**RM3 upgrade procedure**
Ing. Pavel Strnad, Ph.D
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Annotaion: This document is a guide how to provide RM device upgrade. This procedure can be done either by engineer or any other persons with keeping following rules. Both variant, programming from pc/laptop or mobile phone described
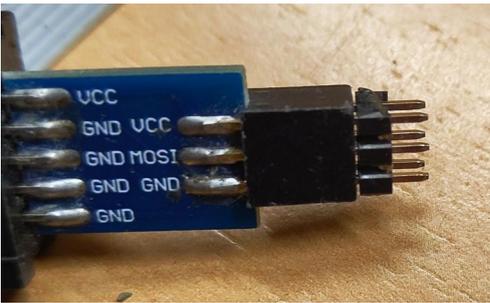*Note:* improper upgrade procedure can lead to RM disfunctionality or device damage

1/ Prerequisities
- AVR programmer with power jumper @5V
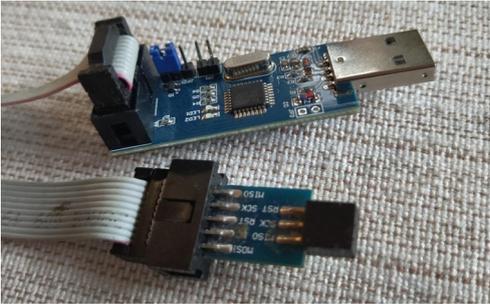
- programming header 6pin, 3x2 2.54mm

- USB OTG dongle (if programming through mobile phone choosed)

- firmware pre-installed
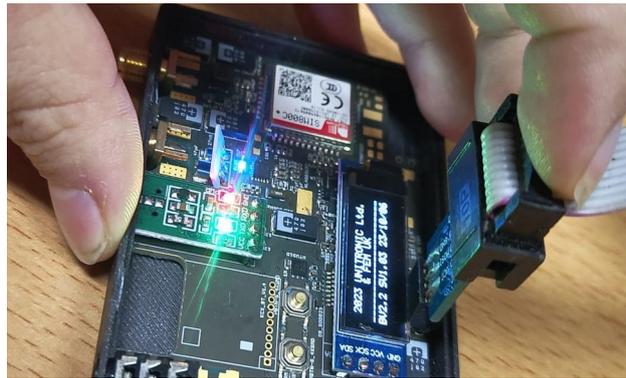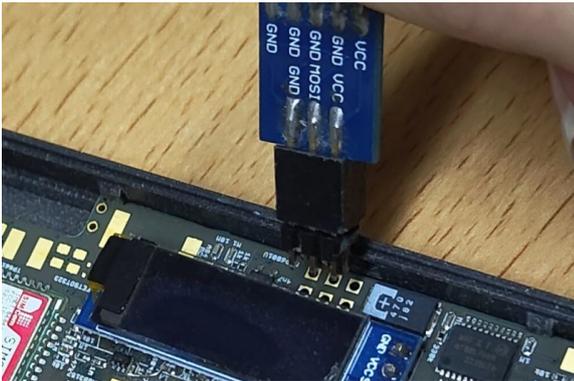 zFlasher on adroid phone (find for free on android/google apps)

or WIN_avr/avrdude on pc/laptop https://www.ladyada.net/learn/avr/setup-win.html

2/ Hardware preparation

Take a RM and using nail or screwdriver push the lid like this

Use programmer with 2x3 pin header inserted in

The MOST IMPORTANT is to keep programmer header under slight push-press to secure electrical connection to all six pins. This is ESSENTIAL and you must follow this through full programming process since you activated programming using the programmer. You can connect/disconnect it as many times if no programming proceed. If programmer is in USB slot of your pc or mobile phone, connection is estabilished and programer inserted properly, RM should start.
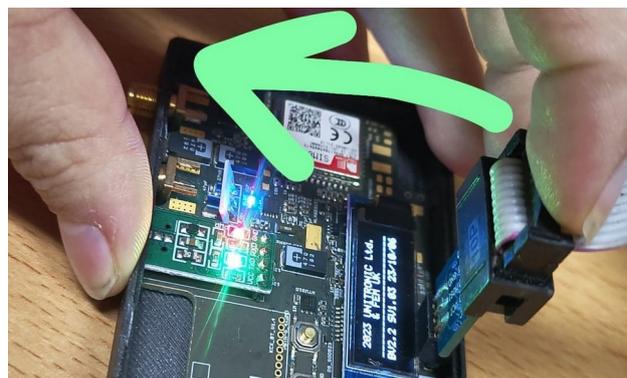

Note: improper programmer insertion in non-working but cant not damage the device. Only the programmer can get stacked in functionality. This might be solved anytime (except of programming process) simply removing and re-inserting programmer to the USB slot again
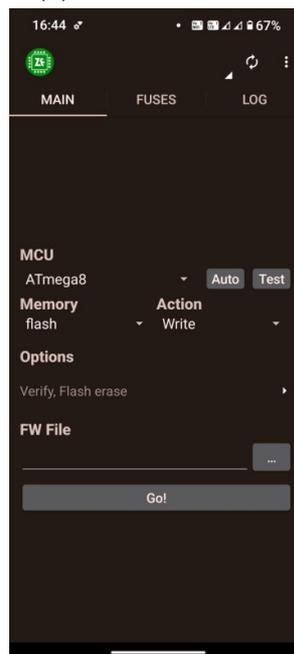
3/ Android phone programming

- get latest RM firmware *.HEX file to your phone (from USB/Email/Whatsup e.g.)
- on your mobile phone open Zflasher programm
- attach USB OTG plug to your phone
- insert programmer into the OTG plug – programmer should light on
- Zflasher app should start automatically. If not, open it manually
- click "…" button and search for upgrade file in Your phone
- insert programmer into RM as described before and keep programming header in secure position
- click "AUTO" for processor auto detection. Atmega328, Atmega328p or ATmega328PB should appear (3):
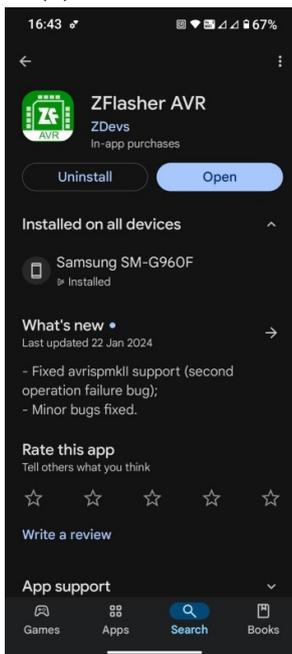
(1) Android APPs: (2) Zflasher screen   (3) Open file and AUTO

- press "TEST to check if connection is OKAY. IF proceeded OK, press "Go!" for programming
- wait with your fingers over programmer head with no moving through full programming process including VERIFYING process!!!
- after successfully programming which takes about 30sec, RM should automatically restart. You can check if the current SW and HW revision is displayed properly
- disconnect RM AFTER SUCCESSFULLY BOOT. DON'T disconnect RM through first booting procedure after upgrade!!!
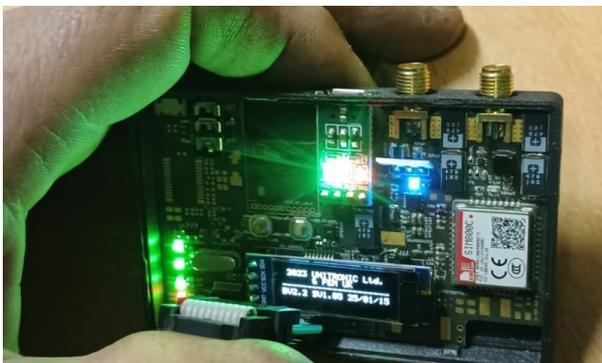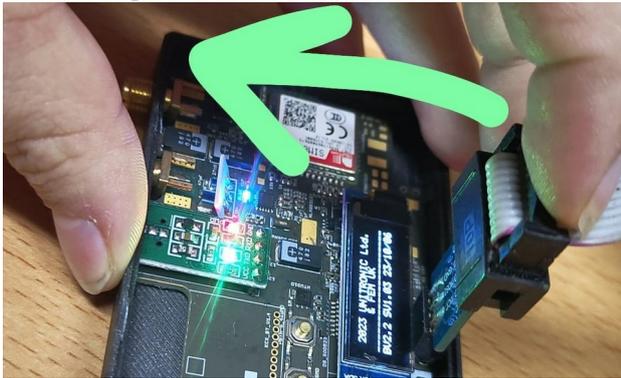

- if everything passed okay, RM is upgraded. All settings were erased and it should be in factory settings

4/ PC/laptop programming

- get latest RM firmware to your PC/laptop.
- install Avrdude software on your PC/laptop according to Your OS.
- insert AVR programmer to the USB port.
- run application
- on windows, run "cmd" command to open text console
- go to working directory with avrdude programm
- run command with following options:
avrdude -p m328 -c USBasp -P usb -B 2 -F -U flash:w:./RM_03.xxx.hex

Note: this command working on Linux OS, port parameter may differ on Windows OS

- don't forget for secure header connection to RM!!!

- wait until FULL programming process finishes including VERIFYING
- if everything passed okay, RM is upgraded. All settings were erased and it should be in factory settings

Quick review and basic rules:

- before ANY upgrade operations ensure that you are not risking power outage (laptop or mobile battery are charged enough)
- through any operations, ensure a few times that the RM and programmer connection is secured and safe working
- put your hands with RM connected to the desk e.g. to ensure that you not going to move with the hand until programming finishes. Programming lasts for 30-60s in average
- if connection to the programmer fails, try to reconnect programmer

5/ Enclosing the RM

Insert lid this way
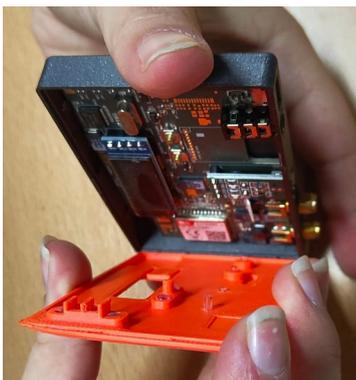
Bend the lid using fingers
and push top inside

..then press middle of the lid to push it in