

# miro Insight

## Indoor CO<sub>2</sub> & air quality sensor

Versatile LoRa<sup>®</sup>/LoRaWAN<sup>®</sup> indoor air quality sensor device to monitor different environment conditions



### Description

**miro Insight** is an advanced indoor air quality sensor device featuring various sensors to monitor environmental conditions such as temperature, relative humidity, CO<sub>2</sub>, air quality, and pressure. It is battery powered with a lifetime of up to 10 years.

The device is fully LoRaWAN<sup>®</sup> compatible and can transmit data over 10 km or even more, depending on the environment and network installation.

Its design makes it the perfect choice for mounting on walls.

### Features

- ▶ LoRaWAN<sup>®</sup> compliant class A device
- ▶ 868 / 915 MHz or 2.4 GHz LoRa
- ▶ Integrated LoRa<sup>®</sup> antenna
- ▶ Temperature / humidity sensor
- ▶ Optional sensors: CO<sub>2</sub>, ambient pressure, VOC, hall sensor
- ▶ One or two 3.6V lithium batteries
- ▶ Up to 10 years of battery lifetime
- ▶ Various mounting options
- ▶ Other regions and wireless stacks like BLE, ZigBee, EnOcean, ZWAVE on request

### Applications

- ▶ Indoor air quality monitoring
- ▶ Occupancy detection
- ▶ Building automation

## Document Information

### About

File name	Document type	Date	Revision
DS miro Insight	Datasheet	2022-03-02	1.5

### Revision history

Date	Release	Changes
2021/03/02	1.0	Initial Release
2021/03/14	1.1	Added new 2.4 GHz region 2G4
2021/09/07	1.2	Added FCC IDs
2021/09/15	1.3	Added VOC info
2022/03/01	1.4	New design, image and diagrams
2022/03/30	1.5	Product ID modified

## Table of content

Document Information	2
Functional Description	3
Technical Specifications	4
Sensor Specifications	5
Diagrams	6
Mechanical Dimensions	6
Additional Documentation	7
Device Options	7
Keep in touch	8

## Functional Description

**miro Insight** is a versatile sensor device to monitor room temperature and indoor air quality. The device is available with different selections of sensors installed. The sensor device is fully over-the-air configurable and can be set to different measurement intervals and numbers of locally accumulated measurement points. miro Insight uses low power wide area LoRaWAN<sup>®</sup> network to send its data over a long distance with battery a life of more than ten years possible. miro Insight is based on Miromico's FMLR family of wireless modules and can therefore provide with any low-power wireless technology like LoRa<sup>®</sup>, (G)FSK, BLE, Zig-Bee, EnOcean, ZWAVE and more on request.

## Technical Specifications

### Mechanical specifications

Weight	90 g incl. one AA battery
Dimensions	86 × 86 × 26 mm
Enclosure	Plastic, ABS UL94-V0, white

### Operating conditions

Temperature	-20 – +80 °C
Humidity	0 – 95% RH, non-condensing

### Device power supply

Battery type	LiSOCl <sub>2</sub> , 3.6V, 1 or 2, size A or AA
Expected battery lifetime	Up to 10 years

### Radio / wireless

Wireless technology	LoRaWAN® 1.0.3, 868 MHz / 915 MHz, 2.4 GHz
LoRaWAN® device type	Class A
Supported LoRaWAN® features	OTAA, ADR, Adaptive Channel Setup
Maximum RX sensitivity	-137 dBm
RF transmission power	14 dBm / 20 dBm (depending on region)

### Certifications

CE	RED 2014/53/EU
FCC	Contains FCC ID 2AUQE14DJC or 2AUQEPC1Y4

## Sensor Specifications

Temperature	
Range	-40 – 90 °C
Resolution	0.01 °C
Accuracy (typ.)	± 0.2 °C, <a href="#">see Figure 1, Page 6</a>

Humidity	
Range	0 – 100 % RH
Resolution	0.5 % RH
Accuracy (typ.)	± 2 % RH, <a href="#">see Figure 2, Page 6</a>

Ambient pressure	
Range	300 – 1100 hPa
Resolution	0.01 hPa
Accuracy (typ.)	± 1 hPa

CO <sub>2</sub>	
Range	400 – 5'000 ppm
Resolution	1 ppm
Accuracy (typ.)	± 30 ppm ± 3 % of reading

VOC (AIR QUALITY)	
Range	0 – 500
Resolution	1
Accuracy (typ.)	± 15 % ± 1 sensor to sensor deviation

MAGNETIC SENSOR	
Detection threshold	Max. ±4.8 mT
Magnetic response	Omnipolar
Reset activation (typ.)	After 7.5 sec

## Diagrams

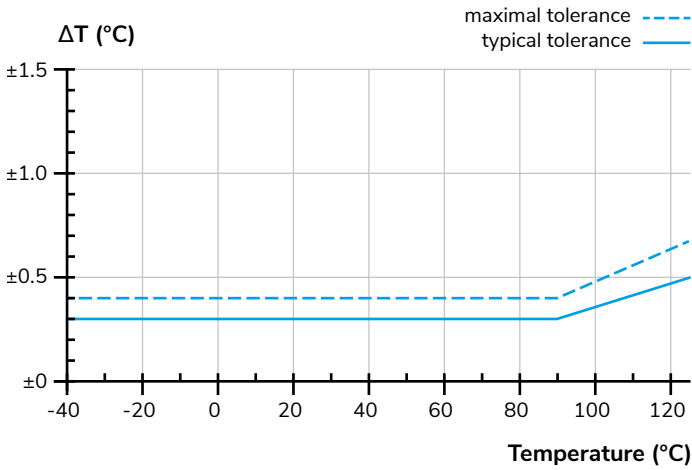


Figure 1: Temperatur Sensor

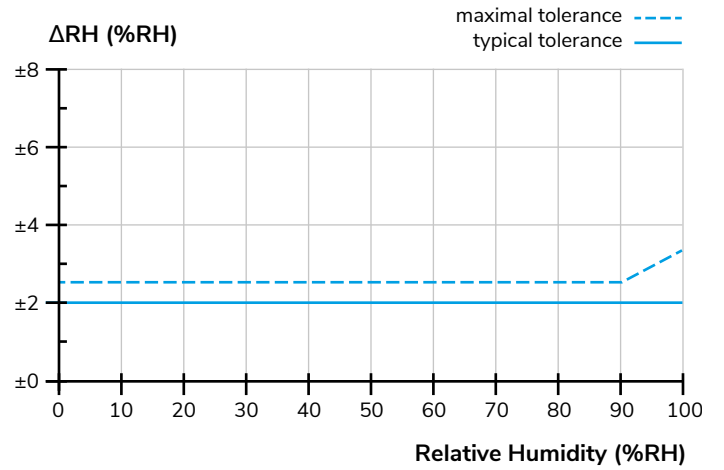


Figure 2: Humidity Sensor

## Mechanical Dimensions

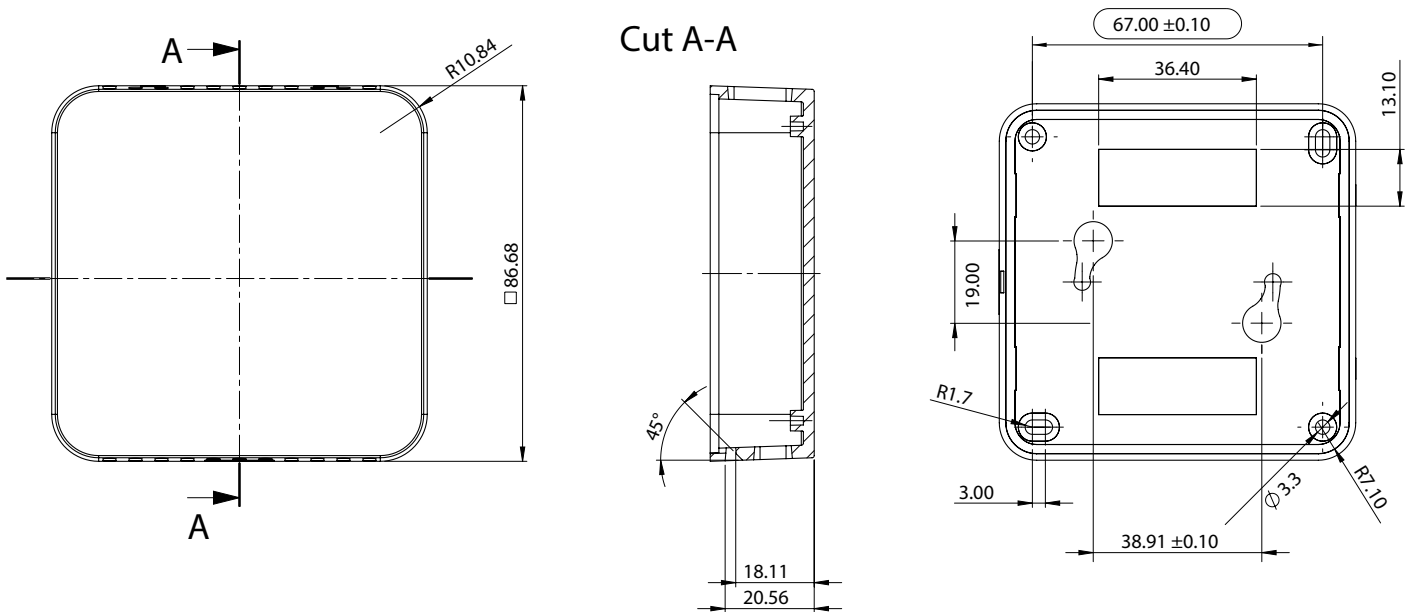


Figure 3: Mechanical dimensions in mm

## Additional Documentation

### Additional Resources

Product information page	<a href="https://miromico.ch/miro-insight">miromico.ch/miro-insight</a>
Technical documentation	<a href="https://docs.miromico.ch/datasheets/devices.html">docs.miromico.ch/datasheets/devices.html</a>

## Device Options

Product ID	LoRaWAN® region						Options					
	EU868	US915	AS923	AU915	IN865	2G4**	Temperature	Humidity	CO <sub>2</sub>	VOC	Hall	Pressure
IOT-IAQ-LW/*	✓	✓	✓	✓	✓	✓	✓	✓			✓	
IOT-IAQ-LW/*-CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
IOT-IAQ-LW/*-CO2-AIR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

\* LoRaWAN® region (e.g. EU868)

\*\* 2.4 GHz region supported by selected network providers (e.g. Lorient, TTI)

## Keep in touch

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