

### 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 2 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 is also monitored and a warning is issued if it is not working. The device also keeps count on the total running time since first start and powerup.

### WARNING / ALARM INDICATION

The CO<sub>2</sub> also comes in one version with visual and acoustic warning/alarm to alert on high CO<sub>2</sub> concentration. The sensor will in this case using a buzzer and high brightness LED indicate that the CO<sub>2</sub> reached the Warning or Alarm level. This indication can then be used to alert that is time to ventilate the room (open windows) in order to have a safe environment. The CO<sub>2</sub> level correlates to the amount of virus and thus it can be used to provide a safer workplace.

### FIRMWARE

MODES	C1-A/B, T1 or S1 (selectable on order)
SAMPLE INTERVAL	5 minutes CO2 & Sound 2,5 minutes Humidity, Temperature, Light, Pressure
TRANSSION INT.	2,5 minutes
ENCRYPTION	AES128 encryption OMS mode 5. Profile A.
MBUS DATA	Instant, Average hour, Average 24 hours.

### STANDARD

T1 Mode, Encryption ON.  
Transmission intervall 2,5 minutes,

### WARNINGS

BATTERY	Low battery.
SENSOR ERROR	CO2 sensor not working
CALIBRATION	Calibration not completed yet

### LIFESPAN

LAN-WMBUS-E2-EAQ 14 years expected\*  
LAN-WMBUS-E2-EAQ-I 10 years expected\*

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

### DEVICE

LAN-WMBUS-E2-EAQ (coming product)  
LAN-WMBUS-E2-EAQ-I (coming product)

### TEMPERATURE SENSOR

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

### HUMIDITY SENSOR

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

### SOUND SENSOR

The sound level is measured by the onboard microphone and presented in a dBa scale.

### AMBIENT LIGHT

The ambient light is measured in LUX and can be used to indicate if lamp is active.

### PRESSURE

The pressure is measured and can be used to indicate the pressure in the room. Can be a help in controlling ventilation.

### CO2 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 during the entire lifetime. The sensor calibrates every 20 days to ensure good readings. The calibration is done using the lowest average hour reading in the interval. This reading is used 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 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 parameters are sampled every 2 or 4 minutes and sent synchronous using the Wireless MBUS protocol as defined by OMS. This makes the sensor ideal for integration in data collecting systems, drive by solutions or for controlling ventilation. The data from the device could is also protected using the AES128 encryption compliant with OMS standard.



Specifications in this document are subject to change without notice

### GENERAL INFORMATION

STANDARDS	2014/53/EU (RED), EN 13757-3/4:2013, OMS 4.0.2
MATERIAL	White, ABS

### 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
SIZE (W x H x D)	80 x 80 x 25 mm

### POWER

POWER SUPPLY	2 x ER18505 3.6V Li-SOCI2 battery pack.
CAPACITY	7600-8200 mA
VOLTAGE	2.6 to 3.6V
RADIO	14 dBm (25mW) output power to antennas.
ANTENNAS	2 antennas for true differential transmission.

### DEVICES

Name	Temp	Humidity	CO <sub>2</sub>	Pres- sure	Sound level	Ambient light (LUX)	Optional mains powered 5V	Battery powered	LED and sound indica- tion on CO <sub>2</sub> level
LAN-WMBUS-E-CO2	X	X	X					X	
LAN-WMBUS-E2-CO2 (coming product)	X	X	X					X	
LAN-WMBUS-E2-CO2-I	X	X	X				X	X	X
LAN-WMBUS-E2-CO2-S	X	X	X		X		X	X	
LAN-WMBUS-E2-CO2-S-I	X	X	X		X		X	X	X
LAN-WMBUS-E2-AEQ (coming product)	X	X	X	X	X	X	X	X	
LAN-WMBUS-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 even better on request.
LUX. prel	0,01 Lux to 83k Lux at same freq as the human eye.	4%
PRESSURE	20 kPa to 110 kPa absolute pressure	0,4 kPa
SOUND LEVEL prel.	40 dBA to 90 dBA at 850 HZ prel.	tdb.

### 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 reach: Will flash 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: Will flash 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: Will flash every 30 seconds for 10 minutes then every 2 minutes.	None

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