

LANSEN

LAN-WMBUS-E2-CO2-S-(I)

CO2/TEMP/HUMIDITY/SOUND WITH OPTIONAL INDICATIONS

DEVICE

The combined true CO₂, ambient temperature and humidity, and sound level 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 CO₂ 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 CO₂ devices that ends with -I (stands for indication) comes with visual and acoustic warning/alarm to alert on high CO₂ concentration. The sensor will in this case use a buzzer and high brightness LED to indicate that the CO₂ 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 CO₂ correlates to a higher virus spread and causing concentration problems, early warnings and alarms provide both a safer and more efficient workspace.

FIRMWARE

| | |
|-----------------|---|
| MODES | C1-A/B, T1 or S1 (selectable on order) |
| SEND INTERVAL | 60s - 1 hour (selectable on order) |
| SAMPLE INTERVAL | |
| CO ₂ | Twice** as long as send interval (default 5 min) |
| Sound | Twice** as long as send interval (default 5 min) |
| Temperature | Same as send interval (default 2.5 min) |
| Humidity | Same as send interval (default 2.5 min) |
| ENCRYPTION | AES128 encryption OMS mode 5. Profile A. |
| STANDARD | T1-mode, transmission 2.5 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-S | 14 years* typical, standard configuration and operating temperature |
| LAN-WMBUS-E2-CO2-S-I | 10 years* typical, standard configuration and operating temperature |

DEVICE

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

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.

CO2 SENSOR

The on-board NDIR CO₂ sensor with diffusion technology is used to measure the absolute CO₂ 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 CO₂ 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 2.5 minutes (temperature and humidity) or 5 minutes (CO₂ and sound) 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.



* 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.

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° to +55° (-20° to +55° on request) |
| CO ₂ 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-SOCl ₂ 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 | Pressure | Sound level | Ambient light (LUX) | 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 |
| 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 ₂ | 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. | TBD |

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 |