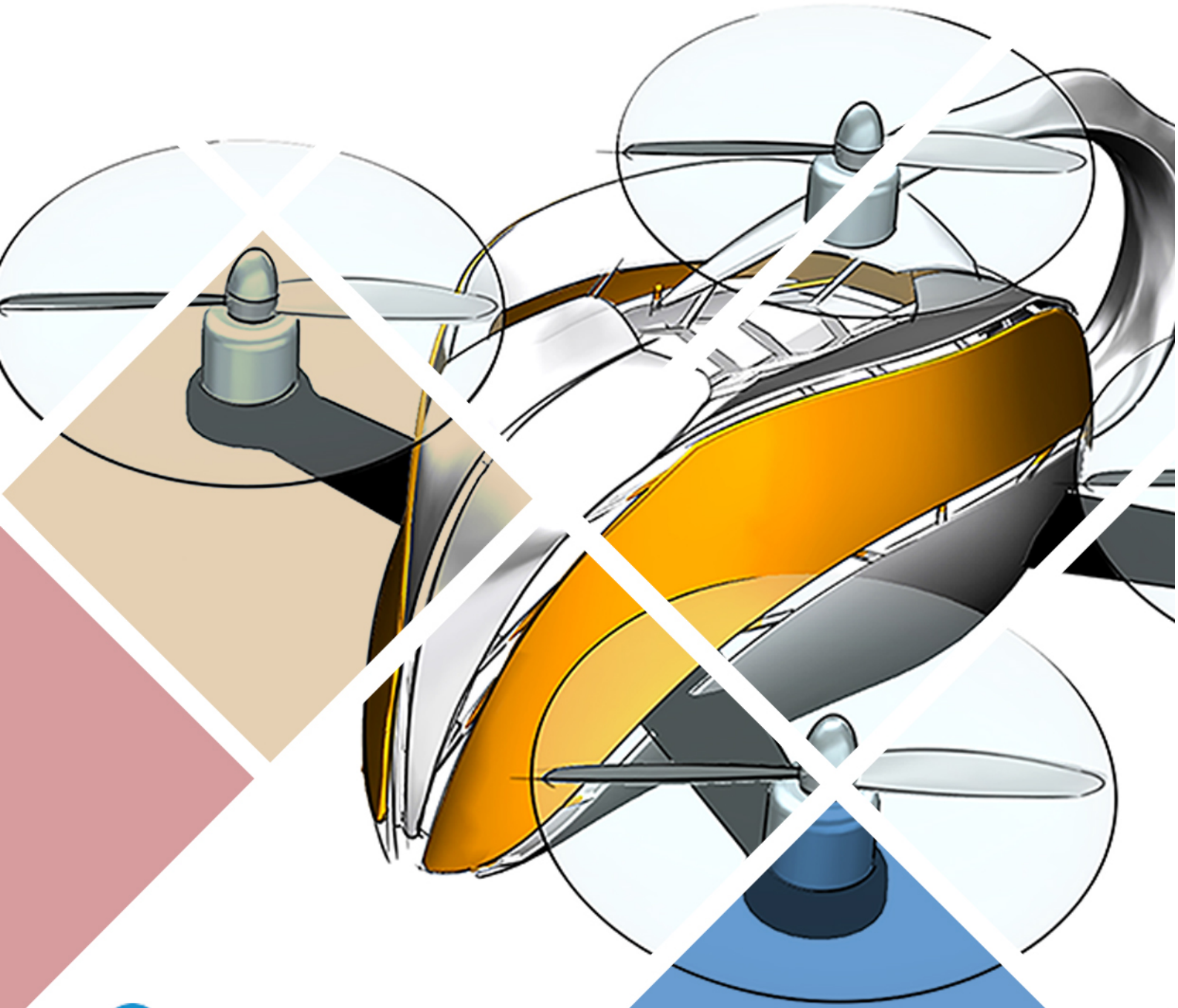


DRONE TEAM

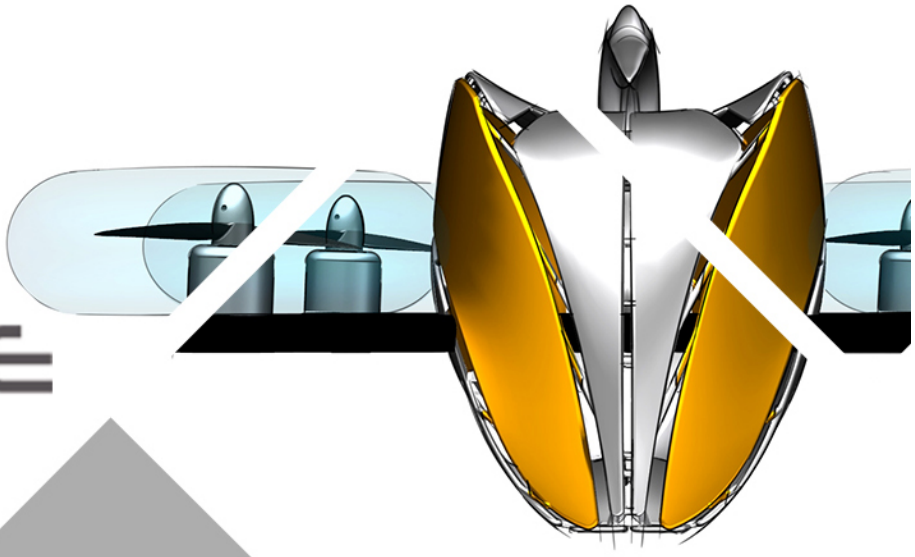
Drone It Yourself!

MAKING AND DESIGNING A TOY DRONE THROUGH MULTIDISCIPLINARY COLLABORATIVE WORK

Project no. 2015-1-ES01-KA202-015925

Co-funded by the Erasmus+ Programme of the European Union

Drone It Yourself! consists of the following modules:



DRONE TEAM

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

MODULE OF PROBLEM MANAGEMENT

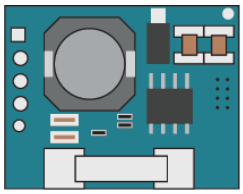
2015-1-ES01-KA202-015925

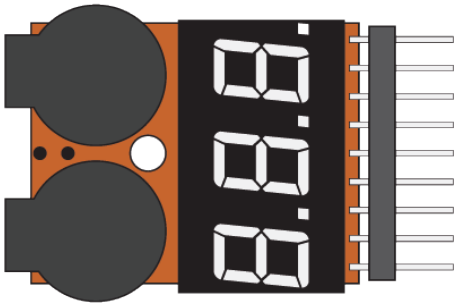
Co-funded by the Erasmus+ Programme of the European Union

Index

1. POWER MODULE

Power module permit measure current consumption and provides a stable voltage. It allows triggering a warning when battery is near of its capacity or there is a power problem.





Power module with TX60 connectors to connect the battery and the PBD (control distribution plate).

The power or power module will allow to know the voltage and the current supplied by the battery. These data can be viewed through live telemetry or data stored in the flight control of the drone.

A unique 6-pin cable is suitable for APM, HKPilot or PX4 controllers.

In this case, it also has a built-in switched BEC that emits 5.3V to a maximum of 2.25A, and can use up to 45Volts (10S LiPo) and up to a maximum of 90 A.

However, for The feeding of the motors is necessary an adequate PBD to avoid power problems.

The system is complemented by a "sneak" that emits a sound when the battery is running low, so the pilot can land the drone safely avoiding accidents due to battery exhaustion.

2. APM 2.6 PROBLEMS

How to program APM 2.6 on Atmel 2560

Introduction

APM 2.6 is preprogramed board. This is made for working with ArduPilot without any errors. The chip is Atmel 2560.

Configuration

- Windows 10 64bit
- Asus ux32a
- USB 3.0
- SSD
- Intel Core i3-3217U 1.80GHz
- 4 GB RAM

How it happened?

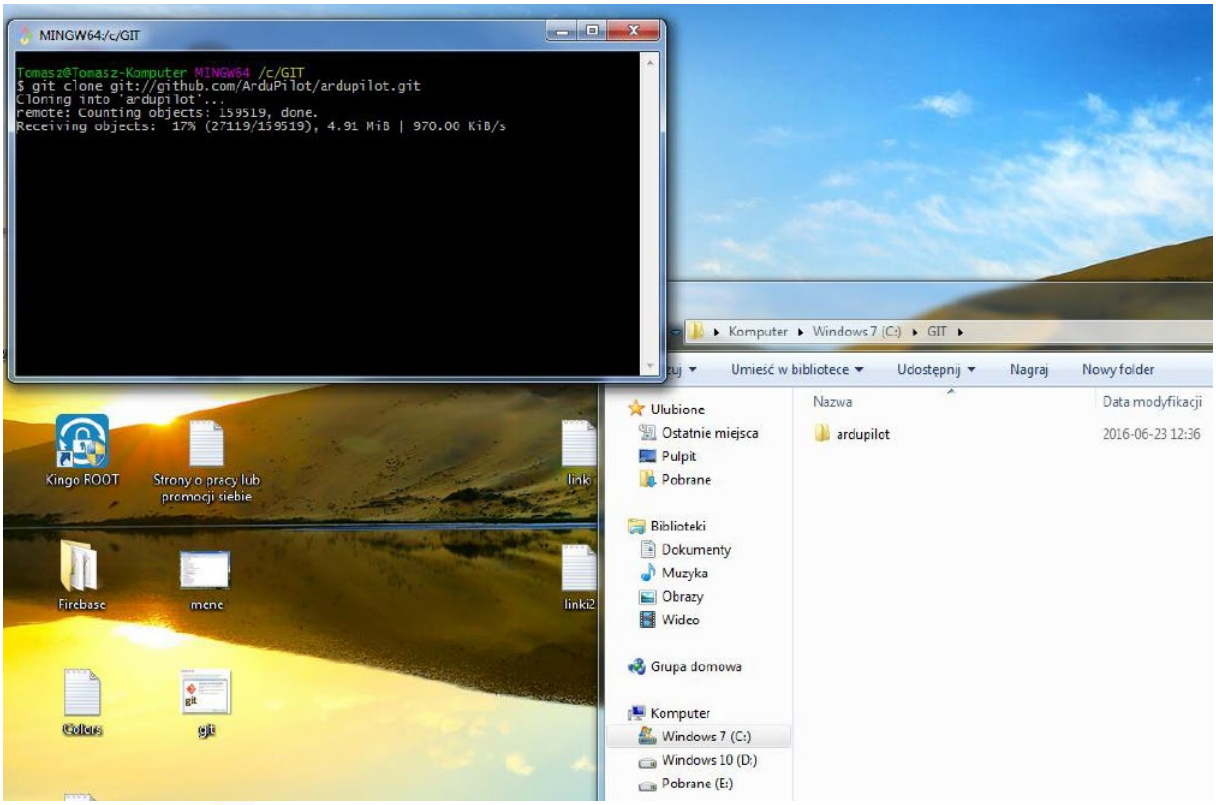
We decided if It works with Mission Planner, we will try with Arduino. Probably something went wrong during loading settings. This is very popular problem with APM 2.6, but few people have resolved this problem.

Symptoms

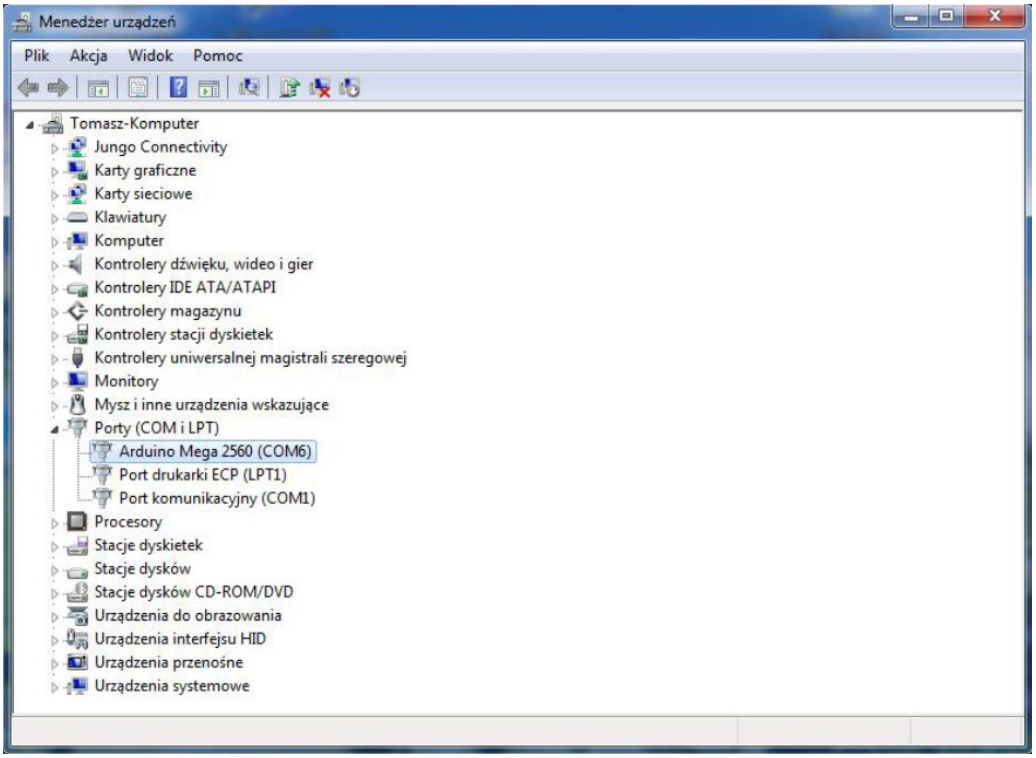
- Device is visible in COM port
- Only green led lights
- In mission planner it is impossible to connect and write new firmware
- Generally, device works

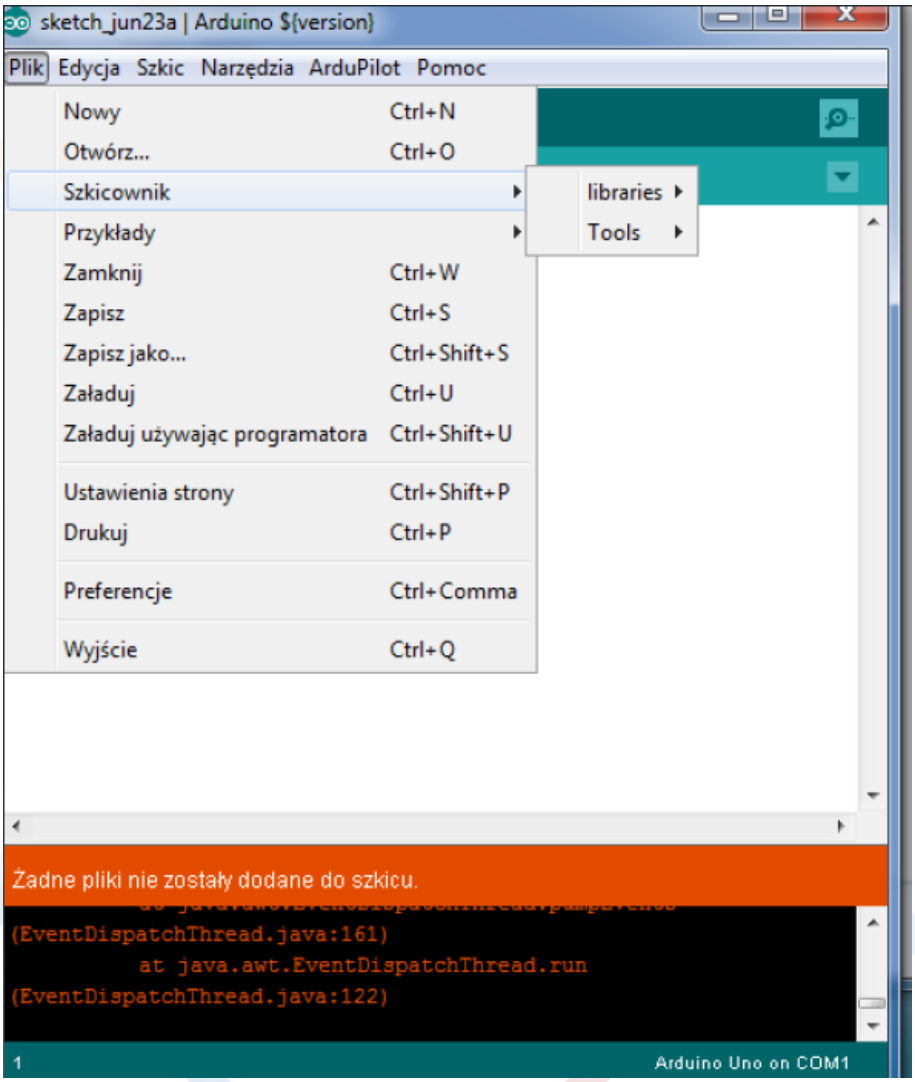
How to connect APM to Arduino

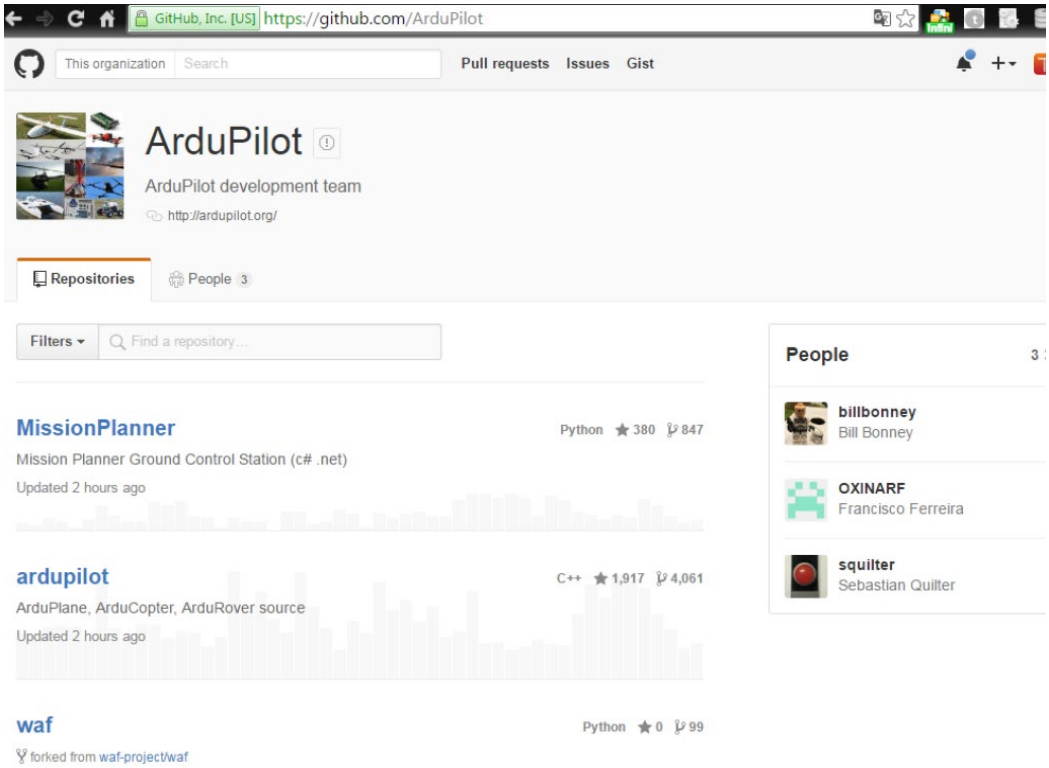
These steps will show you how to configure Arduino under APM

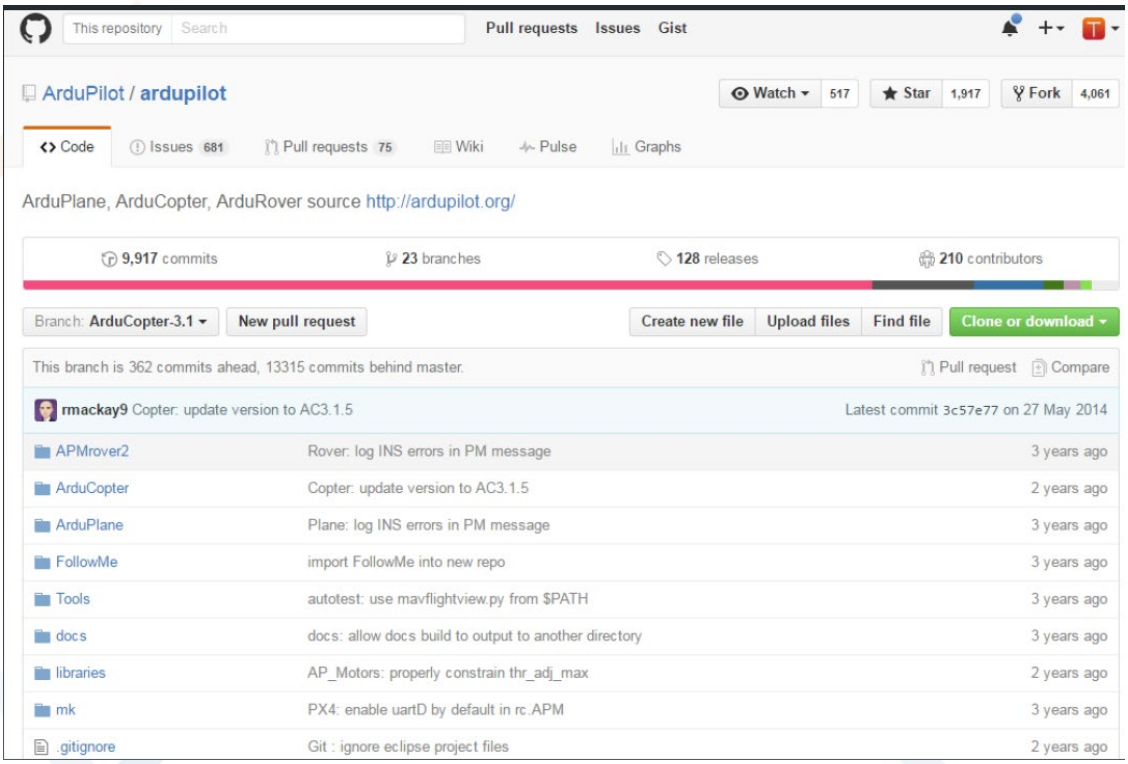

MINGW64:/c/GIT
Tomasz@Tomasz-Komputer MINGW64 /c/GIT
$ git clone git://github.com/ArduPilot/ardupilot.git
Cloning into 'ardupilot'...
remote: Counting objects: 159519, done.
Receiving objects: 17% (27119/159519), 4.91 MiB | 970.00 KiB/s
Komputer ▸ Windows 7 (C:) ▸ GIT ▸
Umieść w bibliotece
Udostępnij
Nagraj
Nowy folder
Nazwa
Data modyfikacji
ardupilot
2016-06-23 12:36
Ulubione
Ostatnie miejsca
Pulpit
Pobrane
Biblioteki
Dokumenty
Muzyka
Obrazy
Wideo
Grupa domowa
Komputer
Windows 7 (C:)
Windows 10 (D:)
Pobrane (E:)
Kingo ROOT
Strony o pracy lub promocji siebie
link
Firebase
mene
linki2
Qdcrs
git

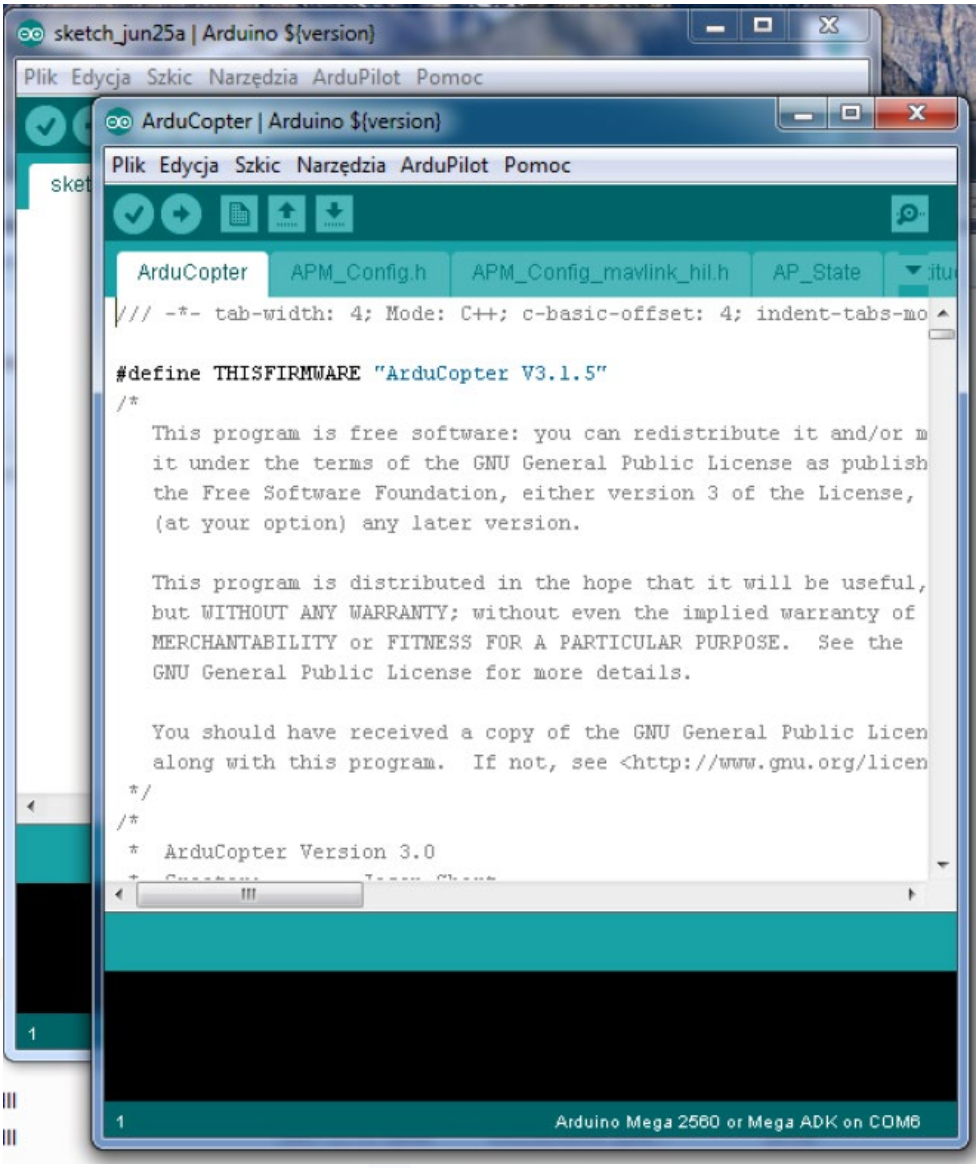

Install MHV_AVR_Tools to its default location
1. Download and install the MHV_AVR Tools:
http://firmware.ardupilot.org/Tools/Arduino/MHV_AVR_Tools_20121007.exe
MHV AVR Tools Setup
Welcome to the MHV AVR Tools Setup Wizard
This wizard will guide you through the installation of MHV AVR Tools.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.


Menedżer urządzeń
Plik Akcja Widok Pomoc
Tomasz-Komputer
Jungo Connectivity
Karty graficzne
Karty sieciowe
Klawiatury
Komputer
Kontrolery dźwięku, wideo i gier
Kontrolery IDE ATA/ATAPI
Kontrolery magazynu
Kontrolery stacji dyskietek
Kontrolery uniwersalnej magistrali szeregowej
Monitory
Mysz i inne urządzenia wskazujące
Porty (COM i LPT)
Arduino Mega 2560 (COM6)
Port drukarki ECP (LPT1)
Port komunikacyjny (COM1)
Procesory
Stacje dyskietek
Stacje dysków
Stacje dysków CD-ROM/DVD
Urządzenia do obrazowania
Urządzenia interfejsu HID
Urządzenia przenośne
Urządzenia systemowe


sketch_jun23a | Arduino ${version}
Plik Edycja Szkic Narzędzia ArduPilot Pomoc
Nowy Ctrl+N
Otwórz... Ctrl+O
Szkicownik
Przykłady
Zamknij Ctrl+W
Zapisz Ctrl+S
Zapisz jako... Ctrl+Shift+S
Załaduj Ctrl+U
Załaduj używając programatora Ctrl+Shift+U
Ustawienia strony Ctrl+Shift+P
Drukuj Ctrl+P
Preferencje Ctrl+Comma
Wyjście Ctrl+Q
libraries
Tools
Żadne pliki nie zostały dodane do szkicu.
(EventDispatchThread.java:161)
at java.awt.EventDispatchThread.run
(EventDispatchThread.java:122)
1
Arduino Uno on COM1


GitHub, Inc. [US] https://github.com/ArduPilot
This organization Search
Pull requests Issues Gist
ArduPilot
ArduPilot development team
http://ardupilot.org/
Repositories
People 3
Filters
Find a repository...
MissionPlanner
Python 380 847
Mission Planner Ground Control Station (c# .net)
Updated 2 hours ago
ardupilot
C++ 1,917 4,061
ArduPlane, ArduCopter, ArduRover source
Updated 2 hours ago
waf
Python 0 99
forked from waf-project/waf
People
billbonney
Bill Bonney
OXINARF
Francisco Ferreira
squilter
Sebastian Quilter


This repository Search
Pull requests Issues Gist
ArduPilot / ardupilot
Watch 517
Star 1,917
Fork 4,061
Code
Issues 681
Pull requests 75
Wiki
Pulse
Graphs
ArduPlane, ArduCopter, ArduRover source http://ardupilot.org/
9,917 commits
23 branches
128 releases
210 contributors
Branch: ArduCopter-3.1
New pull request
Create new file
Upload files
Find file
Clone or download
This branch is 362 commits ahead, 13315 commits behind master.
Pull request
Compare
rmackay9 Copter: update version to AC3.1.5
Latest commit 3c57e77 on 27 May 2014
APMrover2 Rover: log INS errors in PM message 3 years ago
ArduCopter Copter: update version to AC3.1.5 2 years ago
ArduPlane Plane: log INS errors in PM message 3 years ago
FollowMe import FollowMe into new repo 3 years ago
Tools autotest: use mavflightview.py from $PATH 3 years ago
docs docs: allow docs build to output to another directory 3 years ago
libraries AP_Motors: properly constrain thr_adj_max 2 years ago
mk PX4: enable uartD by default in rc.APM 3 years ago
.gitignore Git : ignore eclipse project files 2 years ago



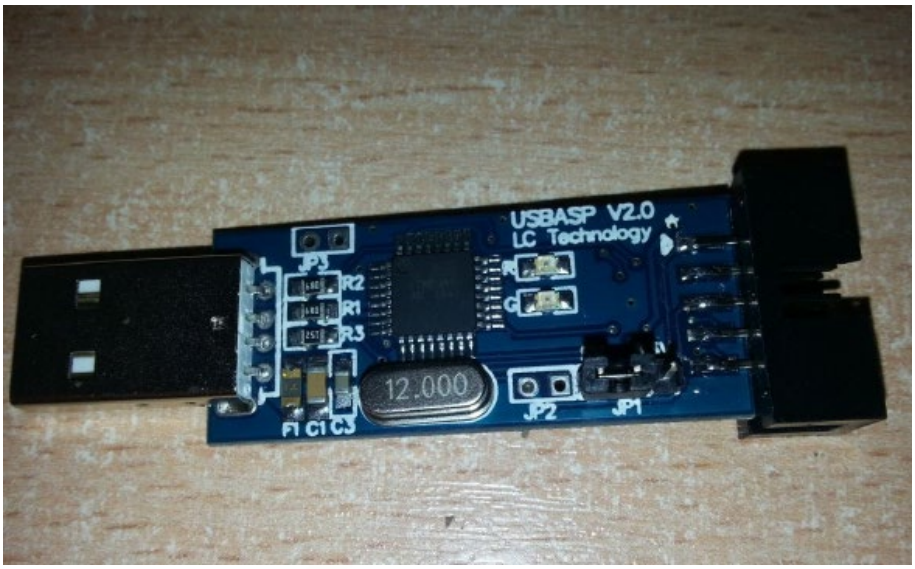
How to repair board?

You must put bootloader again by usbasp programmer.

What do you need?

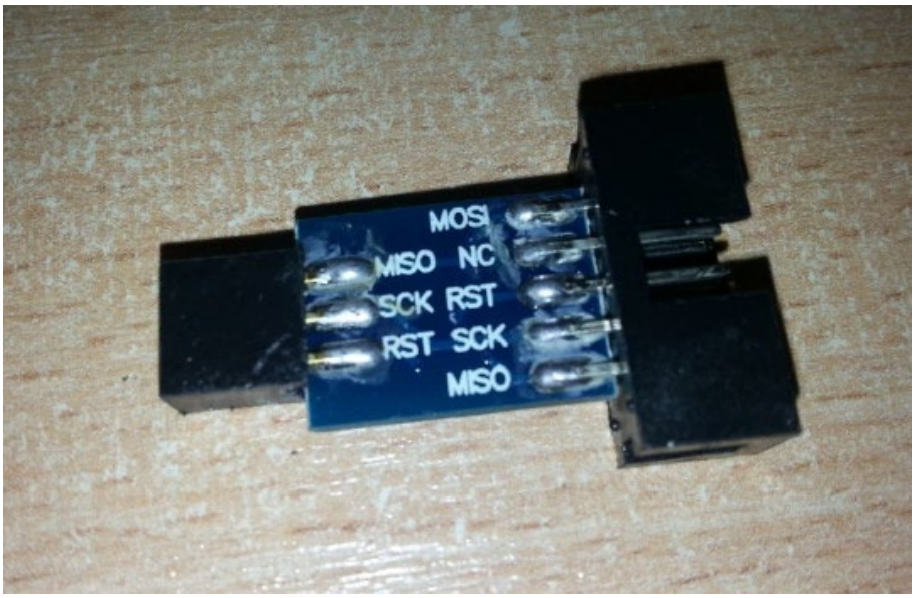
- Some knowledge about programmers and microcontrollers
- USBASP or AVR programmer
- Transfer cable
- KANDA adapter (if you have a 3 pins board)
- Application or AVRDUDE

USBASP

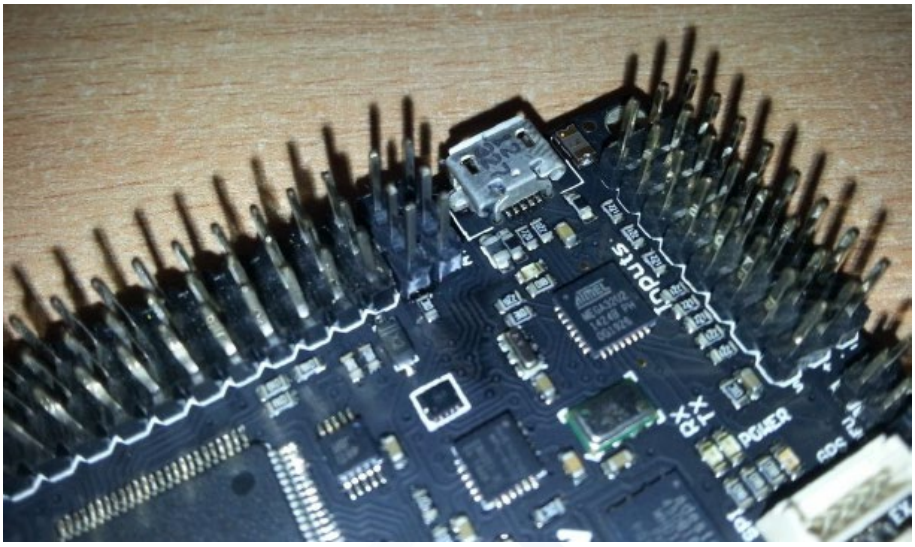


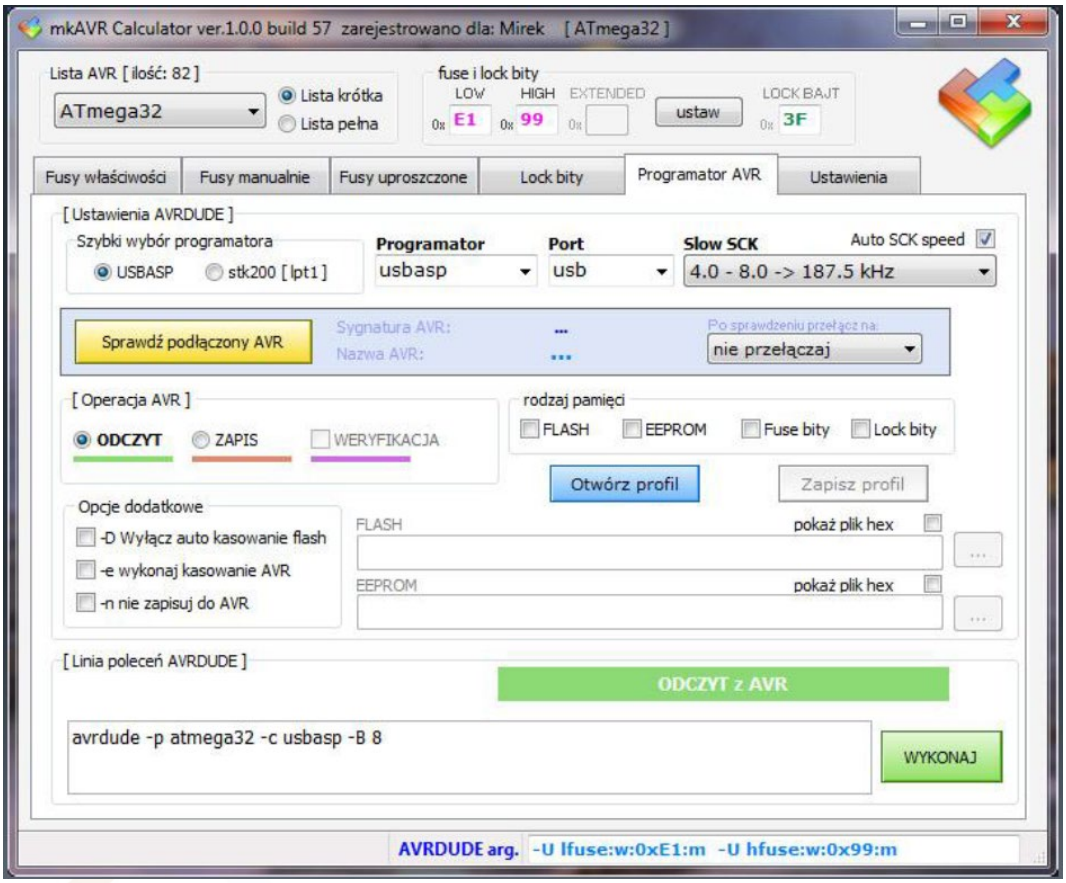
Cable

KANDA Adapter

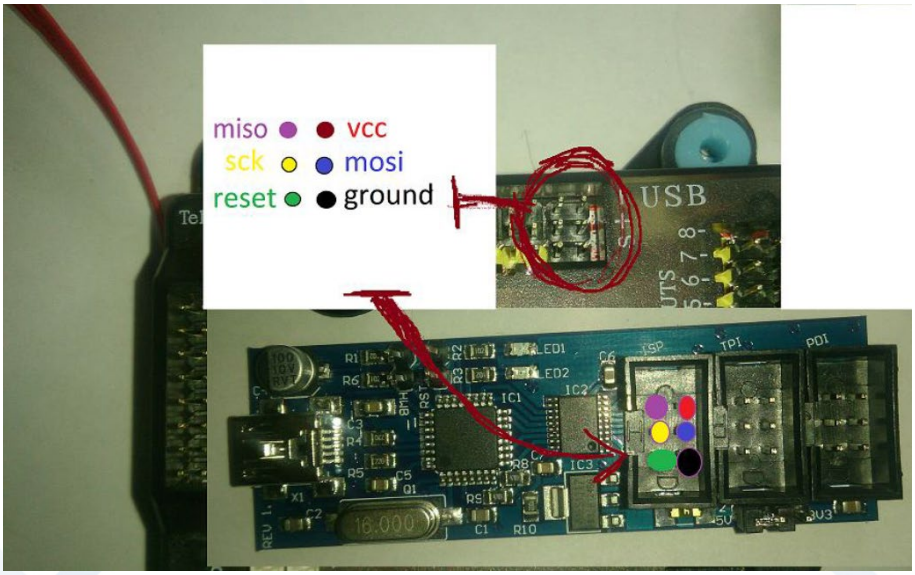


Pins

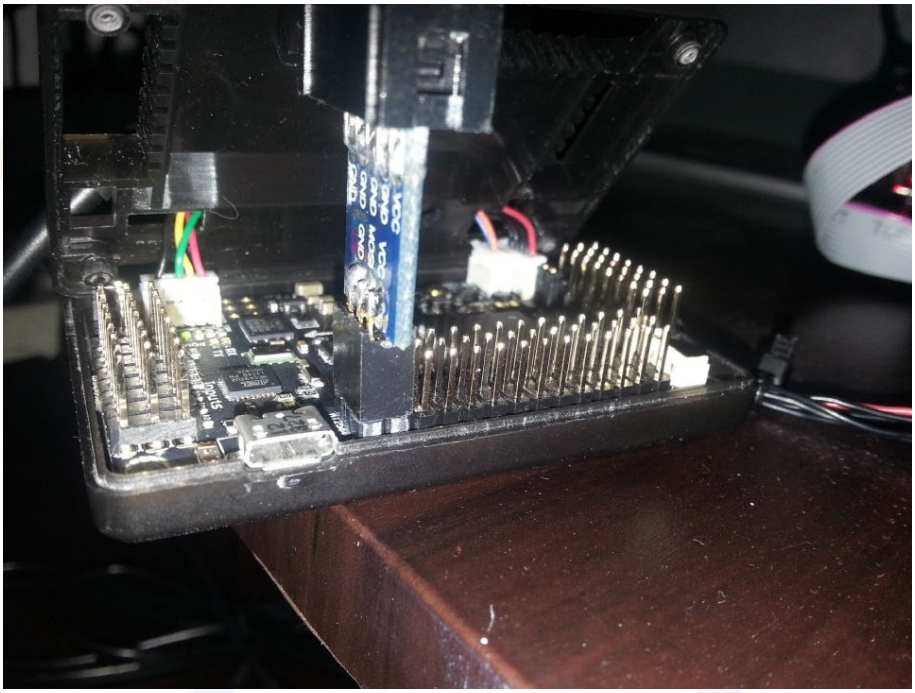


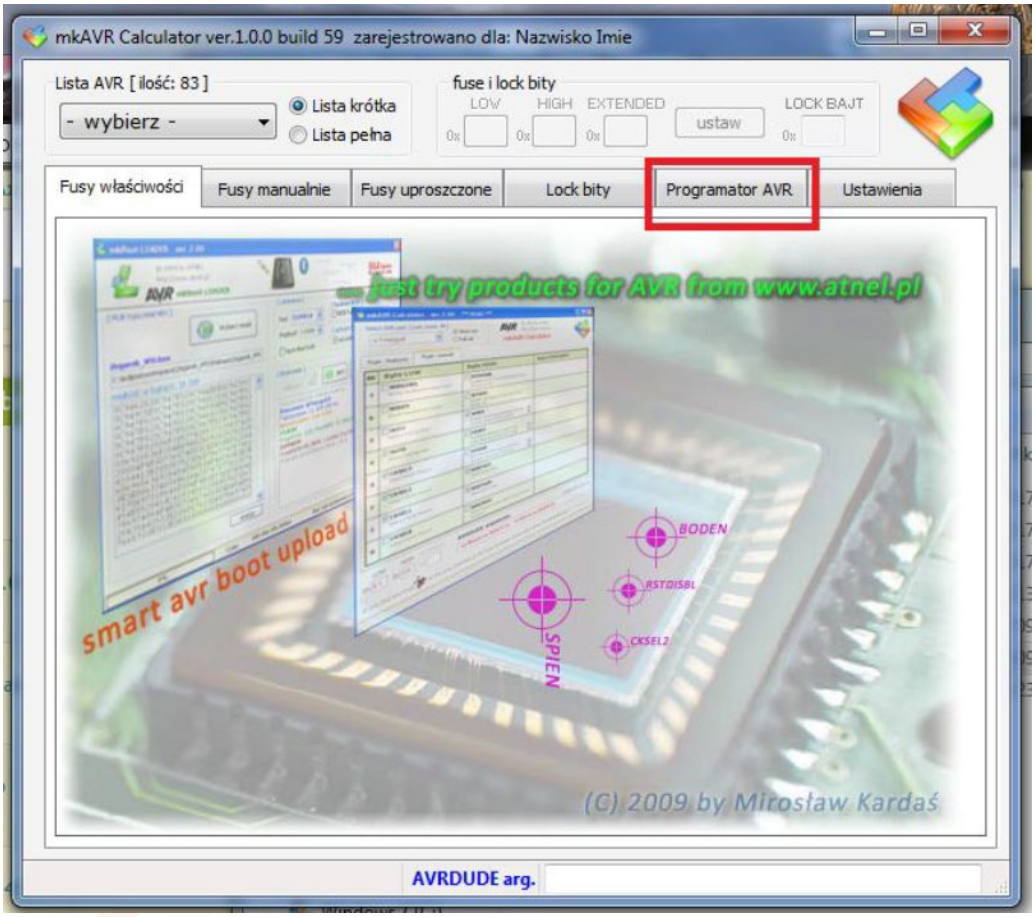


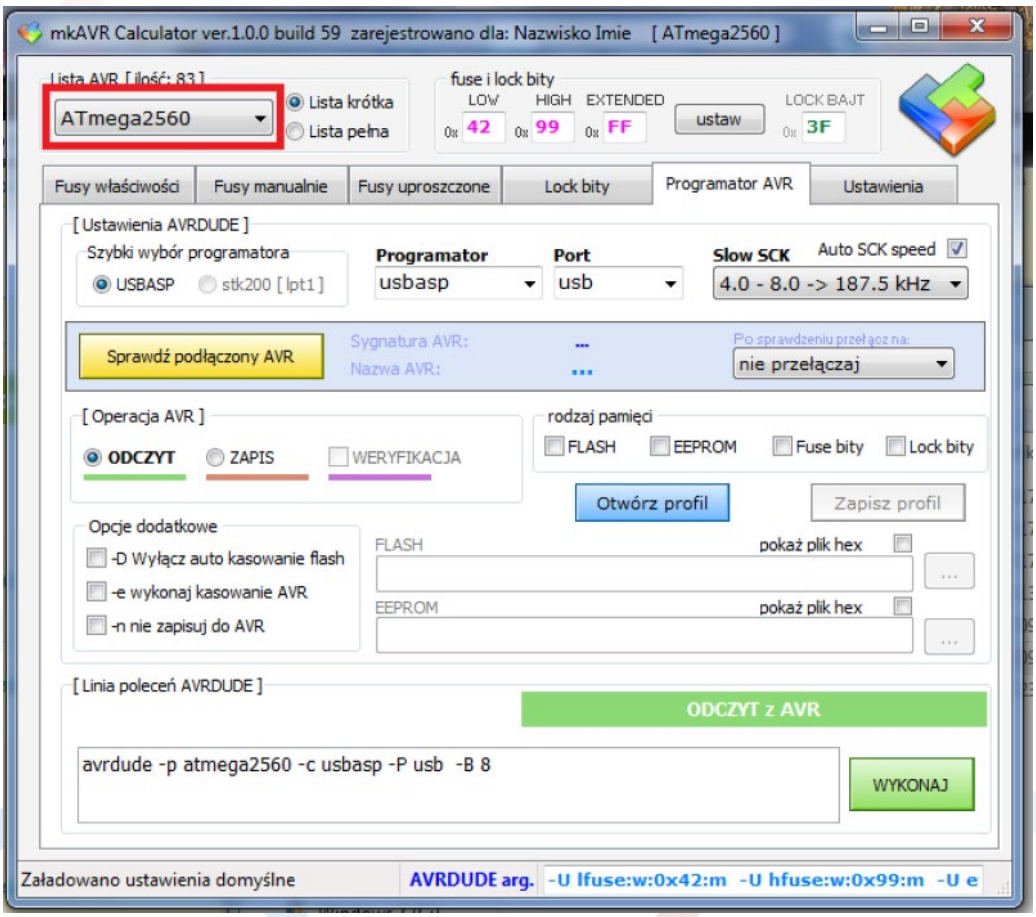
Follow this information:

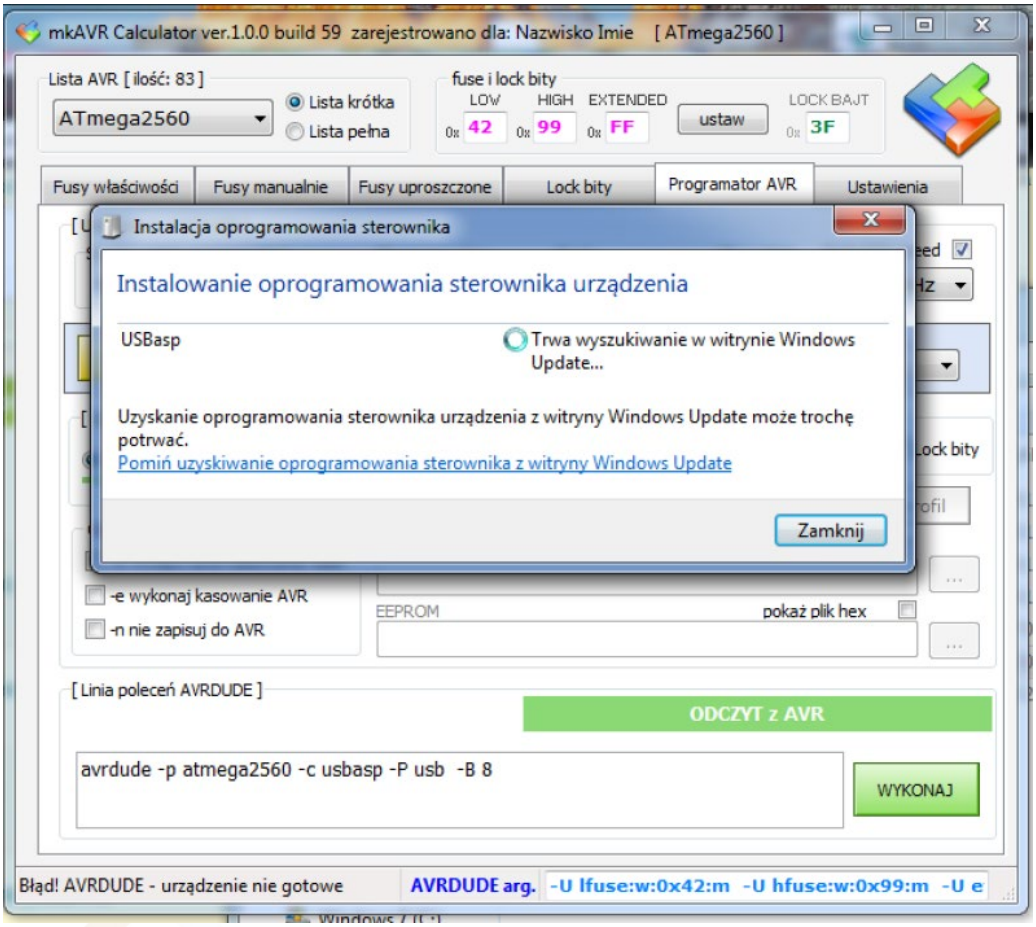


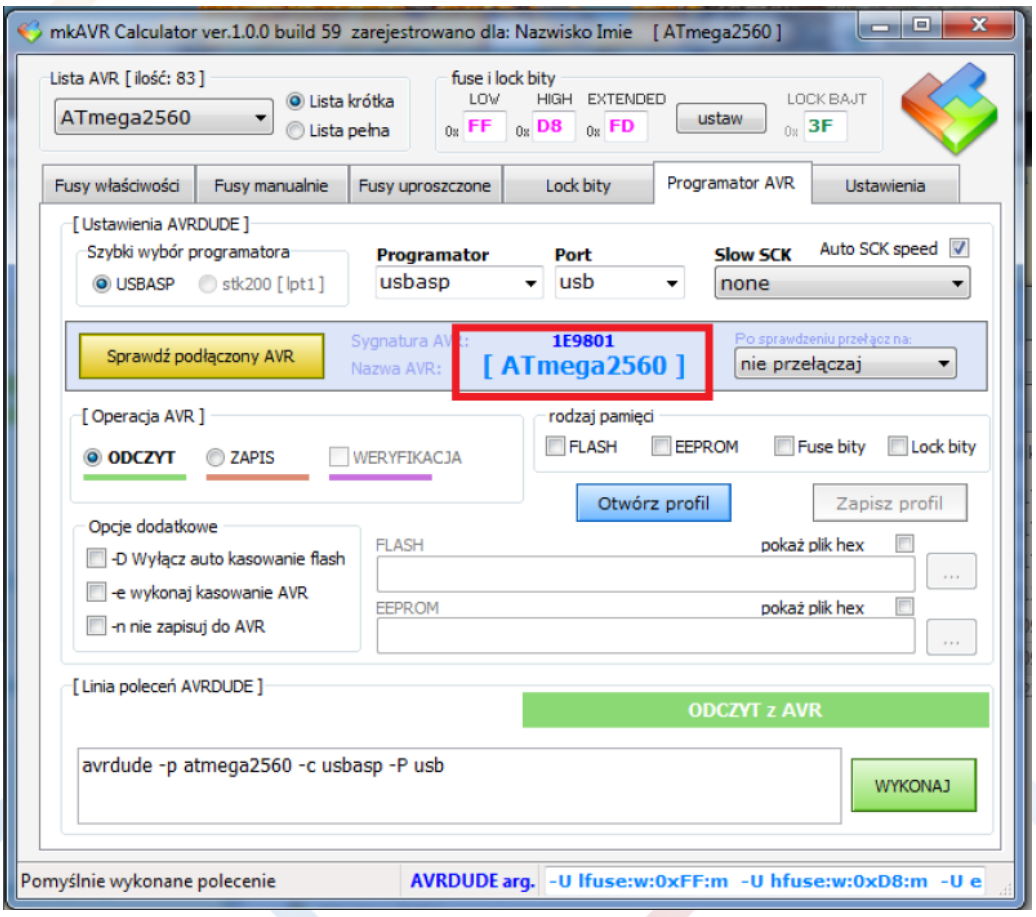

FLATRON

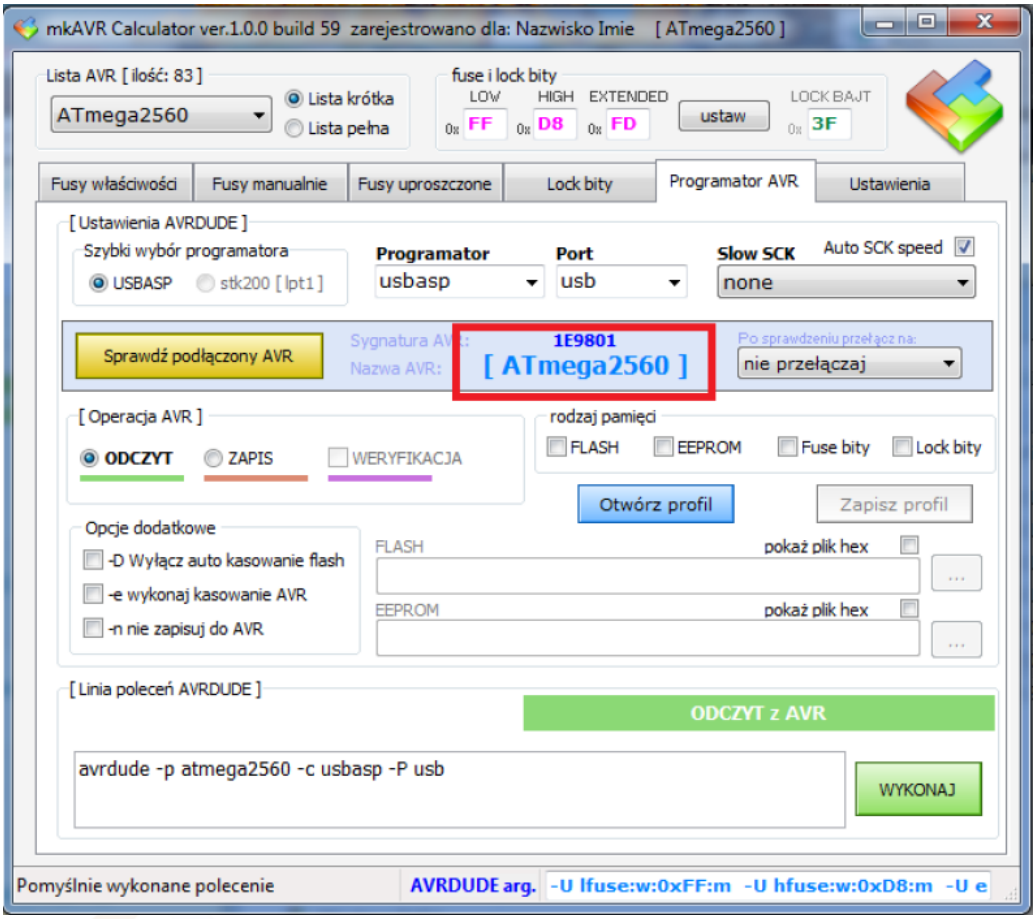



mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie
Lista AVR [ilość: 83]
- wybierz -
Lista krótka
Lista pełna
fuse i lock bity
LOW
HIGH
EXTENDED
LOCK BAJT
ustaw
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
just try products for AVR from www.atnel.pl
smart avr boot upload
BODEN
RSTDISBL
SPIEN
CKSEL2
(C) 2009 by Mirosław Kardaś
AVRDUDE arg.


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW 0x 42
HIGH 0x 99
EXTENDED 0x FF
ustaw
LOCK BAJT 0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
[Ustawienia AVRDUDE]
Szybki wybór programatora
USBASP
stk200 [lpt1]
Programator
usbasp
Port
usb
Slow SCK
Auto SCK speed
4.0 - 8.0 -> 187.5 kHz
Sprawdź podłączony AVR
Sygnatura AVR:
Nazwa AVR:
Po sprawdzeniu przełącz na:
nie przełączaj
[Operacja AVR]
ODCZYT
ZAPIS
WERYFIKACJA
rodzaj pamięci
FLASH
EEPROM
Fuse bity
Lock bity
Otwórz profil
Zapisz profil
Opcje dodatkowe
-D Wyłącz auto kasowanie flash
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
FLASH
pokaż plik hex
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb -B 8
WYKONAJ
Załadowano ustawienia domyślne
AVRDUDE arg.
-U lfuse:w:0x42:m -U hfuse:w:0x99:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW HIGH EXTENDED
0x 42 0x 99 0x FF
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
Instalacja oprogramowania sterownika
Instalowanie oprogramowania sterownika urządzenia
USBasp
Trwa wyszukiwanie w witrynie Windows Update...
Uzyskanie oprogramowania sterownika urządzenia z witryny Windows Update może trochę potrwać.
Pomiń uzyskiwanie oprogramowania sterownika z witryny Windows Update
Zamknij
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb -B 8
WYKONAJ
Błąd! AVRDUDE - urządzenie nie gotowe
AVRDUDE arg.
-U lfuse:w:0x42:m -U hfuse:w:0x99:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW HIGH EXTENDED
0x FF 0x D8 0x FD
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
[Ustawienia AVRDUDE]
Szybki wybór programatora
USBASP
stk200 [lpt1]
Programator
usbasp
Port
usb
Slow SCK
Auto SCK speed
none
Sprawdź podłączony AVR
Sygnatura AVR: 1E9801
Nazwa AVR: [ATmega2560]
Po sprawdzeniu przełącz na:
nie przełączaj
[Operacja AVR]
ODCZYT
ZAPIS
WERYFIKACJA
rodzaj pamięci
FLASH
EEPROM
Fuse bity
Lock bity
Otwórz profil
Zapisz profil
Opcje dodatkowe
-D Wyłącz auto kasowanie flash
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
FLASH
pokaż plik hex
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb
WYKONAJ
Pomyślnie wykonane polecenie
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW HIGH EXTENDED
0x FF 0x D8 0x FD
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
[Ustawienia AVRDUDE]
Szybki wybór programatora
USBASP
stk200 [lpt1]
Programator
usbasp
Port
usb
Slow SCK
none
Auto SCK speed
Sprawdź podłączony AVR
Sygnatura AVR:
1E9801
Nazwa AVR:
[ATmega2560]
Po sprawdzeniu przełącz na:
nie przełączaj
[Operacja AVR]
ODCZYT
ZAPIS
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rodzaj pamięci
FLASH
EEPROM
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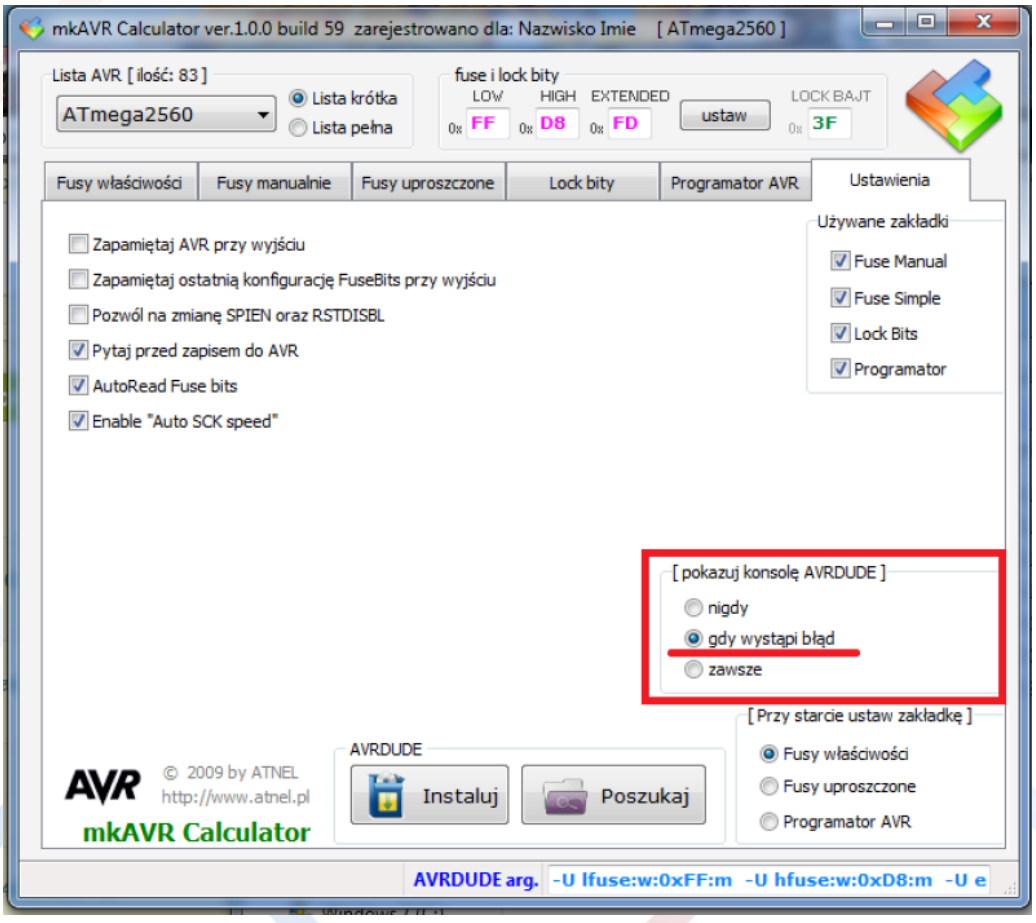
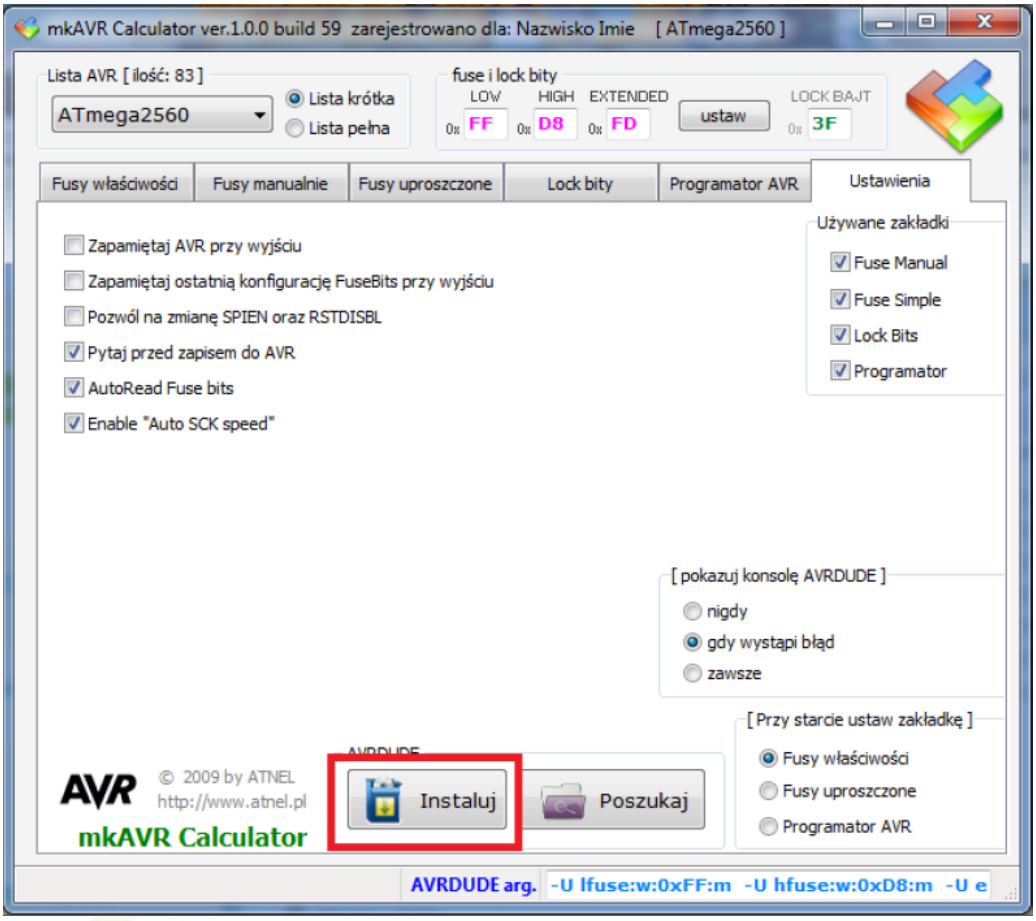
Opcje dodatkowe
-D Wyłącz auto kasowanie flash
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
FLASH
pokaż plik hex
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb
WYKONAJ
Pomyślnie wykonane polecenie
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW HIGH EXTENDED
0x FF 0x D8 0x FD
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
Zapamiętaj AVR przy wyjściu
Zapamiętaj ostatnią konfigurację FuseBits przy wyjściu
Pozwól na zmianę SPIEN oraz RSTDISBL
Pytaj przed zapisem do AVR
AutoRead Fuse bits
Enable "Auto SCK speed"
Używane zakładki
Fuse Manual
Fuse Simple
Lock Bits
Programator
[pokazuj konsolę AVRDUDE]
nigdy
gdy wystąpi błąd
zawsze
[Przy starcie ustaw zakładkę]
Fusy właściwości
Fusy uproszczone
Programator AVR
AVR
© 2009 by ATNEL
http://www.atnel.pl
mkAVR Calculator
AVRDUDE
Instaluj
Poszukaj
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
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Lista pełna
fuse i lock bity
LOW
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0x FF
0x D8
0x FD
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
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Programator AVR
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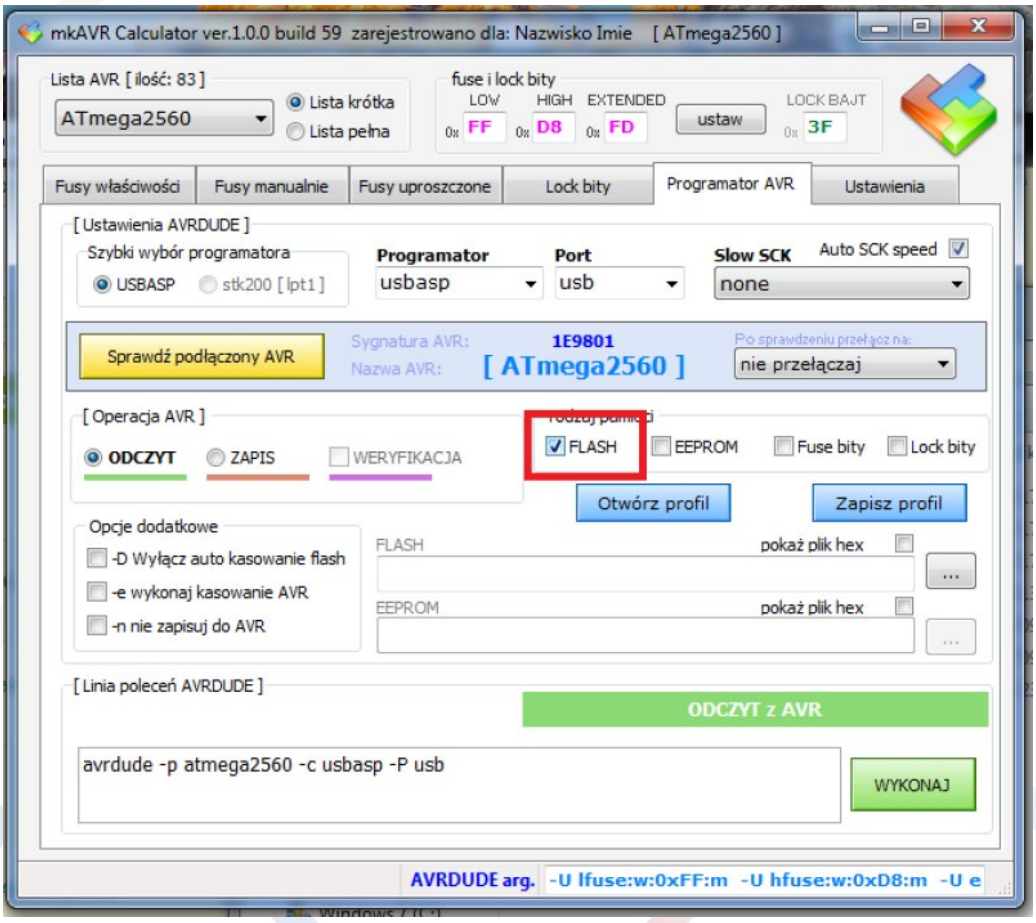
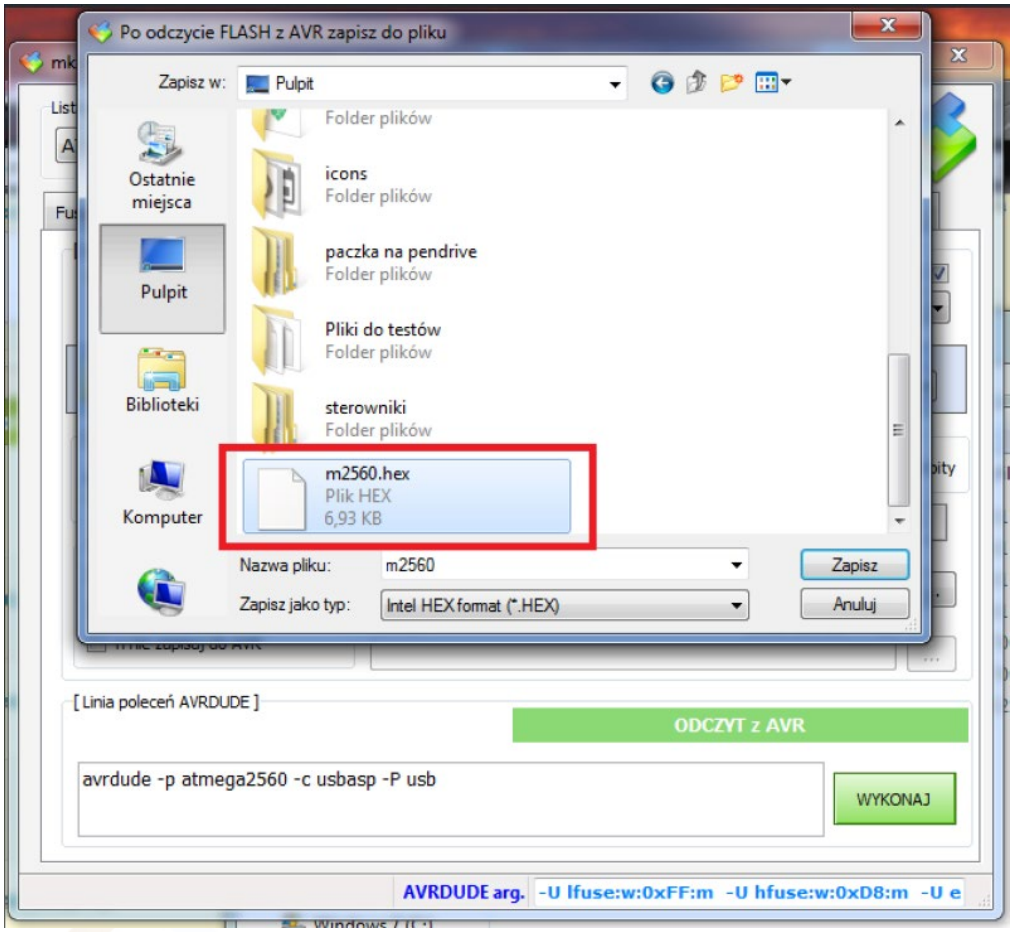
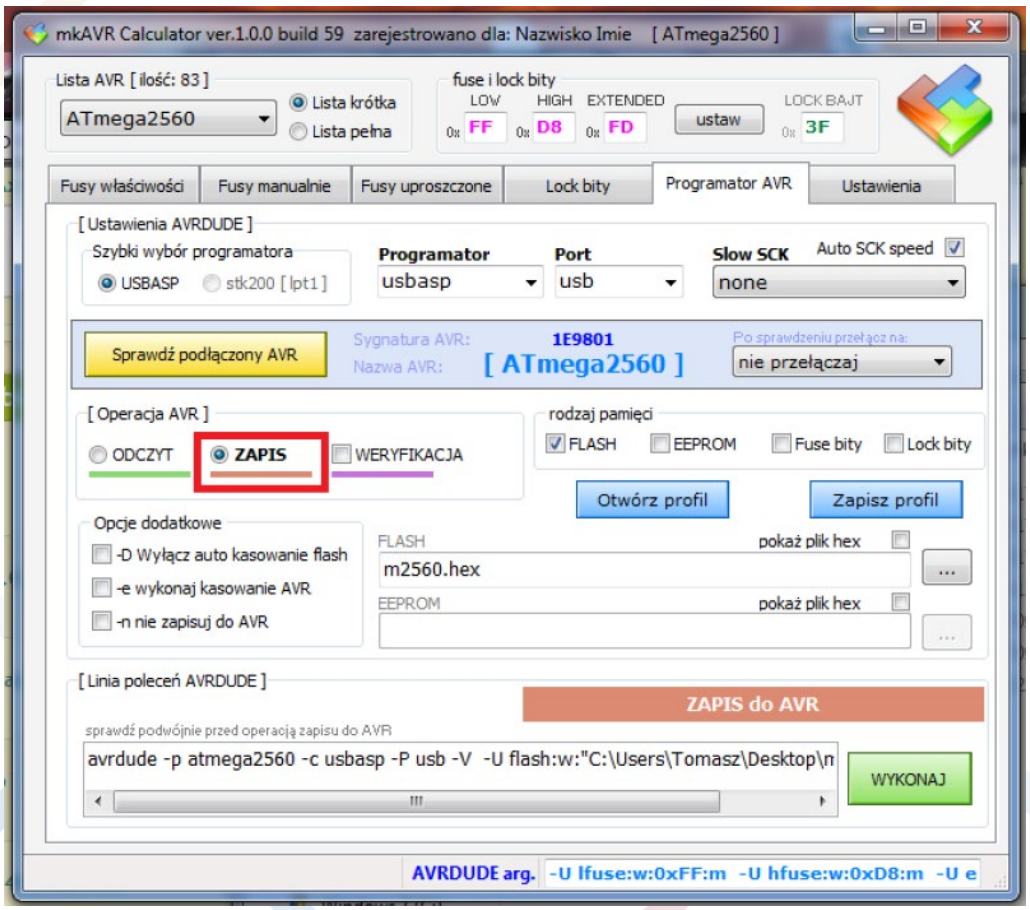
Zapamiętaj AVR przy wyjściu
Zapamiętaj ostatnią konfigurację FuseBits przy wyjściu
Pozwól na zmianę SPIEN oraz RSTDISBL
Pytaj przed zapisem do AVR
AutoRead Fuse bits
Enable "Auto SCK speed"
Używane zakładki
Fuse Manual
Fuse Simple
Lock Bits
Programator
[pokazuj konsolę AVRDUDE]
nigdy
gdy wystąpi błąd
zawsze
[Przy starcie ustaw zakładkę]
Fusy właściwości
Fusy uproszczone
Programator AVR
AVR
© 2009 by ATNEL
http://www.atnel.pl
mkAVR Calculator
Instaluj
Poszukaj
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW
HIGH
EXTENDED
0x FF
0x D8
0x FD
ustaw
LOCK BAJT
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
[Ustawienia AVRDUDE]
Szybki wybór programatora
USBASP
stk200 [lpt1]
Programator
usbasp
Port
usb
Slow SCK
Auto SCK speed
none
Sprawdź podłączony AVR
Sygnatura AVR:
1E9801
Nazwa AVR:
[ATmega2560]
Po sprawdzeniu przełącz na:
nie przełączaj
[Operacja AVR]
ODCZYT
ZAPIS
WERYFIKACJA
FLASH
EEPROM
Fuse bity
Lock bity
Otwórz profil
Zapisz profil
Opcje dodatkowe
-D Wyłącz auto kasowanie flash
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
FLASH
pokaż plik hex
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb
WYKONAJ
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


Po odczycie FLASH z AVR zapisz do pliku
Zapisz w:
Pulpit
Folder plików
Ostatnie miejsca
icons
Folder plików
Pulpit
paczka na pendrive
Folder plików
Biblioteki
Pliki do testów
Folder plików
sterowniki
Folder plików
Komputer
m2560.hex
Plik HEX
6,93 KB
Nazwa pliku:
m2560
Zapisz
Zapisz jako typ:
Intel HEX format (*.HEX)
Anuluj
[Linia poleceń AVRDUDE]
ODCZYT z AVR
avrdude -p atmega2560 -c usbasp -P usb
WYKONAJ
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e


mkAVR Calculator ver.1.0.0 build 59 zarejestrowano dla: Nazwisko Imie [ATmega2560]
Lista AVR [ilość: 83]
ATmega2560
Lista krótka
Lista pełna
fuse i lock bity
LOW
HIGH
EXTENDED
LOCK BAJT
0x FF
0x D8
0x FD
ustaw
0x 3F
Fusy właściwości
Fusy manualnie
Fusy uproszczone
Lock bity
Programator AVR
Ustawienia
[Ustawienia AVRDUDE]
Szybki wybór programatora
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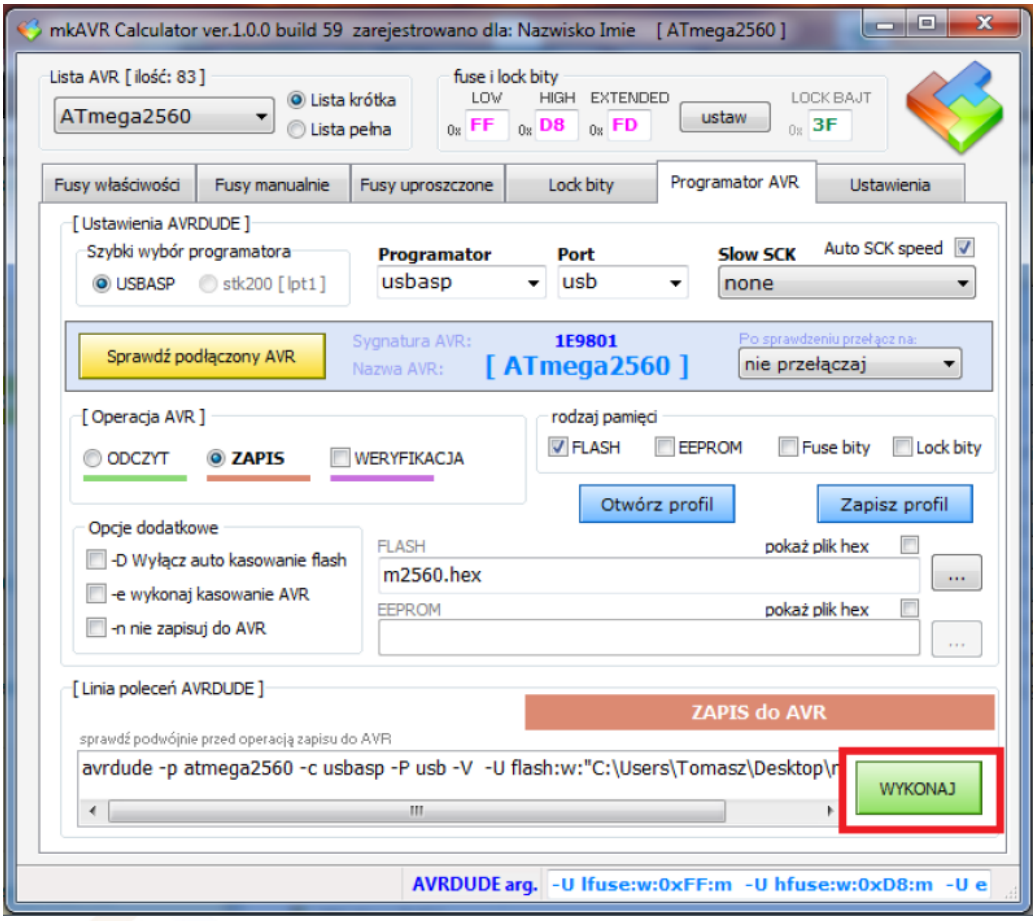
Port
usb
Slow SCK
Auto SCK speed
none
Sprawdź podłączony AVR
Sygnatura AVR:
1E9801
Nazwa AVR:
[ATmega2560]
Po sprawdzeniu przełącz na:
nie przełączaj
[Operacja AVR]
ODCZYT
ZAPIS
WERYFIKACJA
rodzaj pamięci
FLASH
EEPROM
Fuse bity
Lock bity
Otwórz profil
Zapisz profil
Opcje dodatkowe
-D Wyłącz auto kasowanie flash
-e wykonaj kasowanie AVR
-n nie zapisuj do AVR
FLASH
pokaż plik hex
m2560.hex
EEPROM
pokaż plik hex
[Linia poleceń AVRDUDE]
ZAPIS do AVR
sprawdź podwójnie przed operacją zapisu do AVR
avrdude -p atmega2560 -c usbasp -P usb -V -U flash:w:"C:\Users\Tomasz\Desktop\n
WYKONAJ
AVRDUDE arg.
-U lfuse:w:0xFF:m -U hfuse:w:0xD8:m -U e



With the previous procedure, we will solve the APM 2.6 problems.

3. DRONE REGULATION

Drone sector is an emerging and technologically advanced sector that is being regulated by all countries, although logically, there is always the circumstance that while the sector is growing in possibilities and applications, the regulations are also adapted to the circumstances. Therefore, the regulations that affect drones or unmanned aerial vehicles will change in the coming years. It is important to know what is the regulation that affects the flight of drones. In this section, a review is made and advice of good practices for the proper use of drones are given. In each country, regulations on drone flight must be met and respected. Not all countries have the same regulations and there are some variations.

3.1. Regulations in Spain.

In Spain, for example, the last applicable standard for the closing of this document is published from 18 April, 2018.

According to the weight of the drone we will have more or less prohibitions (this being for recreational use).

If your drone weighs less than 250g, you can fly it practically anywhere except in restricted flight areas and near airports, as long as you do not exceed 20 metres in height and do not bother third parties.

But if your drone exceeds this weight, without reaching 2kg, almost all fall into this category, you have to go to parks or unpopulated areas to use it, since you cannot fly over people or buildings or exceed 50 metres in height.

Next we will see the rules more closely:

What requirements do I have to meet if I am flying recreationally?

1. Fly at a minimum distance of 8 km from any airport or aerodrome.

2. Fly out of controlled airspace.

3. Do not exceed 120 metres above the ground, or above the highest obstacle located within a radius of 150 metres from the drone.

4. Fly by day and in good weather conditions. Here it is necessary to emphasise that if the drone weighs less than 2 kilograms, night flights are allowed as long as they do not exceed 50 metres in height.

5. Flights will always be within the visual range of the pilot.

6. Airplanes of less than 250 grams may fly in the city and over crowds of people and buildings as long as they do not exceed 20 meters in height.

7. Although it is not mandatory for recreational use, it is highly recommended to have a civil liability insurance

Where to fly:

Next we are going to talk about ENAIRE, the manager of air navigation in Spain.

It is responsible for controlling an airspace of more than 2,000,000 km, in addition to having a website where we can know if it is safe to fly our drone or not in a space defined by ourselves. Link: https://drones.enaire.es/

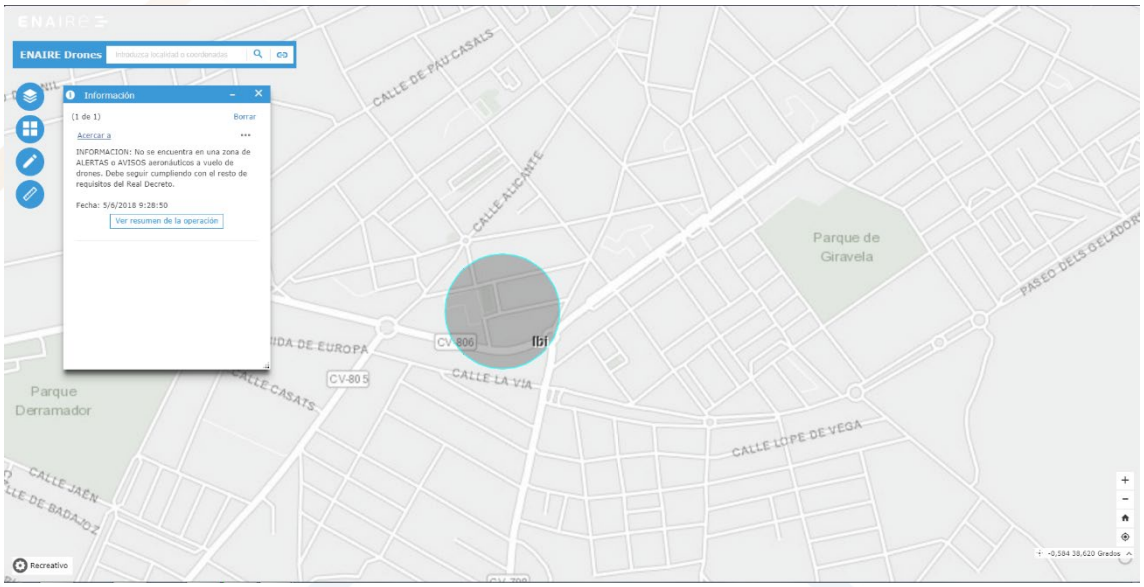
Within this page, we must answer a few questions about our drone and where we want to fly.

In our case, the drone we use is recreational, so we can only use it for exhibitions or recreational activities.

Once the questionnaire is finished, we will press the button Draw flight area on the map.

As you can see, we are already on the world map, and we can choose the desired flight area, since the page itself will determine whether it is legal or not to fly in that area.

We have chosen the dark circle and, as far as we can see, the page says that there is no flight restriction in the marked area, although in any case, we must also follow the rules of the Law.

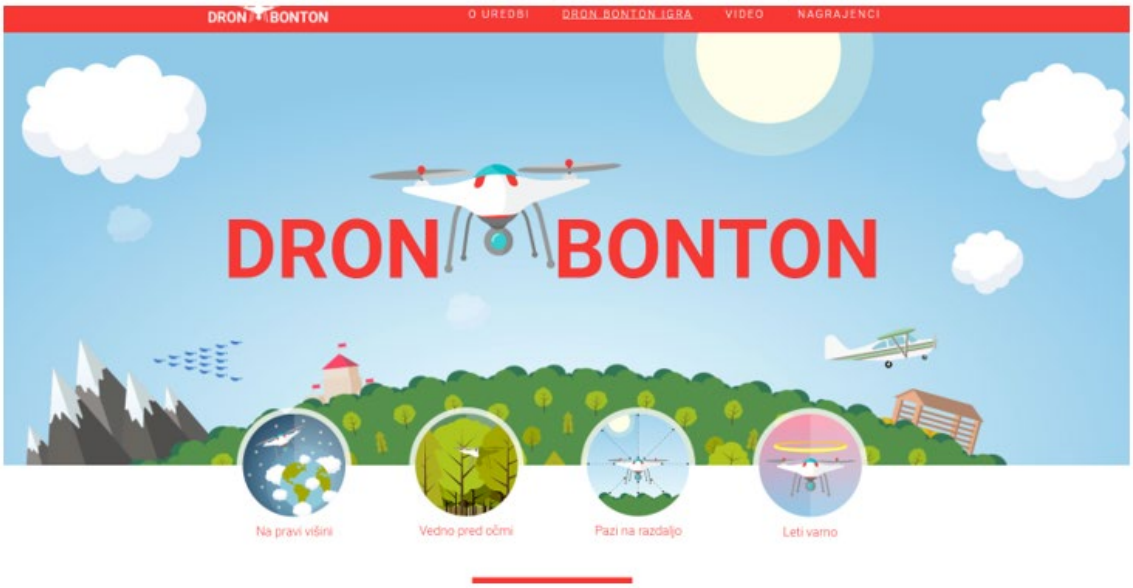


3.2. Regulations in Slovenia

In Slovenia, there are variations of weights or distances, comparing with the other countries regulations:

- If drone weighs 5 kilograms or more, must be registered in the CAA (Civil Aviation Administration of Slovenia: http://www.caa.si/). For 25 Kg or 150 Kg there are some specific regulations.
- Distance to airports: 1.5 kilometres from airports.
- Only can fly during the day.
- Commercial drone flights are not permitted, only recreational purposes.
- Maximum height: 150 metres.
- Maximum horizontally distance between drone and pilot: 500 meters. FPV flights are permitted if there is a visual point from the pilot to watch the drone.

you can learn the Slovenian drone rules through a video game: http://www.dronbonton.si



3.3. Regulations in Poland.

In Poland, the Civil Aviation Authority is the body in charge of regulating the drone sector. To fly in Warsaw is required a special authorization. And commercial pilots must pass some certificates. Therefore, basic rules for flying drones in Poland are:

- Maximum height: 150 metres.
- Maximum weight: 25 kg
- Distance to airports: 5 kilometres from airports.
- Al least 100 metres from over cities and 30 metres from vehicles or animals
- Drone must be in visual line with pilots
- Liability insurance is only required for commercial drones.

3.4. Regulations in Croatia.

The Croatian Civil Aviation Agency is the body that organise the drone sector in Croatia. Basic regulations are:

- Maximum height: 150 metres.
- Maximum weight: 5 kg. For more than 5kg, the drone need a label with non-flammable identification and the pilot information (name, address, phone)
- Distance to airports: 3 kilometres from airports (except under special circumstances)
- Only can fly during the day.
- Safe distance: Al least 150 metres from cities or group of people and 30 metres from vehicles, animals, power lines, railways, roads, etc. Avoiding risk to health of people.
- Drone must be in visual line of sight with the pilot, and no more than 500 metres
- Liability insurance is required for drones with 20 kg or more.
- To take photos or record video can only be done by professional and with a special permit.
- Approval for radio frequency spectrum used is required: https://www.hakom.hr/default.aspx?id=596
- There are different areas ready to fly (AREA I –Semi-rural with not elevated structures or buildings; AREA II: Rural areas, farm buildings or structures without people or with people passing occasionally like cyclists, etc.; AREA III: Residential areas; AREA IV: Cities). Leisure flights only are possible in AREA I and AREA II.