

# EMS Series LoRa

## LoRaWAN Wireless Sensor

The **EMS Series LoRa** consists of subtle indoor sensors with different features and LoRaWAN® wireless connectivity. The sensor measures, depending on model, temperature, humidity, acceleration, door activity, occupancy and can also be used as a water leak detector.

The EMS series LoRa sensors are designed to be mounted on door frames, under desks, under dishwashers or in any other limited surface area. The sensors are equipped with NFC (Near Field Communication).



## Product features

- LoRaWAN Certified CM
- Temperature sensor
- Humidity sensor
- Motion sensor (PIR)
- Detects water leak
- Detects opening activity (reed switch)
- Monitors desk occupancy
- NFC for configuration
- Configuration over the air
- Discrete and minimalistic design

## Applications



Indoor environment measuring



Smart buildings



Workplace management



Room occupancy

## Device specifications

### Mechanical specifications

|                  |                          |
|------------------|--------------------------|
| Weight           | 10 g excluding battery / |
|                  | 32 g including battery   |
| Dimensions       | 21.2 x 74.9 x 20.8 mm    |
| Enclosure        | ABS UL94-V0 (White)      |
| Protection class | IP20                     |

### Operating conditions

|                     |                               |
|---------------------|-------------------------------|
| Temperature         | 0 to 50 °C                    |
| Humidity            | 0 to 85 % RH (non-condensing) |
| Operating Altitude  | 0 – 2000 m                    |
| Pollution Degree    | Degree 2                      |
| Usage Enviroment    | Indoor                        |
| Storage Temperature | -40 – 85 °C                   |

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**Device Power Supply**

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Battery Type          | 1 x 3.6V AA Lithium Battery                             |
| Expected Battery Life | <10 years (Depending on configurations and environment) |

**Radio / Wireless**

|                             |                                                                                |
|-----------------------------|--------------------------------------------------------------------------------|
| Wireless Technology         | LoRaWAN® 1.0.4, Regional Parameters RP002 – RP1.0.3                            |
| 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, IN865               |
| Link Budget                 | 137 dBm (SF7) to 151 dBm (SF12)                                                |
| RF Transmit Power           | 14 dBm / 20 dBm (Region specific)                                              |

**Device Logging Function**

|                      |                                                 |
|----------------------|-------------------------------------------------|
| Sampling Interval    | Configurable via NFC and downlink configuration |
| Data Upload Interval | Configurable via NFC and downlink configuration |

**Sensor Characteristics**

|                                    |                                                           |
|------------------------------------|-----------------------------------------------------------|
| Temperature Range                  | 0 to 50 °C                                                |
| Temperature Resolution             | 0.1 °C                                                    |
| Temperature Accuracy               | Accuracy: $\pm 0.2$ °C                                    |
| Humidity Range                     | 0 – 100 % RH                                              |
| Humidity Resolution                | 1 % RH                                                    |
| Humidity Accuracy                  | $\pm 2$ % RH at 25 °C                                     |
| Accelerometer Range                | $\pm 2$ g                                                 |
| Accelerometer Sensitivity          | 16 mg/count                                               |
| Accelerometer Data rate            | 10 Hz                                                     |
| Occupancy Detection Range          | 50 cm                                                     |
| Occupancy Field of view            | 60°                                                       |
| Reed Switch Magnet Detection Range | 2 cm max (edge of sensor casing to edge of magnet casing) |

#### Device Power Supply

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Battery Type          | 1 x 3.6V AA Lithium Batteries                           |
| Expected Battery Life | <10 years (Depending on configurations and environment) |

#### Radio / Wireless

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#### Sensor Characteristics

|                                    |                                                           |
|------------------------------------|-----------------------------------------------------------|
| Temperature Range                  | 0 to 50 °C                                                |
| Temperature Resolution             | 0.1 °C                                                    |
| Temperature Accuracy               | Accuracy: ±0.2 °C                                         |
| Humidity Range                     | 0 – 85 % RH                                               |
| Humidity Resolution                | 0.1 % RH                                                  |
| Humidity Accuracy                  | ± 2 % RH at 25 °C                                         |
| Accelerometer Range                | ± 2 g                                                     |
| Accelerometer Sensitivity          | 16 mg/count                                               |
| Accelerometer Data rate            | 10 Hz                                                     |
| Occupancy Detection Range          | 50 cm                                                     |
| Occupancy Field of view            | 60°                                                       |
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