

## RM3 installation

*This document is to be used for person who is going to install MD3 in a field. All notes and instructions are **HIGHLY** important for successfully installation and have to be followed. If you feel that you are not sure about understanding anything, ask Your head engineer. This is **NOT** troubleshooting guide, but a gude for proper installation including quick functionality tests. If something seems wrong, go through this manual again step by step to avoid mistakes. If problems persists, contact your head engineer immediately. It's important to solve issues as soon as you in the field.*

### Annotation:

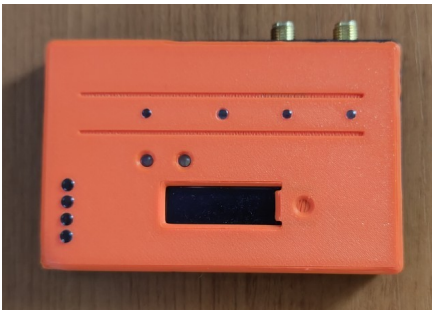
1. MD3 package set
2. Antennas positioning
3. Wiring
4. Powering up
5. Checking functionality

### 1. MD3 package

{photo} /Kabiru/

Your package must contain following parts:

a/ MD3 module



b/ Charging system (wallplug, solar charger, battery)

{photo} /Kabiru/

c/ Adequate solar panel

{photo} /Kabiru/

d/ USB to USB\_micro cable for powering MD3

{photo} /Kabiru/

e/ GSM antenna



f/ FM antenna



g/ metallic base plate(s) for antennas (not necessary if you have place to install antennas on other suitable metallic objects)

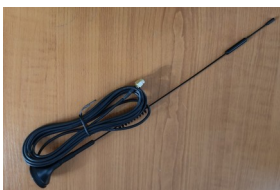
{photo} /Kabiru/

## 2. Antennas

We use two different antennas. One for GSM signal and one for FM signal. Although they seem simillary, they CAN'T be switched. Always double check if proper antenna is installed in adequate port. Any metallic plate used for base must be clean of rust or thick paint to get best capacitance contact between antenna base and plate. Use sandpaper if necessary.

Be careful with FM antenna install, telescopic FM antenna is very fragile, especially screw which is used to hold it in a base can get easily broken!!

GSM antenna is the one which is NOT telescopic and it's smaller one



FM antenna is TELESCOPIC and the longer one when pulled on



- metallic base plate for GSM antenna - must be in minimum size of 10x10cm or rounded (shape does not matter quite much)

{photo} /Kabiru/

- metallic base plate for FM antenna - must be in minimum size of 25x25cm or rounded (shape does not matter quite much)

{photo} /Kabiru/

a/ Basic rules for antenna installing are:

- Both antennas must be installed on a separate metallic plate and located at least one meter of each other

- both antennas should be installed at least 1 meter of the wall, especially if wall is made from concrete. If wall is metallic, installing FM antenna close such wall is not recommended.

- antennas should NOT to be placed on the ground, especially FM antenna. Try to install antennas in one meter height at least

- don't install antennas (especially FM) close to other electronic devices. Except of Installation on fridges, this might work good. Fridges are metallic, tall enough and don't spread electronic noise.

- you can install them close to the window if possible, especially if concrete walls or metallic walls are around

- DO NOT install antennas close to window if there are safety bars in the window!!

- don't install any antennas close to vertical metal (lamp e.g.) or any kind of electric cables

- GSM antenna can be installed either vertically and horizontally. Check with signal level meter what is better, vertically is usually best

- FM antenna should be installed vertically to get best signal

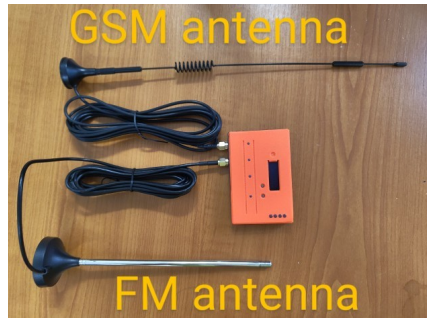
- FM antenna is telescopic and must be released to maximum length before use

- be careful with FM antenna install, telescopic FM antenna is very fragile, especially screw which is used to hold it in a base can get easily broken

### **3. Wiring**

a/ Antenas

GSM and FM antenna has the same SMA plugs. Don't mix them! GSM antenna tip is always smaller, FM is longer. GSM plug on MD is the one which is close to MD corner, simply close to SIM card slot. FM antenna plug is more to MD center.



b/ Power

MD3 is equipped by two micro-USB ports. You can use one of them or both of them. The most safe is to use center one (USB1) because its mechanically more robust. To power MD3, you should use original power-Box or any USB port which can deliver 1000mA or more. Note: standard USB port in computer supports usually just 500mA which is not sufficient to power MD3 GPRS module. If you test MD in your computer and problems with GPRS data connection occurs, try to use powerBox or powerBank to power it up. You can also use two different power sources for each MD3 micro-USB port.



4/ Powering-up

- Check if bot antennas installed in proper socket and at least one micro-USB is connected to powerBox or other sufficient USB supply.



- Switch powerBox switch ON

{photo} /kabiru/

- MD3 should boot and display current firmware version. Take a photo for sure and keep it for head engineer. If problems occurs. If you missed the number, switch off and ON again to get the boot screen again

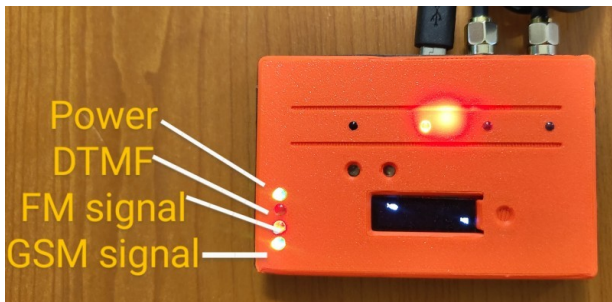


- After successfully boot, you should see bars are keep moving on the display



- left side of the MD there are four indicators. Position from the Top:

- power - must light GREEN
- DTMF (don't care, usually OFF)
- FM signal level - GREEN (signal OK), ORANGE (signal intermediate, but usefull), RED (signal LOW)
- GSM/GPRS signal - GREEN (signal OK), ORANGE (signal intermediate, but usefull), RED (signal LOW)



Note: if fishes appears on the display, it's okay, it just means power save mode is activated and it have no influence to MD functionality.

### 5/ Checking functionality

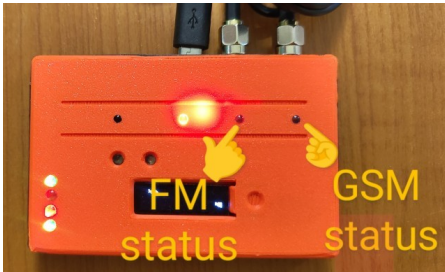
Check colors of FM and GSM signal. If one of them i RED, try to move or position adequate antenna to different location. A move of 5cm step may be used for GSM, a move of 10-20cm should be used to see changes in signal.

If both level indicators still ORANGE/GREEN, installation seems successfully. Note: signal level indicators chages every 5seconds.

Note: FM antenna must be pulled on to at least half of the length to work OK

Then observe MD, there are two BLUE indicators on the right side bellow antenna plugs.

- The one bellow FM antenna (closely to the MD center) should remain light BLUE continuously if FM signal is okay and stereo.
- the one bellow GSM/GPRS antenna should blink quickly (2x for one second) if data connection successfully. Note: connecting to the server may take up to 2-3minutes. Through this time, BLUE indicator below GSM/GPRS antenna may be off for up to 30s through module reset.



IF everything works okay, contact your Head engineer to check if MD responds to the server

## 6/ Troubleshooting

- if at least one of signal level indicators light RED, try to repeat section 5/
- if FM blue indicator blinks, try to repeat section 5/ with adequate FM antenna
- if GSM indicator blinks slow (1x for one second), try to repeat section 5/ with adequate GSM antenna.

If nothing helps, contact your head engineer for detailed discussion. Prepare following photos:

- firmware version photo
- MD installation overall photo
- antennas installation and position photos

You may also be asked to take a photo of some MD screen shots. Moving through menus is possible using short press of button right side of the display. up to 10 menus scrolls repeatedly. Note: navigating through menus does not affect MD functionality.

