



## NFC RFID - LoRa Button

MTC-XX-NFC01/02

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](mailto:support@mutelcor.com)

## 2. Manufacturer

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

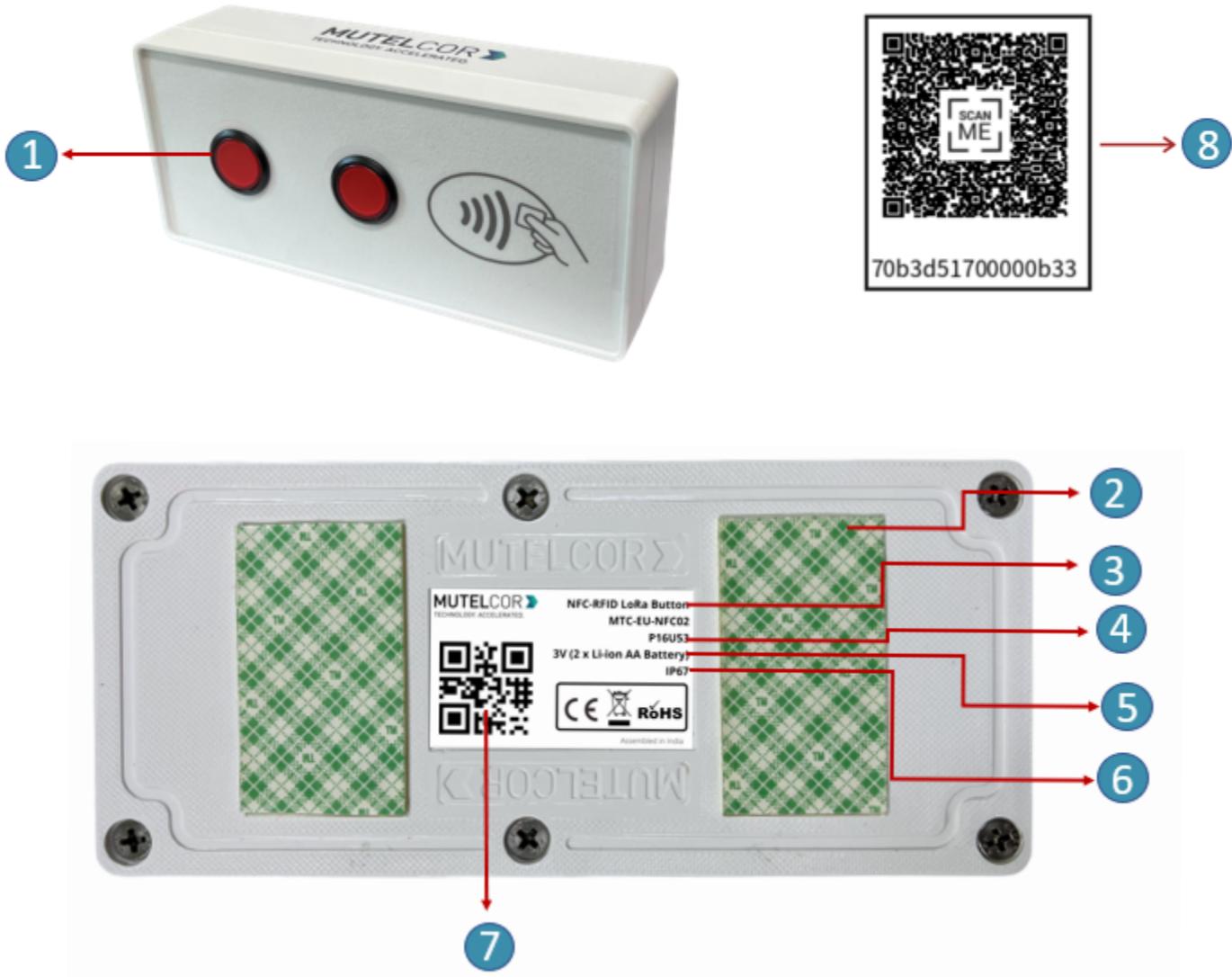
Office: +49 203 72996070, Fax: +49 203 72996071, Web: [www.mutelcor.com](http://www.mutelcor.com)

## 3. Safety

Read the instructions carefully before device installation, operation and maintenance

1	Maintenance and repair must be carried out by qualified personnel authorized by reseller
2	Keep the device away from any hot surface.

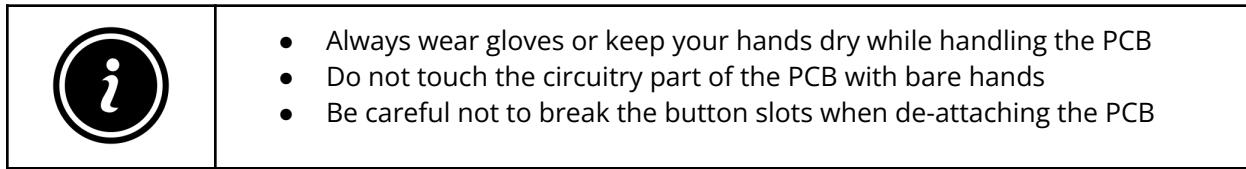
#### 4. Product Description



#### At a Glance

No.	Description	No.	Description
1	Authentication Service Buttons	5	Voltage
2	Double Sided 3M Tape	6	Ingress Protection
3	Model Name	7	DevEUI QR code
4	Module ID	8	Device info Access Sticker (optional)

## 5. Opening and Closing the Device



For reset or replacing the batteries, opening of the enclosure is needed.



Fig 5.1

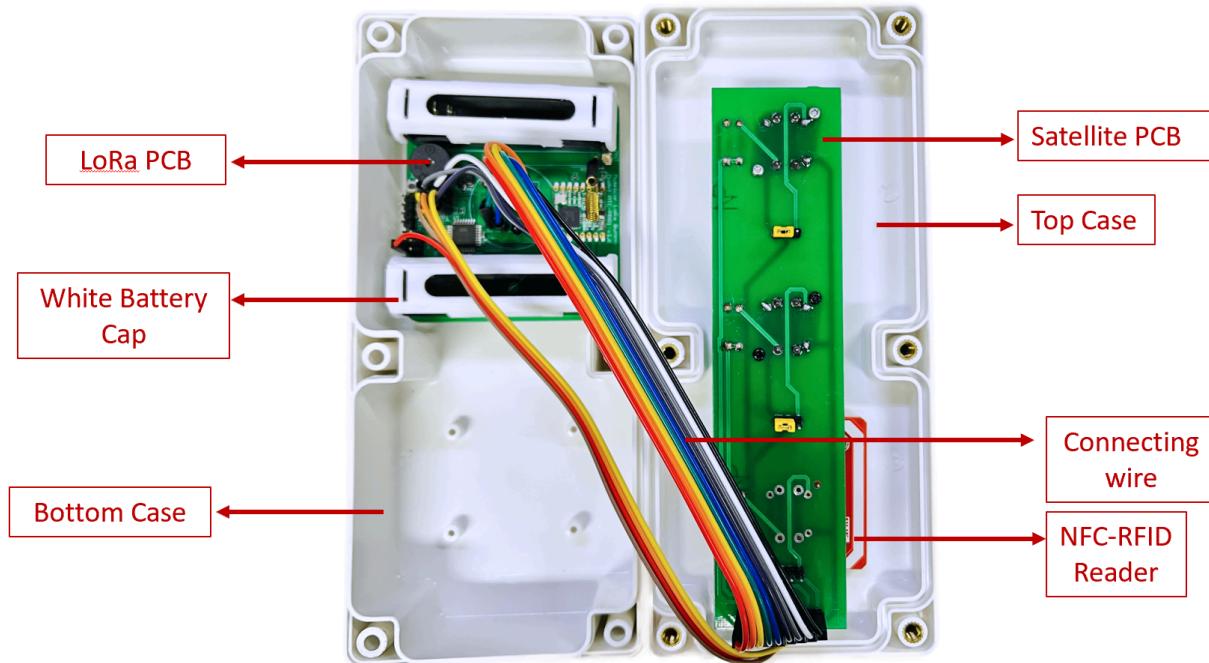


Fig 5.2

For opening the enclosure please follow the steps described below:

1. Unscrew the six screws on the bottom of the enclosure as shown in Fig 5.1
2. Gently separate the top and bottom case
3. On the PCB, replace the batteries or reset the device as explained in section 9 (Resetting the Device) or section 6 (Insertion & Replacement of Batteries)
4. Gently close the top and bottom of the enclosure together. Connecting wires must go across the enclosure as shown in Fig. 5.2. Tighten all the six screws

## 6. Insertion & Replacement of Batteries



- Open the device for replacing the batteries
- Always wear gloves or keep your hands dry while handling the PCB
- Do not touch the circuitry part of the PCB with bare hands
- Do not use sharp objects to remove the batteries

For replacing the battery please follow the steps described below:

1. Open the device (for details please refer to section 5, "Opening and Closing the Device")
2. The PCB is attached to the bottom of the case. To insert the batteries, **lift up two white battery caps** from battery holders of PCB , as shown in fig 6.1. White Battery Caps are provided to secure batteries in the battery holders to avoid battery pop-out and disconnection.
3. Hold the LoRa PCB and carefully and remove the batteries from the holders
4. Insert 2 AA Batteries and make sure the positive (+) and negative (-) ends of batteries are facing in the correct terminals
5. After insertion of Batteries, cover the battery holders by using **white battery caps** as shown in fig 6.2
6. Once the batteries are inserted, close the top & bottom cases of enclosure as described in the instructions in section 5 "Opening and Closing the Device"



**Lifting of Battery Cap**

**Fig. 6.1**



**Battery holder covered with Battery Caps**

**Fig. 6.2**

The replacement of the batteries will trigger the device to register to the LoRaWAN network. When inserting the batteries, the LED shortly flashes once. The device confirms a successful registration on the LoRa Network by rapidly flashing the LED 3 times. This implies that the device is activated in a LoRa network successfully and will send heartbeats and alarms via LoRa.

**Note:** If rejoining of the device fails, one can manually reset the device as described in section 9 "Resetting the Device"

## 7. Activation of the Device

	<ul style="list-style-type: none"><li>Device must be provisioned in the LoRa network before activation, as otherwise it will continuously send join requests towards the network, which may result in quicker battery discharge</li><li>Device is for indoor application only</li></ul>
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### 7a: Activation

The device will automatically try to register to a LoRaWAN network upon insertion or replacement of batteries. When inserting the batteries, the LED shortly flashes once. The device confirms a successful registration on the LoRa Network by rapidly flashing the LED 3 times. This implies that the device is activated in a LoRa network and will send heartbeats and trigger Events via LoRa.

### 7b: Pressing of Button with NFC-RFID Tag

Every time when button is pressed, the following happens by default:

The device will scan for any NFC / RFID Tag and the LED of pressed button starts to flash followed by single beep

#### Registration of NFC-RFID Tag

- 1) NFC-RFID Tags are required to be registered in the backend for authentication
- 2) Ensure, NFC-RFID Tag makes direct contact at the printed NFC symbol while tapping

Case 1: **Button is pressed without Tag:** When the Button is pressed without tapping any Tag, the device will try to read the NFC-RFID Tag and LED of pressed button flashes rapidly followed by a rapid buzzer and the device will send LoRa Uplink indicating which button was pressed but **will not trigger any alert on the dashboard.**

Case 2 : **Button is pressed by an authorized Tag:** When the authorized Tag is tapped and the button pressed, NFC Reader reads the Tag successfully and LED (Red/Yellow) and buzzer are activated for 1 second. The device will send a LoRa Uplink about the button that was pressed as well as the ID of the NFC / RFID Tag. **In this case the button pressed will trigger an alert on the dashboard.**

Case 3: **Button is pressed by an unauthorized Tag:** When an unauthorized Tag is tapped and the button pressed, the device will try to read the NFC-RFID Tag. The LED of the pressed button will flash followed by a single beep of the buzzer. The device will send LoRa Uplink indicating which button was pressed as well as the ID of the NFC/ RFID Tag. In this case the button pressed **will not trigger any alert on the dashboard.** The user needs to contact the concerned admin to register the NFC-RFID Tag in the backend.

### 7c: LoRa Communication

Each LoRa message triggered by a button press is repeated 2 times in intervals of 10 seconds by default on slightly different frequencies to ensure a robust communication.

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](mailto:support@mutelcor.com)

### 7d: QR code sticker

All devices are QR-Ready. If requested, we can activate this feature to allow reading the current battery status by simply scanning a QR code. To activate the service, please contact your local distributor or Mutelcor GmbH at [support@mutelcor.com](mailto:support@mutelcor.com)

**Note:** If the buzzer in the device continuously gives a beep every 8-seconds, then there is a software error. When this happens the device must be returned for repair. Please immediately contact your reseller or Mutelcor GmbH at [support@mutelcor.com](mailto:support@mutelcor.com)

## 8. Mounting of Device



The device should be mounted on clean and non flammable solid surface

To ensure best product performance and prevent malfunctioning, avoid the following :

- Areas that are susceptible to vibration
- Areas near the high-voltage cables
- Near heating appliances and hot surfaces

Device Mounting can be done by following two options:

**Option A :** Paste the device directly with the provided **3M double-sided tape** on the back of the device as shown in Fig 8.1 below

**Option B :** Use of Transparent PC (Polycarbonate) **Mounting Plate**:

Follow the instructions given in the document "Use of Transparent PC (Polycarbonate) **Mounting Plate**" sent separately by email.



Mounting with 3M Double sided tape

Fig. 8.1



Fig. 8.2

## 9. Resetting the Device

	<ul style="list-style-type: none"> <li>Open the device for resetting</li> <li>Always wear gloves or keep your hands dry while handling the PCB</li> <li>Do not touch the circuitry part of the PCB with bare hands</li> <li>Do not use sharp objects to press the reset button</li> </ul>
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Resetting the device may be needed, e.g. to re-register the device into the LoRa network. For resetting please follow the steps described below.

1. Open the device. For details please refer to section 5 "Opening the Enclosure"
2. Position and hold the PCB as shown in Fig 9.1
3. **Ensure** 2 AA-Batteries are inserted in the battery holders
4. On the PCB, carefully observe a small reset button as shown in Fig 9.1
5. Press (do not hold) the button shortly for a second. The reset will trigger the device to re-register to a LoRaWAN network. When resetting, the LED shortly flashes once. The device confirms a successful registration on the LoRa Network by rapidly flashing the LED 3 times. This implies that the device is activated in a LoRa network and will send heartbeats and alarms via LoRa.

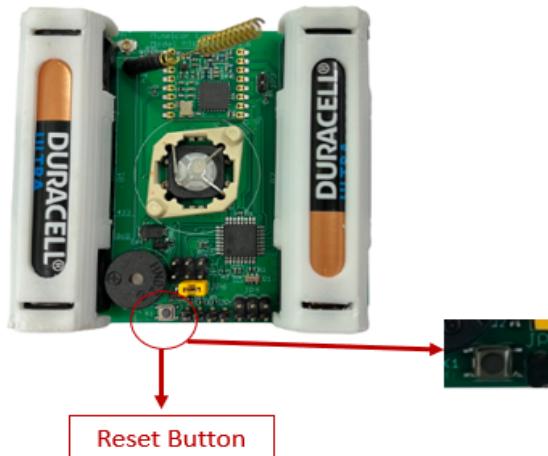


Fig.9.1

## 10. Technical Specifications

<b>Model Name</b>	NFC RFID - LoRa Button	<b>Enclosure Size</b>	180 x 80 x 48 mm
<b>Module ID</b>	P16U53	<b>Net Weight</b>	350g
<b>Model No</b>	MTC-XX-NFC01 / 02	<b>Battery life</b>	5 Years
<b>Model No. (XX) LoRa Frequency</b>	EU: EU 863-870 IN: IN 865-867 US: US 902-928 AU: AU915-928 AS: AS923-1 KR: KR920-923 IL: AS923-4 OTAA and ADR supported	<b>Voltage</b>	3V (2 x AA-Battery)
<b>LoRaWAN Version</b>	MAC V1.0.3	<b>Supported Tag Types</b>	ISO/IEC14443-4A ISO/IEC14443-4B FeliCa Innovision Jewel / Topaz Tag
<b>Transmission Power</b>	Max 25mW (14 dBm)	<b>Operating Temperature</b>	-18°C to +55°C
		<b>Ingress Protection</b>	IP40

**Note:** The recommendation is to use **AA 1.5V ENERGIZER L91 Ultimate Lithium** Battery. Alkaline Batteries can be used, but they will reduce battery life by half.

## 11. 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 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](mailto:support@mutelcor.com)

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

## 12. Product complies and Directives



ETA



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

## 13. Disposal / Recycling

	<ul style="list-style-type: none"><li>Do not dispose of the product with household waste. For proper disposal, contact a waste disposal company</li><li>Discharge batteries store in a plastic or cardboard container that doesn't conduct electricity in case there is a spark</li><li>Search the area for recycling centers that accept single-use batteries using Earth911's Recycling Search.</li><li><b>WEEE-Reg.-Nr.: DE 71445608</b></li></ul>
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## 14. Warranty

Contact your reseller for warranty

	LoRa Service call button is not warranted by Mutelcor GmbH in case the enclosure is modified, broken, painted, branded out, outlined for any reason
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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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### Mutelcor GmbH Team



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