

DJI Onboard API Sample for Windows QT

Version	Date	Remarks
V1.0.0	2015-05	Created

This document introduce the general features of the DJI Onboard API C++ sample based on Qt on Windows OS. Compile and run this sample to gain basic control of the aircraft such as take-off, landing and go home, etc.

Development Environment

Operating System: Windows 7 64 bit

Integrated Development Environment: Qt Creator 3.3.1

Qt Version: Qt 5.4.1 MinGW 32bit

Directory Structure

Directory structure for *DJI_Onboard_API_Windows_QT_Sample* is listed as below:

Directory	Description
src	Source code files
output	Compiled output files
doc	Documents
exe	Executable files. Dependent files are also included.

List of key functions

➤ Serial Port Configuration

```
int Pro_Hw_Setup(QString port_name, int baudrate)
```

Usage: Setup and open serial port.

Parameters : *port_name* denotes the port number of the serial device. *baudrate* denotes transmission rate of the serial port.

Return Values: 0 as Success and -1 as Failed.

➤ Initialization

```
int DJI_Pro_Test_Setup(void)
```

Usage: Initialize various variables including app ID, app key and serial port.

Parameters: Void.

Return Value: 0 as Success and -1 as Failed.

➤ API Activation

```
void DJI_Onboard_API_Activation(void)
```

Usage: Activate the DJI Onboard API.

Parameters: Void.

Return Value: Void.

➤ Gain or Release Control of the Aircraft

```
void DJI_Onboard_API_Control(unsigned char data)
```

Usage: Obtain or release control of the aircraft after DJI OnBoard API is activated.

Parameters: 1 to obtain the control of the aircraft, 2 to release the control of the aircraft.

Return Value: Void.

➤ Take-off Function

```
void DJI_Onboard_API_Takeoff(void)
```

Function Feature: Request for take-off.

Parameters: Void.

Return Value: Void.

➤ Landing Function

```
void DJI_Onboard_API_Landing(void)
```

Function Feature: Request for landing.

Parameters: Void.

Return Value: Void.

➤ Go home Function

```
void DJI_API_Request_Gohome(void)
```

Function Feature: Initiate go home process. Aircraft will go home and land

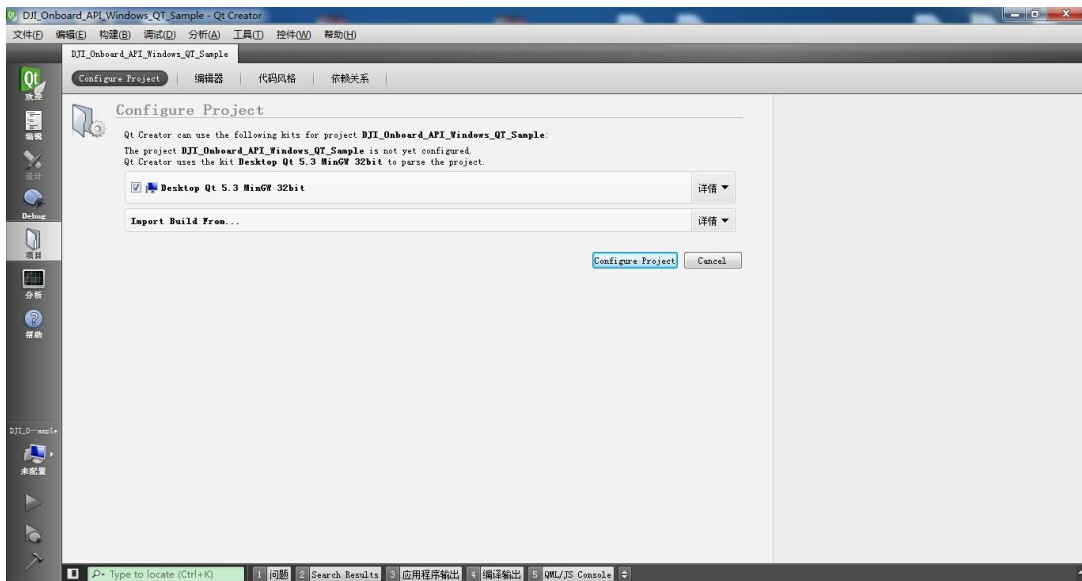
Parameters: Void.

Return Value: Void.

Configuration

Open *DJI_Onboard_API_Windows_QT_Sample.pro* locates at *src* sub-diretory in the *DJI_Onboard_API_Windows_QT_Sample*.

The screenshot listed below shows when you launch the application for the first time.



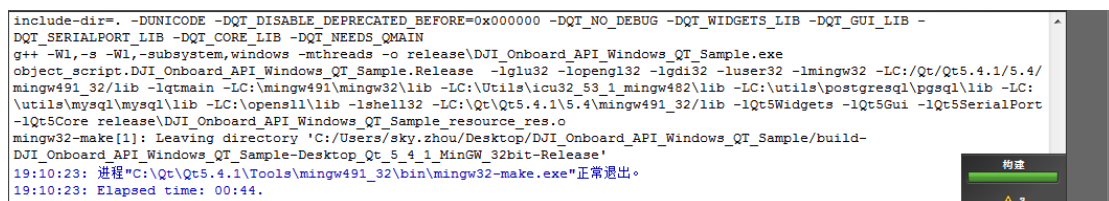
Select the “Desktop Qt 5.3 MinGW 32 bit” kit and click “Configure Project” to proceed.

Compile

This section will guide you to compile the sample code by using the Qt Creator 3.3.1 IDE. Click the hammer icon on the bottom left corner to start compiling.



A similar text result shown below as indication if the sample code is compiled successfully.



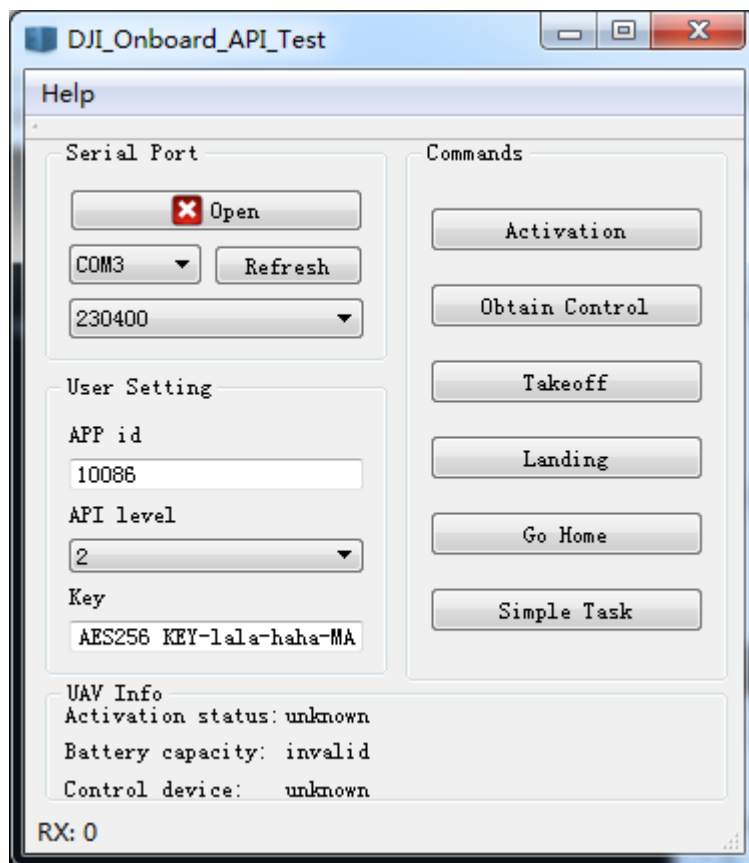
Run

Click the green triangle icon on the bottom left corner to run the sample.



Sample Functions

The main GUI of the sample is shown as below:



➤ Serial Port Settings

Set the available serial port and its baudrate value in the Serial Port section.

Developers must ensure the baudrate set is consistent with the one of the aircraft



Click "Refresh" button to check the information of serial devices connected with windows host in the windows console.

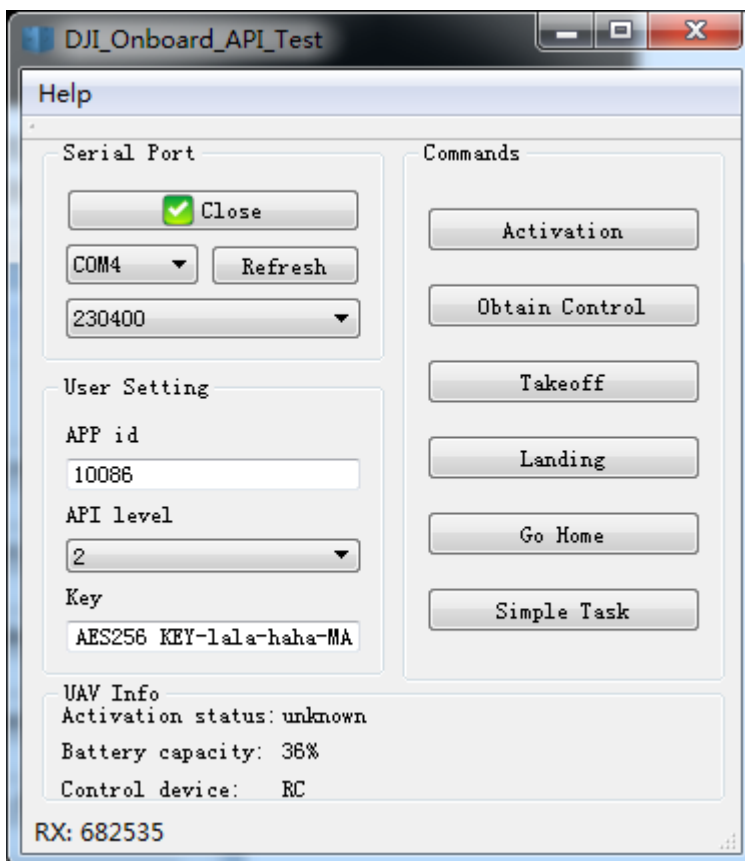
```

Name       : "COM3"
Description : "DJI USB Virtual COM"
Manufacturer: "dji-innovations inc."

Name       : "COM4"
Description : "Silicon Labs CP210x USB to UART Bridge"
Manufacturer: "Silicon Laboratories"

```

Click the “Open” button from the main GUI to open the serial port. The  icon indicates failed, while the  icon indicates success. The status bar on the bottom shows the size of received data.



Double check the information from windows console shown below.

```

Name       : "COM3"
Description : "DJI USB Virtual COM"
Manufacturer: "dji-innovations inc."

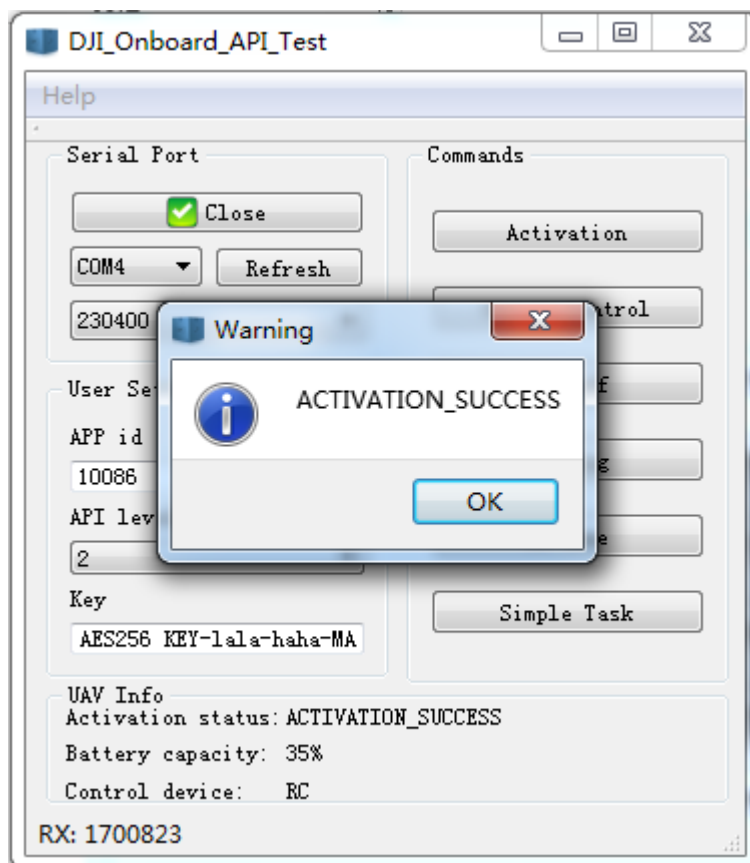
Name       : "COM4"
Description : "Silicon Labs CP210x USB to UART Bridge"
Manufacturer: "Silicon Laboratories"

OPEN SUCCESS

```

➤ Activate

Input the “App id”, “API level” and “Key” within the User Setting section and then click the “Activation” button to active the Onboard API.



You may also learn the activation result from the windows console.

```
[ACTIVATION] Activation result: ACTIVATION_SUCCESS
[ACTIVATION] set key DJI-DEMO AES256 KEY-lala-haha-MA
```

➤ Enable Third Party Control

Click the “Obtain Control” button to enable control for third party device. The following message will indicate a successful operation in the windows console.

```
Pro_Link_Recv_Hook:Recv Session 1 ACK
call sdk_ack_nav_open_close_callback
Recv ACK,sequence_number=5,session_id=1,data_len=2
```

➤ Testing

Test the API by using the following command.

Click “Take off” button to send a take-off command to the aircraft.

Click “Landing” button to send a landing command to the aircraft.

Click “Go Home” button to have the aircraft returned to the last recorded home point.

Click “Simple Task” button to send a collection of sample commands such as take-off, pitch, roll and landing to the aircraft. Attention for flight safety, make sure you are in a wide area if you are not using simulator.