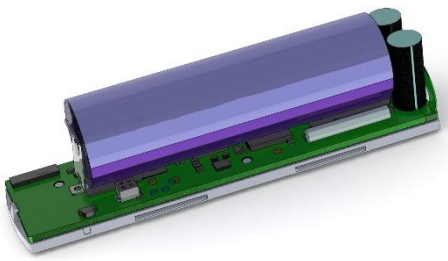
Applications

- Indoor environment measuring
- Smart buildings
- Workplace management
- Water leakage detection
- Door activity detection
- Movement detection

- LoRaWAN® Certification in progress
- Temperature sensor
- Humidity sensor
- Accelerometer
- Water leak detector
- Door switch
- NFC for configuration
- Configuration over the air

Product features





Device Specifications

Mechanical specifications	
Weight	10 g excluding batteries / 30 g including batteries
Dimensions	21.2 x 74.9 x 20.8 mm
Enclosure	Plastic, PC/ABS

Operating conditions	
Temperature	0 to 50 °C
Humidity	0 to 85 % RH (non-condensing)

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LoRaWAN Wireless Sensor

Radio / Wireless	
Wireless Technology	LoRaWAN® 1.0.3
Wireless Security	LoRaWAN® End-to-End encryption (AES-CTR), Data Integrity Protection (AES-CMAC)
LoRaWAN Device Type	Class A/C (configurable) End-device
Supported LoRaWAN® features	OTAA, ABP, ADR, Adaptive Channel Setup
Supported LoRaWAN® regions	US902 – 928, EU863 – 870, AS923, AU915 – 928, KR920 – 923, RU864, IN865
Link Budget	137 dB (SF7) to 151 dB (SF12)
RF Transmit Power	14 dB / 20 dB (Region specific)

Device Power Supply	
Battery Type	1 x 3.6V AA Lithium battery (Li-SOCl$_2$)
Expected Battery Life	Up to 10 years (Depending on configuration and environment)

Device Logging Function	
Sampling Interval	Configurable via NFC and downlink configuration
Data Upload Interval	Configurable via NFC and downlink configuration

Data types

Type value	Type	Data size	Comment
0x01	Temperature	2	-3276.5 °C → 3276.5 °C (Value of: 100 → 10.0 ¡C)
0x02	Humidity	1	0 - 100 %
0x03	Acceleration/Level	3	X, Y, Z -127 → +127 (Value of:63=1G)
0x07	VDD (Battery voltage)	2	0-65535mV
0x0A	Pulse count	2	0-65535 (Between two send intervals)
0x0B	Pulse count ABS	4	Absolute value 0-4294967295
0x0D	Digital	1	1 / 0 (On / Off)
0x12	External Water leak	1	0 – 255. Value indicates conductivity. The higher the value, the more moisture

Sensors

Temperature

Resolution: 0.1 °C

Accuracy: ±0.2 °C (See figure 1)

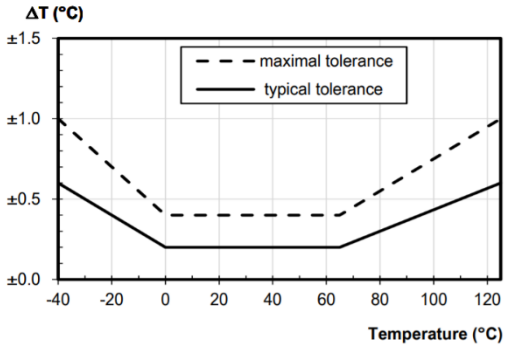


Figure 1

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Humidity

Resolution: 0.1 % RH

Accuracy at 25 °C: ± 2 % RH (See figure 2)

Accuracy of humidity over temperature: See figure 3

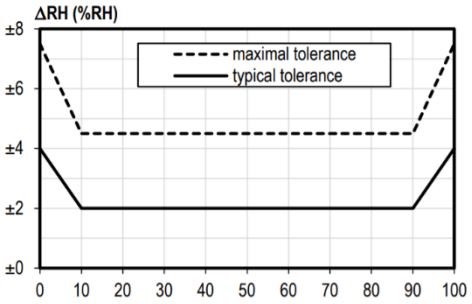


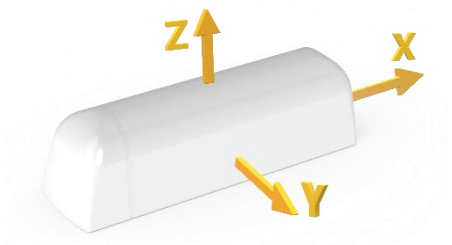
Figure 2

Accelerometer

Range: ± 2.0 g

Sensitivity: 16 mg/digit

Data rate: 10 Hz



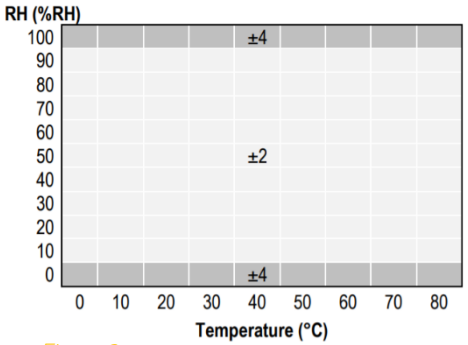
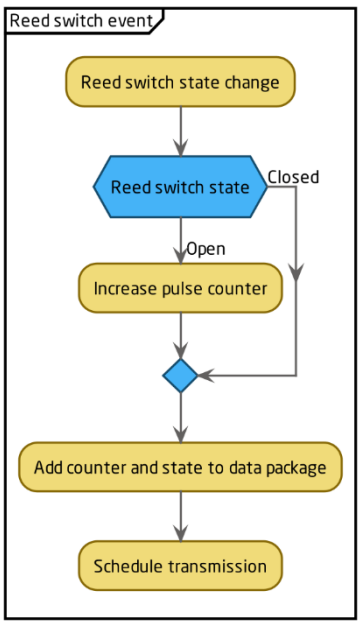


Figure 3

Door switch

The door switch consists of a reed switch on one side of the sensor. The maximum detection distance is 10 mm but may be affected by the material of the door (metal will reduce the range).



Water leak detection

The water leak detector consists of bottom-mounted probes which are continuously monitored by the sensor. A detection level is sent periodically, and an alarm is sent when water is detected.

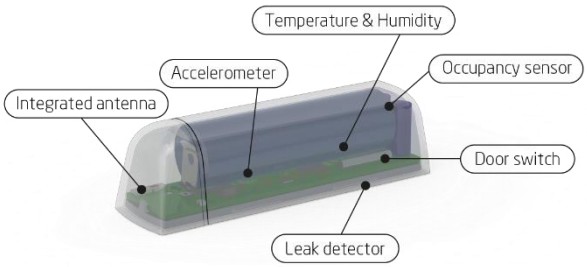


Figure 4 - EMS Features

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