

# Display Series

## Description

The ERS Display series of sensors are universal LoRaWAN® indoor climate sensors with a 2.1" E-paper display showing real-time sensor data. Depending on the model, the sensor measures temperature, humidity, light intensity, CO2 level, VOC level, sound level and detects motion. The ERS Display series are battery-powered devices and are designed to be wall-mounted. The sensors are equipped with NFC (Near Field Communication) for easy configuration with an NFC-enabled smartphone.



## Applications

- Indoor environment measuring
- Smart buildings
- Workplace management

## Product features

- LoRaWAN Certified <sup>CM</sup>
- 2.1 " E-paper display
- Temperature sensor
- Humidity sensor
- Light sensor
- Motion sensor (PIR)
- Occupancy
- CO2-sensor
- VOC-sensor
- Button
- NFC for configuration
- Configuration over the air
- Discrete and minimalistic design
- Traffic Light Indication

## Device Specifications

### Mechanical specifications

|                  |  |
|------------------|--|
| Weight           | 53 - 60 g excluding batteries<br>70 - 95 g including batteries |
| Dimensions       | 76.2 x 76.2 x 22.5 mm  |
| Enclosure        | PC + ABS   |
| 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 Environment   | Indoor                        |
| Storage Temperature | -40 – 85 °C                   |

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| Device Power Supply   |  |
|-----------------------|--|
| Battery Type          | 2 x 3.6V AA Lithium Batteries                                |
| Expected Battery Life | Up to 10 years (Depending on configurations and environment) |

| Radio / Wireless            |  |
|-----------------------------|--|
| Wireless Technology         | LoRaWAN® 1.0.4<br>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  | EU868, IN865, US915, AU915, AS923, HK923, KR923                                |
| Link Budget                 | 137 dBm (SF7) to 151 dBm (SF12)  |
| RF Transmit Power           | Max 14 dBm EIRP  |

| 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: ±0.2 °C  |
| Humidity Range         | 0 – 85 % RH  |
| Humidity Resolution    | 0.1 % RH   |
| Humidity Accuracy      | ± 2 % RH at 25 °C  |
| Light Range            | 4 – 2000 lx  |
| Light Resolution       | 1 lx   |
| Light Accuracy         | ± 10 lx  |
| CO2 Range              | 400-10000 ppm  |
| CO2 Resolution         | 1 ppm  |
| CO2 Accuracy           | 400-5000 ppm: ±30 ppm, ±3 % of reading (15-35 °C, 0-80 % RH)<br>5001-10000 ppm: ±10 % of reading (15-35 °C, 0-80 % RH) |
| Sound Range (Average)  | 31 – 75 dB SPL   |
| Sound Range (Peak)     | 59 – 100 dB SPL  |
| Sound Resolution       | 1 dB   |
| Sound Accuracy         | ± 5 dB   |
| VOC Range              | 0 – 60000 ppb  |
| VOC Resolution         | 0 ppb – 2008 ppb: 1 ppb<br>2008 ppb – 11110 ppb: 6 ppb<br>11110 ppb – 60000 ppb: 32 ppb                                |
| VOC Accuracy           | Typ. 15 % of measured value  |

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## User Interface

|             |   |
|-------------|---|
| LED         | Functionality configurable via NFC and downlink configuration |
| App Support | Sensor Settings (Using NFC)                                   |

## Conformity

|      |                       |
|------|-----------------------|
| IC   | ID: 26904-ERSD1       |
| FCC  | ID: 2ANX3-ERSD1       |
| EMC  | 2014/30/EU            |
| RED  | 2014/53/EU            |
| LVD  | 2014/35/EU            |
| RoHS | 2011/65/EU + 2015/863 |
| LoRa | 1.0.4                 |

## Country of origin

|                                |                           |
|--------------------------------|---------------------------|
| Product & Firmware Development | Sweden                    |
| Plastic casing                 | Sweden                    |
| Production                     | Sweden, Latvia, Lithuania |

## Ordering Information

| Art. No.  | Description   |
|-----------|---|
| ETHd10    | Temperature & Humidity sensor <sup>Display</sup>        |
| EIAQd10   | Indoor Air Quality sensor <sup>Display</sup>            |
| ETHdb10   | Temperature & Humidity sensor <sup>Display Button</sup> |
| ETHdp10   | Temperature & Humidity sensor <sup>Display Pro</sup>    |
| EIAQdp10  | Indoor Air Quality sensor <sup>Display Pro</sup>        |
| ESdp10    | Sound level sensor <sup>Display Pro</sup>               |
| EVdp10    | VOC sensor <sup>Display Pro</sup>                       |
| EIAQSdp10 | Indoor Air Quality & VOC sensor <sup>Display Pro</sup>  |
| ER14505   | AA 3.6V Lithium Battery ER14505                         |

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## Product Information

| Function             | Art | ETHd10 | EIAQd10 | ETHdb10 | ETHdp10 | EIAQdp10 | ESdp10 | EVdp10 | EIAQSdp10 |
|----------------------|-----|--------|---------|---------|---------|----------|--------|--------|-----------|
| 2.1" E-paper display |     | x      | x       | x       | x       | x        | x      | x      | x         |
| Temperature          |     | x      | x       | x       | x       | x        | x      | x      | x         |
| Humidity             |     | x      | x       | x       | x       | x        | x      | x      | x         |
| Motion (PIR)         |     |        |         |         | x       | x        | x      | x      | x         |
| CO2                  |     |        | x       |         |         | x        |        |        | x         |
| Sound                |     |        |         |         |         |          | x      |        | x         |
| VOC                  |     |        |         |         |         |          |        | x      |           |
| Button               |     |        |         | x       |         |          |        |        |           |
| Traffic Light        |     |        |         |         | x       | x        | x      | x      | x         |
| NFC                  |     | x      | x       | x       | x       | x        | x      | x      | x         |

## Document Revision History

| Version | Description   | Date       |
|---------|---------------|------------|
| 1.0     | First versoin | 2024-09-06 |