

# LANSEN

CO<sub>2</sub>/TEMP/HUMIDITY WITH OPTIONAL INDICATIONS

LAN-MIOTY-E2-CO2-(I)

## DEVICE

The combined true CO<sub>2</sub>, ambient temperature and humidity device from Lansen is a plug-and-play transmitter. Great care has been taken to design a sleek, good looking device with high security and performance. The device has two antennas for maximum range in both vertical and horizontal directions.

## PERFORMANCE

The battery level is continuously monitored and a low level warning is issued when battery is nearing depletion. The CO<sub>2</sub> sensor itself is also monitored and a warning is issued if it is not working.

## WARNING / ALARM INDICATION (-I version)

This CO<sub>2</sub> device that ends with -I (stands for indication) comes with visual and acoustic warning/alarm to alert on high CO<sub>2</sub> concentration. The sensor will in this case use a buzzer and high brightness LED to indicate that the CO<sub>2</sub> reached the Warning or Alarm level. This indication can then be used to alert someone that it is time to ventilate the room, e.g., open windows.

Since a high concentration of CO<sub>2</sub> correlates to a higher virus spread and causing concentration problems, early warnings and alarms provide both a safer and more efficient workspace.

## TEMPERATURE SENSOR

The on-board temperature sensor is highly accurate with typical accuracy  $\pm 0,2^{\circ}\text{C}$ .

## HUMIDITY SENSOR

The on-board humidity sensor is highly accurate in the entire temperature range, with typical accuracy  $\pm 2\% \text{RH}$ .

## CO<sub>2</sub> SENSOR

The on-board NDIR CO<sub>2</sub> sensor with diffusion technology is used to measure the absolute CO<sub>2</sub> level. An intelligent calibration routine calibrate the device at startup and then every 20 days during the entire lifetime to ensure good readings. The calibration is done using the lowest reading in the 20 day interval and using this reading as the 400 ppm baseline for the next period. This works on the fact that the CO<sub>2</sub> level move towards 400 ppm (clean air) when the building is not occupied for a period. The first accurate readings can typical be expected after 3-9 days after installation.

## MEASUREMENTS

The CO<sub>2</sub>, temperature, and humidity are sampled on regular interval using the mioty protocol. This makes the sensor ideal for integration in data collecting systems, smart cities or for controlling ventilation. The data from the device is also protected using the AES128 encryption compliant with mioty standard.

## FIRMWARE

MODES mioty ETSI TS-103-357  
ENCRYPTION Network: AES128 encryption

## INTERVAL

SAMPLE 4 min  
TRANSMISSION 4 min

## MIOTY DATA

SENSOR DATA Current & previous measurement of temperature, humidity, and CO<sub>2</sub>  
BATTERY Battery voltage & low battery warning (2,6V)  
NOT ACTIVATED If device has not been activated yet.  
SENSOR ERROR CO<sub>2</sub> sensor not working.  
CALIBRATION Calibration not performed yet, time to next calibration, and last calibration value used.

## LIFETIME

LIFESPAN 10 years expected\*, standard configuration and recommended operating temperature.



\*The expected battery lifetime stated is based on simulations and true measurements at 25°C and is valid to the best of our ability but not a guarantee. For the LAN-WMBUS-E2-CO2-I (with indication) the lifetime is also depend on the number high CO<sub>2</sub> levels that are detected. The calculations and measurements can be sent upon request for your reference.

# LANSEN

## TECHNICAL DATASHEET LAN-MIOTY-E2 FAMILY

### GENERAL INFORMATION

STANDARDS	2014/53/EU (RED)
MATERIAL	White, ABS
SIZE	80 x 80 x 25 mm

### OPERATING CONDITIONS

CO <sub>2</sub> TEMP	0° to +55° (-20° to +55° on request)
CO <sub>2</sub> PRESSURE	950 mbar to 1050 mbar (other range on request)
RADIO TRANSMITTER	Max: -30° to +85°. Recommended +5° to +50°
RELATIVE HUMIDITY	Non-condensing

### POWER

POWER SUPPLY	Replaceable 2 x ER18505 3.6V Li-SOCI2 battery pack.
CAPACITY	7600-8200 mA
VOLTAGE	2.2 to 3.6V
RADIO	14 dBm (25mW) output power to antennas.
ANTENNAS	2 antennas for true differential transmission. ERP typical: 9.5 dbm (9mW)

### DEVICES

Name	Temp	Humidity	CO <sub>2</sub>	Pressure	Sound level	Ambient light (LUX)	Optional mains powered 5V	Battery powered	LED and sound indication on CO <sub>2</sub> level
LAN-MIOTY-E2-CO2	X	X	X					X	
LAN-MIOTY-E2-CO2-I	X	X	X				X	X	X
LAN-MIOTY-E2-CO2-S	X	X	X		X		X	X	
LAN-MIOTY-E2-CO2-S-I	X	X	X		X		X	X	X
LAN-MIOTY-E2-AEQ (coming product)	X	X	X	X	X	X	X	X	
LAN-MIOTY-E2-AEQ-I (coming product)	X	X	X	X	X	X	X	X	X

### SENSORS

Type	Specification	TYP ACC
TEMPERATURE	-40° to +85°	±0,2° at +5° to +60° ±0,5° at -20° to +85°
HUMIDITY	0 - 100 %RH	±2 %RH at 20-80 %RH. ±3 %RH at 10-90 %RH ±3,5 %RH at 0-100 %RH
CO <sub>2</sub>	0-5000 ppm	±(50 ppm + 3% ) after calibration
LUX (preliminary)	0.01 - 83000.00 Lux at the same frequency as the human eye.	4%
PRESSURE	20 - 110 kPa absolute pressure	0,4 kPa
SOUND LEVEL (preliminary)	53 - 90 dBa at 850 HZ (preliminary)	To be decided

### INDICATIONS LED AND SOUND

AIR QUALITY	CO <sub>2</sub> level ppm	LED color	Led indication on new CO <sub>2</sub> level	Sound indication on new CO <sub>2</sub> level
BAD	> 2000	RED	Bad level reached: Flashes every 2 seconds for 3 minutes, then every minute.	Bad level reached: Will beep total 15 times every 2 seconds.
MEDIOCRE	1000-2000	YELLOW	Mediocre level reached: Flashes every 2 seconds for 3 minutes, then every minute.	Mediocre level reached: Will beep total 15 times every 2 seconds.
OK	< 1000	GREEN	Ok level reached: Flashes every 30 seconds for 10 minutes, then every 2 minutes.	None