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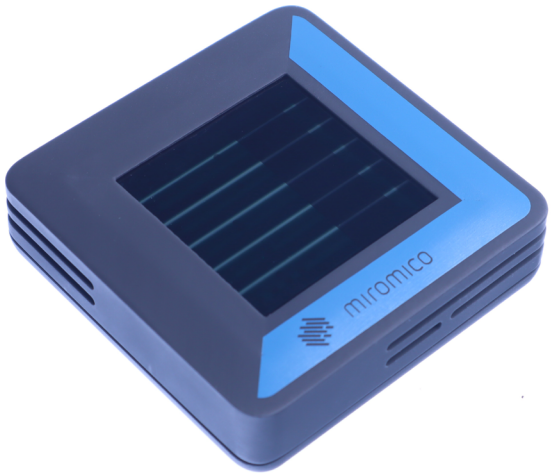
miro
Insight Lux

Versatile battery-free light powered LoRaWAN® indoor room monitor



Description

The **miro** **Insight Lux** is the next generation of our flagship LoRaWAN® Indoor Room Monitor, taking smart buildings and building management to the next level. The **miro** **Insight Lux** features state-of-the-art OPV technology that can operate battery-free even in low-light indoor conditions, making it ideal for energy self-sufficient systems.

The device is equipped with numerous sensors that can measure various environmental and safety-related conditions. These include CO_2, temperature, humidity, volatile organic compounds, and magnetic fields. The device can provide real-time feedback if indoor air quality exceeds a certain threshold. Additionally, it can also detect whether doors or windows are open, which is required for safety-related applications.

The device is fully LoRaWAN® compatible and can transmit data over several kilometres.

Measurement intervals and numbers of locally accumulated measurement points are fully configurable over-the-air (OTA).

Features

- EU868 LoRaWAN® compliant class A device
- Fully configurable over-the-air (OTA)
- Integrated LoRa® antenna
- Light powered
- Lasts up to 2 months in the dark
- Various mounting options

Sensors

- Temperature
- Humidity
- Magnetic (door/window)
- CO_2
- VOC (on request)
- Air pressure (on request)

Applications

- **Occupancy**
  Have rooms been used?
- **Work efficiency**
  How is the air quality?
- **Energy efficiency**
  Is the HVAC running efficiently?
- **Security**
  Doors/windows open outside office hours?

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Document Information

About

File name	Document type	Date	Revision
DS-miro-Insight-Lux	Datasheet	2024/02/13	Release

Revision History

Date	Release	Changes
2024/02/13	1.0	Initial release

Table of Content

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Technical Specifications

Mechanical Specifications

Weight	90 g
Dimensions	86 × 86 × 26 mm
Enclosure	Plastic, ABS UL94-V0, black

Operating Conditions

Temperature	0 – 40 °C
Humidity	1 – 85% RH, non-condensing

Device Power Supply

Power supply	Light powered

Battery-free Operation

Storage type	30F lithium-ion capacitor
Operation time w/o light source	Up to 2 months*
Light requirements	300 lux (typical office environment)

*1 LoRa® SF7 transmission per hour, capacitor fully charged

Note: Device may take multiple days to start operating after prolonged period in the dark

Operation Time Without Any Light Source

The active operation time of the device without any light source is dependent on the frequency of transmissions, as well as the output power of said transmissions. The table below illustrates this effect. Keep in mind the light levels of a typical office suffice to power the device indefinitely. On request we can calculate the expected battery life for a specific application. If you have the need for larger energy capacity, get in touch.

LoRaWAN® Spreading Factor**	2 Tr/day	1 Tr/hour	4 Tr/hour
SF7	54 days	40 days	22 days
SF10	47 days	17 days	6 days
SF12	28 days	4 days	1 day

**This table is not part of Miromico component specification and Miromico does not warrant its accuracy or completeness.

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Radio / Wireless

Wireless technology	LoRaWAN® 1.0.3, 868 MHz
LoRaWAN® device type	Class A
Supported LoRaWAN® features	OTAA, ADR, Adaptive Channel Setup
Maximum RX sensitivity	-137 dBm
RF transmission power	14 dBm

Certifications

CE	Pending
LoRaWAN® certification	Pending

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Sensor Specifications

Temperature	
Range	-40 – 90 °C
Resolution	0.01 °C
Accuracy (typ.)	± 0.2 °C

Humidity	
Range	0 – 100 % rH
Resolution	0.5 % rH
Accuracy (typ.)	± 2 % rH

CO_2	
Range	400 – 5’000 ppm
Resolution	1 ppm
Accuracy (typ.)	± 30 ppm ± 3 % of reading

Magnetic Sensor	
Detection threshold	Max. ±4.8 mT
Magnetic response	Omnipolar

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Mechanical Dimensions

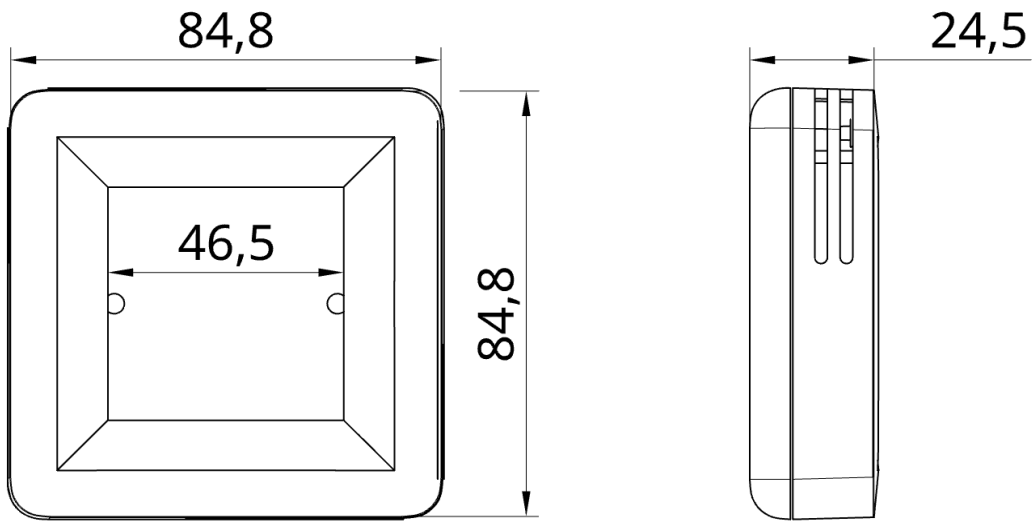

Figure 1: Mechanical dimensions in mm

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Additional Documentation

Additional Ressources

Product information page	miromico.ch/miro-insight-lux
Technical documentation	docs.miromico.ch/iot-devices

Variants

Product ID	Description
IRMLX-LW-EU868	miro Insight Lux, battery-free RoomSensor, EU868, rH/T, hall
IRMLX-LW-EU868-CO2	miro Insight Lux, battery-free RoomSensor, EU868, rH/T, CO_2, hall

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Keep in Touch

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