

WASTE MANAGEMENT SOLUTIONS

Discovery Mobile UHF 3.0 Manual

BUTTONS



F1: If pressed for 3 seconds, it associates **the type 1 anomaly** with tag reading.



F2: If pressed for 3 seconds, it associates **the type 2 anomaly** with tag reading.



Turn ON/OFF



F3: If pressed for 3 seconds, it associates **the type 3 anomaly** with tag reading.



F4: If pressed, it generates an **anomaly relating to abandoned waste**. In other words, it sends the location, the date, and the time of the detection to the server.

Automatic Tag Reading: The device automatically reads RFID tags placed at a certain distance (yellow fixed LED = "reading" mode).

If **GSM connection is unavailable**, "Discovery Mobile 3.0" fails to complete the data transmission phase and it can't start a new reading phase.

To return it to the **automatic tag reading phase**, press the F1 or F2 or F3 button.

THE MEANING OF THE LEDS



1. **RED LED:** If switched on, it indicates "**memory full**" status.
2. **YELLOW LED:** It indicates the reading mode. If it's **switched on in fixed mode**, the device is in **tag scanning mode**; if it is **flashing or off**, the device is **sending the tags** that have been read to the cloud platform.
3. **GREEN LED:** If **flashing**, it indicates that the **GSM connection** is active.
4. **ORANGE LED:** If **flashing**, it indicates that the **GPS signal** is acquired correctly.
5. **BLUE LED:** If it's **switched on in fixed mode**, it indicates that the device is **charging**; if **flashing**, the device is **connected via Bluetooth**.
6. **Multi-color LED based on battery level:**
 - a. If green, the battery charge is > 60%.
 - b. If yellow, the battery charge is between 59% and 30%.
 - c. If red, the battery charge is < 30%.



HOW TO READ THE TAG?

The device has 2 operating phases:

1. **Automatic reading of RFID tags**
2. **Sending of detected data**



PHASE 1:

If the **yellow LED is switched on in fixed mode**, the device is in **reading mode**, so it will be enough to hold the device closer to read the tag automatically.

Tag reading is marked by a "beep" sound, the flashing of the yellow LED, and a vibration.

PHASE 2:

If the **yellow LED is flashing or is off**, the device is **sending data** to the cloud and therefore is not reading.

If the **yellow LED continues to flash**: it could be that the device cannot finish sending data transmission phase, due to the lack of GSM connection. **Pressing F1 or F2 or F3 will restore the reading phase.**

In any case, at the end of the data transmission phase, the device automatically returns to reading mode.

DATA SENDING TIME: 90 SECONDS

Every time a new tag is read, or the F1 or F2 or F3 button is pressed, a reading session lasting 90 seconds is activated.

Within the 90 seconds, any duplicate readings of the same tag are discarded:
if the tag has already been read in the same scanning cycle, the device emits a double "beep" tone and the yellow LED remains lit.

At the end of the 90 seconds, the device sends all the tags read during the reading session, and after the transmission, initiates a new reading session



After reading a new tag, the timer restarts from zero, and the device continues to read until there are 90 seconds without any reading.

Example: if the operator finishes reading the tags in the condominium and gets into the vehicle, after 90 seconds, the device sends the tags it has read.

WHY THE TIMER OF 90 sec?



- **avoid double readings:** because after 90 sec the operator left that area
- **tag reading speed:** because in 90 sec you have the way and time to query tags temporarily saved in the device memory
- **guarantee the real-time transmission of the data:** because after max 90 sec from the last reading you send the data

ANOMALIES

During waste collection, the ecological operator may report any anomalies:

- abandoned waste
- non-compliant waste
- double conferral etc.

The anomaly can be:

1. **Not associated with the tag:** Press the F4 button (e.g., abandoned waste)
2. **Associated with the tag:** Press the F1/F2/F3 button for at least 3 seconds, before reading the tag (e.g., non-compliant waste or duplicate delivery)



DEVICE CHARGING



After placing the back of the device on the charging base, the blue LED lights up in combination with the LED of the wireless charger to indicate the start of charging.

If the device is completely discharged, when it is put on charge, all the LEDs light up for a few seconds and then turn off, leaving only the blue LED illuminated.

LED
BLU

N.B.

The device must be charged for at least 5 hours before use.

The battery level on the platform is expressed using 9 levels of charge (e.g., 50% = battery value between 50% and 59%).



CLOUD DATA MANAGEMENT

TAG READINGS

The "tag readings NEW" section shows for each device:

- **battery level** when sending readings
- **date and time** of reading the tag;
- **date and time** of receipt of the reading on the server;
- **geographical coordinates** with positioning on the map, exclusively inherent at the time of reading the RFID tag;
- **unique code** of the read tag;
- **code of the terminal** that executed the reading.

	Terminale	Batteria	Lettura 📅	Ricezione 📅	Posizioni	Utente/Tag 📅
	29054961	90 %	📅 25/02/2021 08:10:16	📅 25/02/2021 06:21:31	📍 37.291310 13.525121	👤 UFFICIO 📦 0240OR000257
	29054961	90 %	📅 25/02/2021 08:07:44	📅 25/02/2021 06:21:33	📍 37.291906 13.526078	👤 BAR 📦 0120VE000080
	29054961	90 %	📅 25/02/2021 07:39:00	📅 25/02/2021 06:21:36	📍 37.290808 13.532185	👤 BIANCHI MARIA 📦 0020OR008613
	29054961	90 %	📅 25/02/2021 07:38:59	📅 25/02/2021 06:21:38	📍 37.290808 13.532185	👤 BIANCHI MARIA 📦 0020OR011658
	29054961	90 %	📅 25/02/2021 07:38:58	📅 25/02/2021 06:21:40	📍 37.290808 13.532185	👤 ROSSI MARIA 📦 0020OR011153
	29054961	90 %	📅 25/02/2021 07:36:53	📅 25/02/2021 06:21:43	📍 37.292015 13.537798	👤 BIANCHI MARIA 📦 0020OR012127
	29054961	90 %	📅 25/02/2021 07:36:51	📅 25/02/2021 06:21:45	📍 37.292015 13.537798	👤 ROSSI MARIO 📦 0020OR000937

DIAGNOSTICS

	61072545	80 %		 11/02/2023 08:33:42	 11/02/2023 08:43:06	
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↑
“**power-on**”: indicates that the device has been turned on and the percentage of battery charge.

	40239965	50 %		 09/02/2023 09:26:14	 11/02/2023 08:31:14	
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↑
“**power-off**”: indicates when the device has been turned off, the information will be sent only after the device is turned o

DIAGNOSTICS

	61072545	80 %		 11/02/2023 08:46:13	 11/02/2023 08:46:15	 43.857671 010.277889	0
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“keep-alive”: indicates that the device is operational and the percentage of battery charge

	61072545	10 %	415 min	 11/02/2023 08:33:42	 11/02/2023 08:43:08		0
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“battery”: indicates how long the device has been charged

ANOMALIES READINGS

The "**Anomalies Readings**" web - page shows non-conforming readings detected by mobile devices and configurable by the customer.

Samples:

- abandoned waste
- non-compliant waste
- tags in blacklist
- etc.

How to name the anomalies?

By going to Administration → Anomaly → Vocabulary, you can customize the individual anomalies, clicking on "edit" and entering a specific name.

! Non Conformità Vocabolario			
	Codice	Testo (massimo 20 caratteri)	
	cod_6	Anomaly 1	Modifica
	cod_9	Anomaly 2	Modifica
	cod_1_00	Conformal refusal	Modifica
	cod_1_01	Non-compliance 01	Modifica
	cod_1_02	Non-compliance 02	Modifica
	cod_1_04	Blacklist tags	Modifica

DATA DOWNLOAD

Reading data can be downloaded through **restful APIs** that allow our system to interact with third-party applications.

The information is transmitted through the **format JSON** (Javascript Object Notation): one of the most popular programming languages and simple to integrate.

