LANSEN

LAN-WMBUS-E2-CO2-(I)

CO2/TEMP/HUMIDITY WITH OPTIONAL INDICATIONS

DEVICE

The combined true CO_2, 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_2 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 (-I)

The CO_2 devices that ends with -I (stands for indication) comes with visual and acoustic warning/alarm to alert on high CO_2 concentration. The sensor will in this case use a buzzer and high brightness LED to indicate that the CO_2 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., by opening a window.

Since a high concentration of CO_2 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 $\pm 0.2^0$.

HUMIDITY SENSOR

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

CO2 SENSOR

The on-board NDIR CO_2 sensor with diffusion technology is used to measure the absolute CO_2 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_2 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 parameters are sampled every 2 minutes (temperature and humidity) or 4 minutes (CO_2) and sent synchronous using the wireless M-Bus 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 is also protected using the AES128 encryption compliant with OMS standard.

FIRMWARE

MODES	C1-A/B or T1
SEND INTERVAL	60s - 1 hour (selectable on order)
SAMPLE INTERVAL	
CO_2	Twice* as long as send interval (default 4 min)
Temperature	Same as send interval (default 2 min)
Humidity	Same as send interval (default 2 min)
ENCRYPTION	AES128 encryption OMS mode 5. Profile A.
STANDARD	T1-mode, transmission 2 minutes, encryption ON, unique key.

WARNINGS

BATTERY	Low battery
SENSOR ERROR	CO_2 sensor not working
CALIBRATION	Calibration not completed yet

LIFESPAN

LAN-WMBUS-E2-CO2	14 years** typical, standard configuration and operating temperature
LAN-WMBUS-E2-CO2-I	10 years** typical, standard configuration and operating temperature

DEVICE

LAN-WMBUS-E2-CO2
LAN-WMBUS-E2-CO2-I

* If send interval is less than two minutes then everything is sampled with the same interval as send interval.

** 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. The calculations and measurements can be sent upon request for your reference.

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LANSEN

TECHNICAL DATASHEET LAN-WMBUS-E2 FAMILY

GENERAL INFORMATION

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

OPERATING CONDITIONS

CO_2 TEMP	0°C to +55°C (-20°C to +55°C on request)
CO_2 PRESSURE	950 mbar to 1050 mbar (other range on request)
RADIO TRANSMITTER	Max: -30°C to +85°C, recommended +5°C to +50°C
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-SOCl2 battery pack.
CAPACITY	7600-8200 mA
VOLTAGE	2.6 to 3.6V
RADIO	14 dBM (25mW) output power to antennas. ERP typical: 9.5 dBm (9 mW)
ANTENNAS	2 antennas for true differential transmission.

DEVICES

Name	Temp	Humidity	CO_2	Optional mains powered 5V	Battery powered	LED and sound indication on CO_2 level
LAN-WMBUS-E-CO2	X	X	X		X	
LAN-WMBUS-E2-CO2-I	X	X	X	X	X	X

SENSORS

Type	Specification	TYP ACC
TEMPERATURE	-40°C to +85°C	±0.2°C at +5°C to +60°C ±0.5°C at -20°C to +85°C
HUMIDITY	0 - 100 %RH	±2 %RH at 20-80 %RH. ±3 %RH at 10-90 %RH ±3.5 %RH at 0-100 %RH
CO_2	0-5000 ppm	±(50 ppm + 3%) after calibration even better on request.

INDICATIONS LED AND SOUND

AIR QUALITY	CO_2 LEVEL (ppm)	LED Color	Led indication on new CO_2 level	Sound indication on new CO_2 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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