Fidelix

M-Bus wireless

FX-WMBUS-E-CO2

Wireless M-Bus CO_2,
Temperature, & Humidity room sensor

> Battery powered for wireless installation

> AES128 Encrypted Wireless M-Bus communication

> Continuous battery level monitoring

> Seemless design

Measure to manage

The Fidelix FX-WMBUS-E-CO2 room CO_2, temperature, and humidity sensor is a plug-and-play room CO_2, temperature, and humidity transmitter. Great care has been given 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.

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 in case of a failure.

Technical features

Temperature range:	-40..85°C
Dimensions:	80 x 80 x 25 mm
Power supply:	3.6V-battery
Communication:	OMS standard wireless M-Bus - interval 90 sec

Firmware:

MODE	T1
INTERVAL	90 seconds
SAMPLE INTERVAL	6 minutes
ENCRYPTIONS	AES128 encryption OMS mode 5, Profile A
M-BUS DATA	Instant, average hour, average 24 hours

Sensors:

TEMPERATURE	RANGE: -40 to +85°C
	ACC: $\pm$0,2 at 5 to +60°C
	ACC: $\pm$0,5 at -20 to +85°C
HUMIDITY	ACC: $\pm$2 %RH at 20-80 %RH
	ACC: $\pm$3 %RH at 10-90 %RH
	ACC: $\pm$3,5 %RH at 0-100 %RH
CO_2	RANGE: 0-5000ppm
	ACC: $\pm$50ppm +3%

Warnings:

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

Power / Lifetime:

POWER SUPPLY	2 x ER18505 3.6V Li-SOCl2 battery pack
CAPACITY	8200 mA
VOLTAGE	2.6 to 3.6 V
LIFESPAN	16 years typical, standard operating temperature
RADIO	14 dBM (25mW) output power to antennas

Conformity:

ENVIRONMENT	RoHS (2011/65/EU) / (EU)
	2015/863 RADIO / EMC
	RED (2014/53/EU)

General information:

CO2 OP TEMP	0° to +55°C
CO2 OP PRESSURE	950 Pa to 1050 Pa
RELATIVE HUMIDITY	Non condensing
MATERIAL	White, ABS
SIZE (W x L x D)	80 x 80 x 25mm
STANDARD	EN13757-3/4 / OMS 4.0.2

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 start-up and during its entire lifetime. The sensor calibrates every 20 days to ensure good readings. The calibration is done using the lowest 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_2 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 CO_2, temperature, and humidity are sampled every 6 minutes and sent synchronous using the Wireless MBUS protocol OMS compliant. The data is also repeated every 90 seconds as an asynchronous message. 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.

Installation:

The device is mounted with screws. Always mount on an interior wall, e.g. hallway. The sensor works best 180cm above the floor. Mount the device so the hole at the front is on the right side. Make sure that the UP symbol on the label (located on the side) is pointing upwards. Avoid heating/cooling sources (solar radiation, lamps, pipes, extensive airflow, etc.).

Commissioning:

STEP 1:
- Turn the device upside down

- Remove the mounting piece by pushing the two plastic pieces, marked by red circles, inwards (e.g. with a screwdriver) and then lifting the piece up.
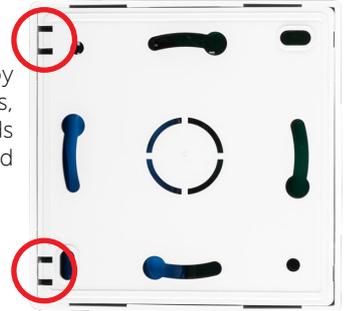
STEP 2:
- Locate the small, black plastic jumper on the left side of the battery.

- Remove the jumper

- Place the jumper so it is connected to the two pins on the board.

- When the jumper connects the two pins, the device is automatically powered on.

- The red LED will start to flash. The start-up sequence is successful when the flashing stops.
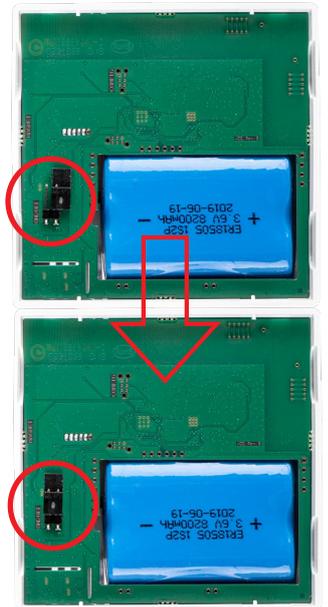
STEP 3:
- Fasten the mounting piece to a wall with the text UP pointing upwards using the recommended mounting instructions.

- Use two screws in the two holes marked with red in the picture.

- Mount the device on the mounting piece.

NOTE: The ventilation slits must be on the right side. Only then the sensor is positioned correctly and will return reliable measurement values.