miro Insight

Indoor CO_2 & air quality sensor

Versatile LoRa®/LoRaWAN®
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_2, air quality, and pressure. It is battery powered with a lifetime of up to 10 years.

The device is fully LoRaWAN® 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® compliant class A device
- 868 / 915 MHz or 2.4 GHz LoRa
- Integrated LoRa® antenna
- Temperature / humidity sensor
- Optional sensors: CO_2, 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

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 is uses low power wide area LoRaWAN® 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®, (G)FSK, BLE, ZigBee, EnOcean, ZWAVE and more on request.

Technical Specifications

Mechanical speciafications	
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	LiSOCl2, 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, see Figure 1, Page 6

Humidity	
Range	0 – 100 % RH
Resolution	0.5 % RH
Accuracy (typ.)	± 2 % RH, see Figure 2, Page 6

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

CO_2	
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

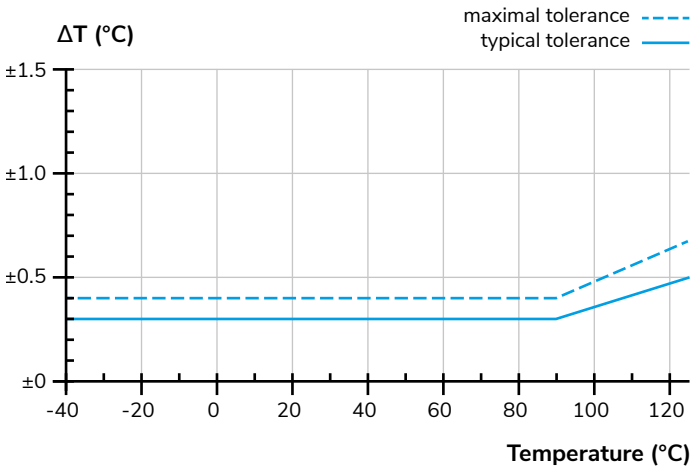

Figure 1: *Temperatur Sensor*

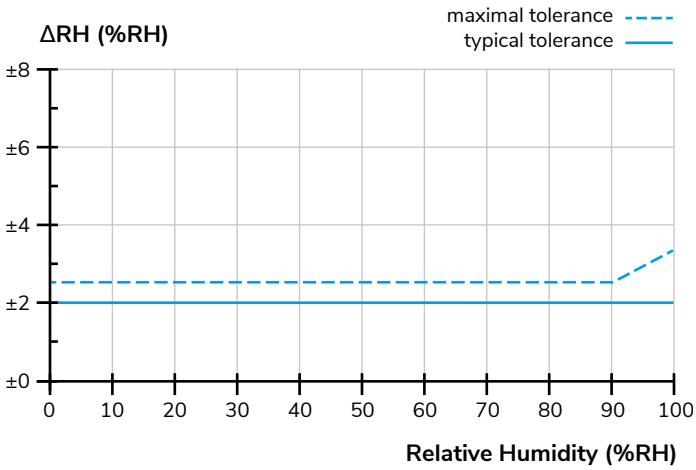

Figure 2: *Humidity Sensor*

Mechanical Dimensions

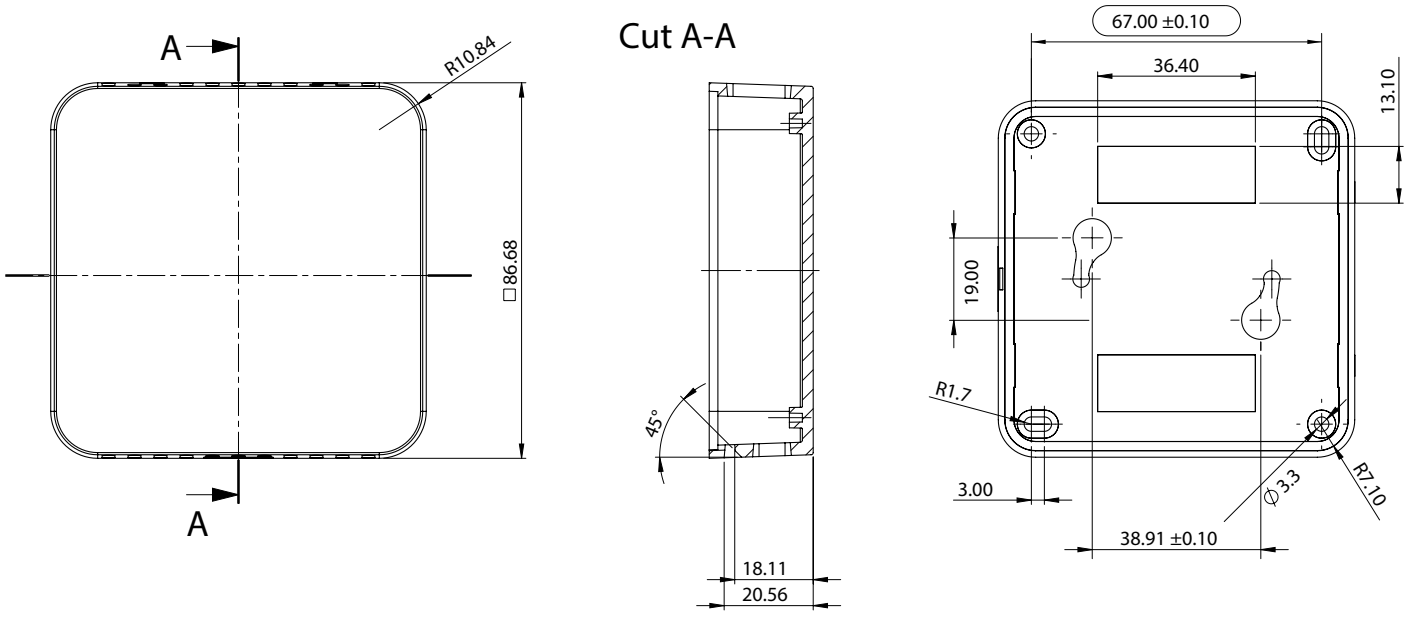

Figure 3: *Mechanical dimensions in mm*

Additional Documentation

Additional Ressources

Product information page	miromico.ch/miro-insight
Technical documentation	docs.miromico.ch/datasheets/devices.html

Device Options

Product ID	LoRaWAN® region						Options					
	EU868	US915	AS923	AU915	IN865	2G4**	Temperature	Humidity	CO_2	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. Loriot, TTI)

Keep in touch

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