

# Datasheet enerSENSE Industry

We make sensing in buildings powerful, scalable & sustainable

Smart building sensors powered by indoor light



enerSENSE wireless industry sensor for temperature and humidity monitoring. Power is supplied by our proprietary indoor photovoltaic technology.

Easy installation without battery replacement. LoRaWAN communication for simple and scalable installations.

## Applications

- Storage and production conditions
- Energy efficiency
- Workplace safety

## Use cases

- Monitoring of temperature and humidity for logistics and production facilities
- HACCP reporting (incl. offset functionality for calibrations)
- Improving energy efficient operations of industry buildings

## Powered by indoor light - no battery replacement or wiring

- Powered by indoor light through enerthing's proprietary photovoltaic technology
- Smart power management on device
- Superior performance to battery-powered sensors

## Sustainable

- Long product lifetime & elimination of maintenance processes
- Reduction of battery- and electronics waste
- Circular product design

## Product features

| Included sensors |
|------------------|
| Temperature      |
| Humidity         |
| Light            |

| User interfaces |
|-----------------|
| LED (RGB)       |

| Device control             |
|----------------------------|
| NFC configuration          |
| Over the air configuration |
| Firmware up-date via app   |

## Specifications

| 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 end-device                                                                                                                                                                                                  |                                                |
| Supported LoRaWAN® features        | OTAA, ADR, adaptive channel setup                                                                                                                                                                                   |                                                |
| Supportet LoRaWAN® regions         | EU863 – 870                                                                                                                                                                                                         |                                                |
| RF transmit power                  | +14 dBm                                                                                                                                                                                                             |                                                |
| Link budget                        | 137 dB (SF7) to 151 dB (SF12)                                                                                                                                                                                       |                                                |
| Energy Supply                      |                                                                                                                                                                                                                     |                                                |
| Photovoltaic module                | Enerthing’s highly efficient indoor photovoltaic technology is optimized for artificial (LED or fluorescent) or ambient light indoors. Inhouse development and production of our proprietary technology in Germany. |                                                |
| Minimum illumination conditions    | Depending on device settings and environment < 100 lx possible                                                                                                                                                      |                                                |
| Secondary battery (accumulator)    | Storage 700 mAh rechargeable secondary battery                                                                                                                                                                      |                                                |
| Energy management circuit          | Charge- and power management circuit with monitoring of battery voltage, PV module voltage and PV harvesting current                                                                                                |                                                |
| Energy management software         | Energy management incorporated in embedded software on the device                                                                                                                                                   |                                                |
| Sensor Data logging & transmission |                                                                                                                                                                                                                     |                                                |
| Sampling interval                  | Configurable via NFC and downlink                                                                                                                                                                                   |                                                |
| Data transmission interval         | Configurable via NFC and downlink                                                                                                                                                                                   |                                                |
| Sensors                            | Feature                                                                                                                                                                                                             | Range                                          |
| Temperature                        | Measurement range                                                                                                                                                                                                   | -40° C to 85° C<br>0° C to 65° C full accuracy |
|                                    | Accuracy                                                                                                                                                                                                            | +/- 0.5° C                                     |
| Humidity                           | Measurement range                                                                                                                                                                                                   | 10 % to 90 % RH                                |
|                                    | Accuracy                                                                                                                                                                                                            | +/- 3 % @ 20 % to 80 % RH                      |
|                                    | Accuracy                                                                                                                                                                                                            | 1,0 hPa @ 0° C to 65° C                        |
| Light                              | Measurement range                                                                                                                                                                                                   | 0 - 83 k lux                                   |
|                                    | Accuracy                                                                                                                                                                                                            | 0,01 lx                                        |
| Interface & Feedback               |                                                                                                                                                                                                                     |                                                |
| LEDs                               | RGB                                                                                                                                                                                                                 |                                                |
| NFC interface                      | For reading and changing device settings                                                                                                                                                                            |                                                |

## Specifications

| Mechanical specifications |                                                          |
|---------------------------|----------------------------------------------------------|
| Colour                    | Black                                                    |
| Dimensions                | 341 mm x 112 mm x 9 mm (H x W x D)                       |
| Protection                | IP65                                                     |
| Enclosure material        | PMMA                                                     |
| Weight                    | 379 g                                                    |
| Operating conditions      |                                                          |
| Temperature               | 0° C to 50° C                                            |
| Humidity                  | 0 to 85 % RH (no condensation)                           |
| General                   |                                                          |
| Storage temperature       | -20° C to +25° C recommended, -20° C to +60° C (1 month) |
| Expected lifetime         | > 15 years                                               |
| Made in                   | Germany                                                  |

### Illumination condition indoors and available energy for powering your sensing device

We have engineered the enerSENSE device to harvest sufficient light for a variety of sensing applications under the consideration of typical illumination conditions in industry, logistics building and office spaces.

### High quality data by Smart Power Management

We have implemented a smart power management on the device as well as on cloud level (optional). While the sensor is designed to provide the performance required in the specific application, more energy provided by better illumination conditions can also be exploited by generating better data. This can be more sensor data, higher resolution of said data, higher signal strengths or the ability for more frequent over the air changes of device parameters.

### Customization

Applications often result in specific requirements.

We are open to customize our solution to your needs – just contact us!

### Installation & commissioning

Device installation & commissioning can be done by the customers. For documentation please visit [www.enerthing.com/support](http://www.enerthing.com/support). For further assistance feel free to contact us at [support@enerthing.com](mailto:support@enerthing.com).

### Disposal



According to the European WEEE directive, electrical and electronic equipment must not be disposed with consumers waste. Its components must be recycled or disposed apart from each other. Otherwise contaminative and hazardous substances can pollute our environment. You as a consumer are committed by law to dispose electrical and electronic devices to the producer, the dealer, or public collecting points at the end of the devices lifetime for free. Particulars are regulated in national right. The symbol on the product, in the user's manual, or at the packaging alludes to these terms. With this kind of waste separation, application and waste disposal of used devices you achieve an important share to environmental protection.

### Declaration of conformity

Hereby the enerthing GmbH declares that enerSENSE sensors complies with the essential requirements and other relevant provisions of Directive 2014/30/EU and 2014/53/EU.