MUTELCOR

Smart CO2 LoRa Sensor

MTC-XX-CO2-01 / MTC-XX-CO2-02 / MTC-XX-CO2-03 / MTC-XX-CO2-04

Quick Start Guide

Thank you for choosing Mutelcor GmbH.
We are proud to be part of your project.

1. Need Help?

For any other query related to our product, please contact the local distributor or Mutelcor at
support@mutelcor.com

2. Manufacturer

Mutelcor GmbH: An der Bastei 42a, 47259 Duisburg, Germany

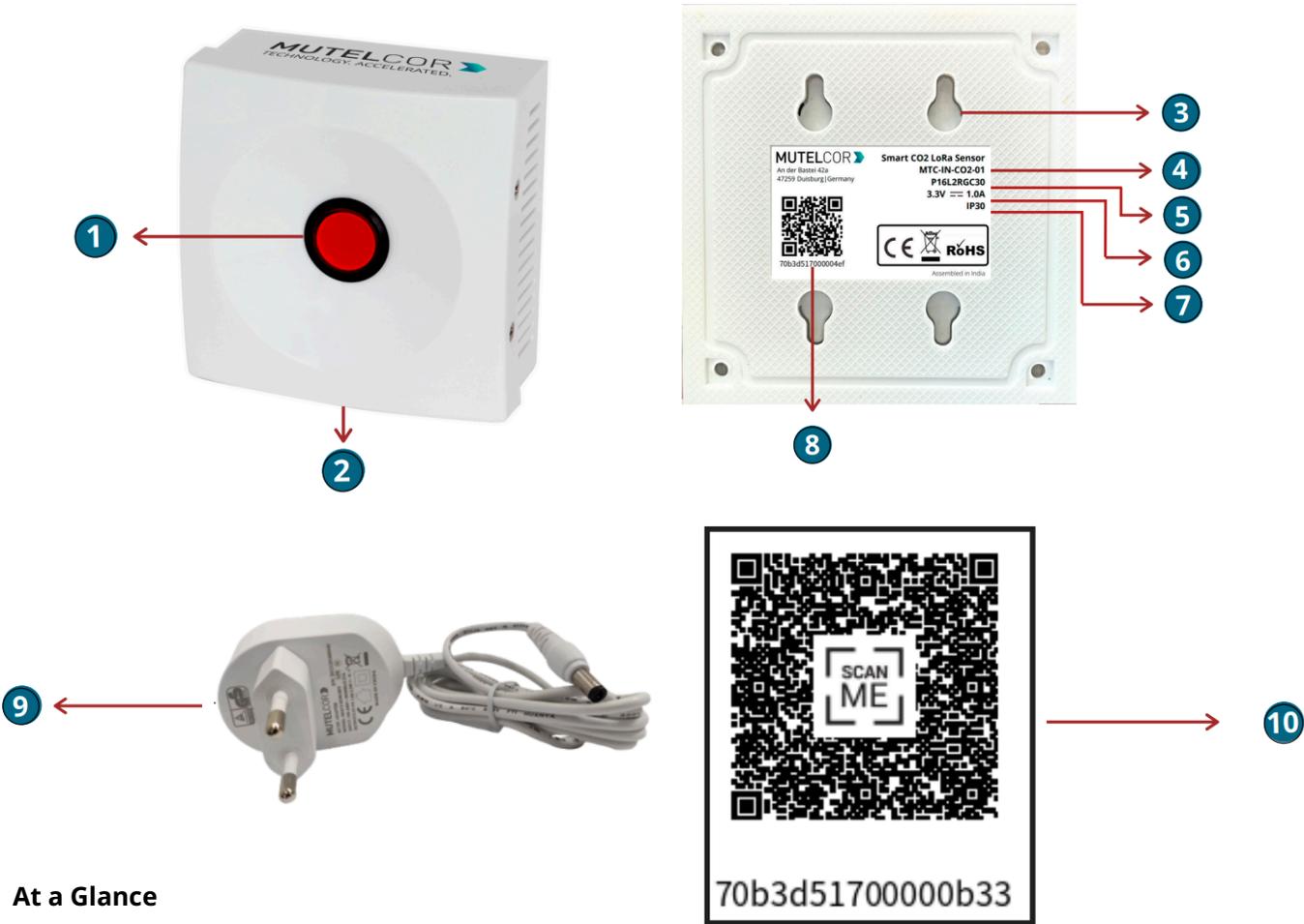Office: +49 203 72996070, Fax: +49 203 72996071, Web: www.mutelcor.com

3. Safety

Read the instructions carefully before device installation, operation and maintenance

1	Connect the adapter to a properly wired and grounded electrical outlet
2	The device should only be used with accessories or spare parts supplied by your reseller
3	The device enclosure must not be opened when connected to power
4	Maintenance and repair must be carried out by qualified personnel authorized by reseller
5	Keep the device away from any hot surface or outdoor environment

4. Product Description

The Smart CO2 LoRa Sensor is designed to measure and report levels of carbon-dioxide (CO2), Temperature and Humidity of an indoor environment

The local CO2 level is the representative of the complete area being measured.

At a Glance

No.	Description	No.	Description
1	Button / Multi-color LED	6	Power supply Input (3.3V ⎓1A)
2	Jack Connector (for power adapter)	7	Ingress Protection
3	Oblong Holes for Wall Mount	8	DevEUI with QR code
4	Model Name	9	Power Adapter (Optional)
5	Module ID	10	Device info Access Sticker (optional)

5. Activation of the Device

	• Provision the device first into a LoRa network before activation • As long as device is connected to the power supply, the yellow LED light flashes once every 60 seconds (only MTC-XX-CO2-01/03) • As long as device is connected to the power supply, the green LED light is constantly on (only MTC-XX-CO2-02/04) • Do not place the device near a window, air conditioner or heater

The Smart CO2 LoRa Sensor will automatically activate after plugging the device to power. The device will automatically try to register via OTAA to a LoRaWAN network

Upon successful registration to the network, the device will trigger 3 short beeps (chirps) in rapid succession. This implies that the device is activated in a LoRa network and will send measurements and threshold triggers/stops via LoRa.

By default the device sends measurements every 2 minutes, and threshold triggers/stops can be sent when applicable.

The device offers the feature of automatically raising a local alarm based on LED and/or Buzzer on the device itself, as soon as predefined thresholds for CO2 are exceeded. When the CO2 levels fall down a specific threshold-value the alarm automatically switches off. The raising and stopping of local alarms are also sent as threshold triggers and stops via LoRa messages to the network.

The device performs a measurement check every 2 seconds against the threshold. The default CO2 values for these thresholds typically set on the device are:
- Below 800 ppm, the LED glows **Green** constantly (only MTC-XX-CO2-02/04)
- At 800 ppm, the LED flashes **Yellow**
- At 1000 ppm, the LED glows **Red** constantly
- At 1500 ppm, the LED flashes **Red** and buzzer sounds for 5 seconds (3 beeps)

When CO2 values falls back to
- Below 1450 ppm, the **Red** LED stops flashing but remains on
- Below 950 ppm, the **Red** LED goes off and **Yellow** LED starts flashing
- Below 750 ppm LED goes off (only MTC-XX-CO2-01)
- Below 750 ppm, the **green** LED goes on (only MTC-XX-CO2-02)

The threshold values for triggering the alarm can also be changed via OTAA in LoRA.

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If the button is pressed, it sends an alarm message via LoRa but does not flash LED or sound the buzzer.

For all details on the payload sent on LoRa, changing values via OTAA, provisioning of the device in a LoRa network, please contact the local distributor or Mutelcor GmbH at support@mutelcor.com

Note: If the buzzer in the device continuously beeps at every 8-second interval, then there is a software error. When this happens the device must be returned for repair. Please immediately contact your reseller

QR code sticker: All devices are QR-Ready. If requested, we can activate this feature to allow reading the current device values by simply scanning a QR code. Please contact us for activation of this service. please contact the local distributor or Mutelcor GmbH at support@mutelcor.com

6. Mounting

⚠	The device should be mounted on clean non flammable solid surface
	The device may only be used in an indoor environment
	It's recommended to install the device at least 1.5m from the ground

Avoid the following areas to ensure best product performance and preventing malfunctioning:

- Areas that are susceptible to vibration
- Near heating appliances
- Near air-conditions
- Areas near the high-voltage cables

The device may be mounted on the wall using two oblong holes

Only two screws (not included) are needed, all mounting information is depicted in Fig.6.1

(Reference dimension: mm)
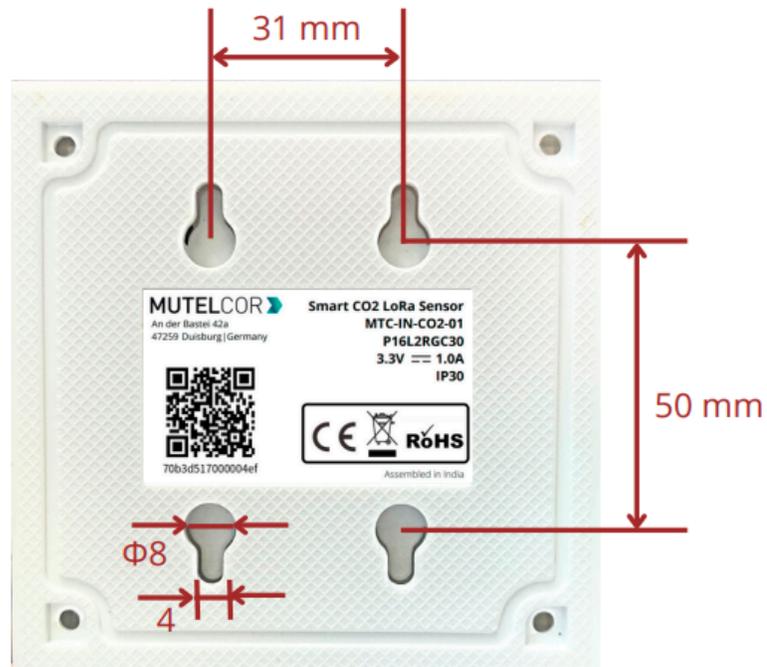
Recommended screw size : M3.5 x 20

Fig.6.1

7. Calibration

Please follow this procedure to perform CO2 Sensor recalibration:
- Connect the device to power and keep the device for at least 15 minutes outside in fresh air on a sunny & dry day. Please make sure that no person is near the device in order to negatively influence the CO2 values.
- After 15 minutes, please set the CO2 Value on the device to 400 ppm by sending a Downlink-OTA message "028052040190" via your LoRaWAN-Network to the device.

Note: Recalibration should not be performed on a rainy or humid day, as on such days the CO2 Value in the air can drastically fluctuate.

8. Technical Specifications

Model Name	Smart CO2 LoRa Sensor	Enclosure Size	95 x 95 x 48 mm
Module ID	P16L2RGC30	Net Weight	150 g
Model No	MTC-XX-CO2-01 (2-color LED with red lens, IP30) MTC-XX-CO2-02 (3-color LED with white lens, IP30) MTC-XX-CO2-03 (2-color LED with red lens, IP54) MTC-XX-CO2-04 (3-color LED with white lens, IP54)	Model No. (XX) LoRa Frequency	EU: EU863-870 IN: IN865-867 US: US902-928 AU: AU915-928 AS: AS923-1 KR: KR920-923 IL: AS923-4 OTAA and ADR supported
Power Adapter	Input: 100-240V~50/60Hz Output: 3.3V⎓1A, 3.3W	NDIR Sensor	CO2: 0-40.000 ppm Temperature: -40-70°C Humidity: 0-100%RH
Ingress Protection	IP30 / IP54	Sensor Accuracy	CO2: ± 30 ppm ± 3% (for 400-10.000 ppm) Temperature: ± 0.5°C Humidity: ±3% RH
LoRaWAN Version	MAC V1.0.3	Operating Temperature	-18°C to +55°C
Transmission Power	Max 25mW (14 dBm)		

9. Declaration of Conformity

Hereby, Mutelcor GmbH, declares that the Product is in conformity with the essential requirements of Article 3.1 (a) the protection of the health, 3.1 (b) an adequate level of electromagnetic compatibility and 3.2 effective use of the spectrum of 2014/53/EU

The CE mark appears due to the issued declaration of conformity under responsibility of Mutelcor GmbH as manufacturer, who declares that the used radio equipment is in compliance with relevant EC Directives. For any further information, please contact Mutelcor GmbH at support@mutelcor.com

In Europe, the Sensor also complies with EN62479 and ERC requirements regarding duty cycle and maximum EIRP

10. Disposal / Recycling

	Do not dispose of the product with household waste. For proper disposal, contact a waste disposal company **WEEE-Reg.-Nr.: DE 71445608**

11. Product complies and Directives

RoHS   C E   ETA   **Equipment Type Approval (INDIA)**
Issue by Wireless Planning and Coordination (WPC)
DEPARTMENT OF TELECOMMUNICATIONS

12. Warranty

Contact your reseller for warranty

WARRANTY	Smart CO2 LoRa Sensor is not warranted by Mutelcor GmbH in case the enclosure is opened, modified, broken, painted, branded out, outlined for any reason

The forgoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Mutelcor GmbH be liable for any consequential, special or incidental damages

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