Drone DJI Matrice100 Control

Documentation https://developer.dji.com/onboard-sdk/documentation/quickstart/safety.html

# Safety

* When testing remove blades
* Use DJI assistant 2 desktop app to simulate flight and test the microcontroller
* Use the most recent firmware of drone and hardware platform
* In the DJI desktop app you can set an Failsafe action this action kicks in when the drone loses connection with the remote controller or the onboard computer

# Permissions

The DJI flight controller has the highest level of authority and can overrule every other control method. In the DJI Assistant 2 desktop app you need to enable OSDK API control when connected to the drone’s flight computer.

# OSDK API (Onboard SDK API)

## Preparing OSDK

Before the OSDK can be used a ID and key need to be generated on a dji developer account without this key and id the OSDK will not work.

1. Go to <https://developer.dji.com/> and make an developer account (if you haven’t one already)
2. Go to Apps and create an onboard SDK app
   1. Fill in name category and description
3. Activate it by email
4. Save ID and key pair

## Preparing Onboard Computer

1. install GCC 5.4 or above
2. install CMake 2.8 or above
3. give user UART permissions
   1. ‘ sudo usermod -a -G dialout $ USER’
4. Install ROS (<http://wiki.ros.org/melodic/Installation/Ubuntu>)
5. ~~Download and Install DJI onboard SDK from (~~[~~https://github.com/dji-sdk/Onboard-SDK/tree/master~~](https://github.com/dji-sdk/Onboard-SDK/tree/master)~~)~~ 
   1. ~~‘git clone -b <branch>~~ [~~https://github.com/dji-sdk/Onboard-SDK.git~~](https://github.com/dji-sdk/Onboard-SDK.git) ~~<Onboard-SDK name>’~~
   2. ~~‘cd <Onboard-SDK name>’~~
   3. ~~‘mkdir build && cd build’~~
   4. ~~‘cmake ..’~~
   5. ~~‘sudo make -j7 install’~~
6. install nema-comms
   1. ‘sudo apt install ros-<release>-nmea-comms’
7. Install libUSB
   1. ‘sudo apt-get install libusb-1.0-0-dev’
8. Set the baud rate of ROS higher than 921600

## Preparing other stuff

Make sure you have an valid developer account with DJI and make an onboard API app (save the app key and app license)

# Start making App

* Create catkin workspace
  + “mkdir <catkin work directory name> && cd <catkin work directory name>”
  + “mkdir <source directory name> && cd <source directory name>”
  + “catkin\_init\_workspace”
* Clone Onboard-SDK-ROS git repo into source directory
  + “git clone -b <branch> <https://github.com/dji-sdk/Onboard-SDK-ROS.git> <Onboard-SDK name>”
    - for the matrice 100 it wil be branch 3.8
* Ga back to catkin main directory
  + “cd <catkin work directory name>”
* Install dependencies
  + “rosdep install -y --rosdistro melodic --from-paths src --ignore-src”
    - this looks what dependencies is needed by the package and installs them
* edit sdk.launche with
  + “rosed dji\_sdk sdk.launch”
    - this wil open the editer an you need to edit the app ID and key allong with the UART port and bautrate
* edit dji\_sdk\_node.cpp and remove every #ifdef ADVANCED\_SENSING
  + “rosed dji\_skd dji\_sdk\_node.cpp”
* Compile project
  + “catkin\_make\_isolated”
* Source the project
  + “source devel/setup.bash”
* Connect jetson to drone with USB to TTY cable Tx → Rx and Rx → Tx

# MSDK API (mobile SDK API)

## Preparing MSDK

Before the MSDK can be used a bundle identifier and key need to be generated on a dji developer account without this key and bundle identifier the MSDK will not work.

1. Go to <https://developer.dji.com/> and make an developer account (if you haven’t one already)
2. Go to Apps and create an Mobile SDK app
   1. Fill in name category, description an package Name of the app
3. Activate it by email
4. Save package Name and key pair

## Preparing Smartphone