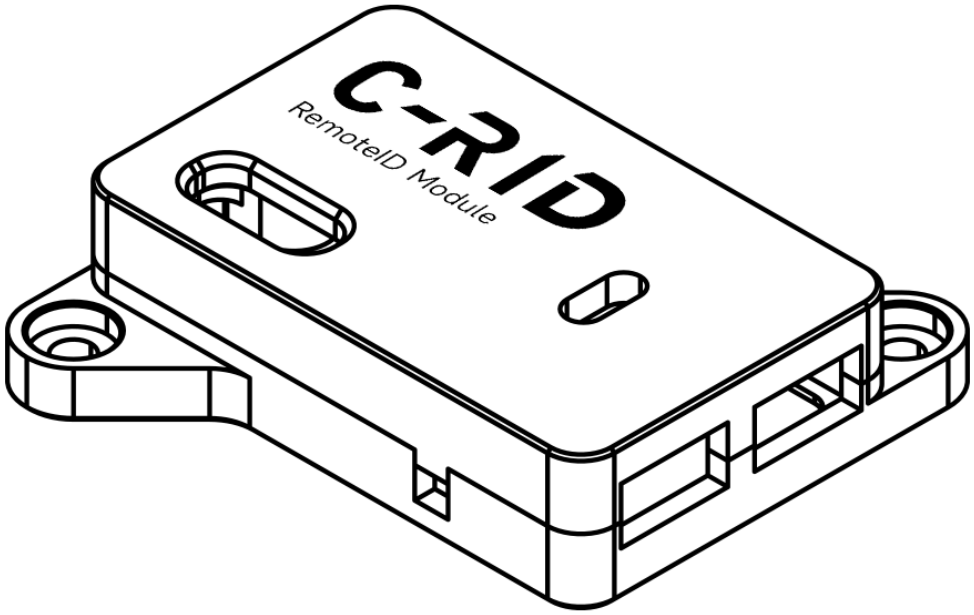
C-RID Remote ID Module

Product manual



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CUAV Tech Inc.,Ltd

Overview

C-RID is a remote ID broadcasting module independently developed and manufactured by CUAV. It supports broadcasting drone ID, ground station information, flight data, etc., and allows parsing and setting drone data via ground stations like QGC/LGC. It provides a solution for drone manufacturers and system integrators to implement the unique identification code (also known as Remote ID) for drone products.

Note:

C-RID is designed for system integrators or manufacturers requiring remote ID solutions. It is used solely as a remote ID broadcasting module, and users need to independently compile and load firmware with remote ID functionality into the controller, as well as write the remote ID into a non-tamperable/non-erasable storage area. After the C-RID module requires the controller to run and the settings are completed, the controller cannot run firmware without a specific remote ID, and standard firmware updates for ArduPilot/PX4 cannot be performed via the ground station; firmware updates need to be compiled independently.

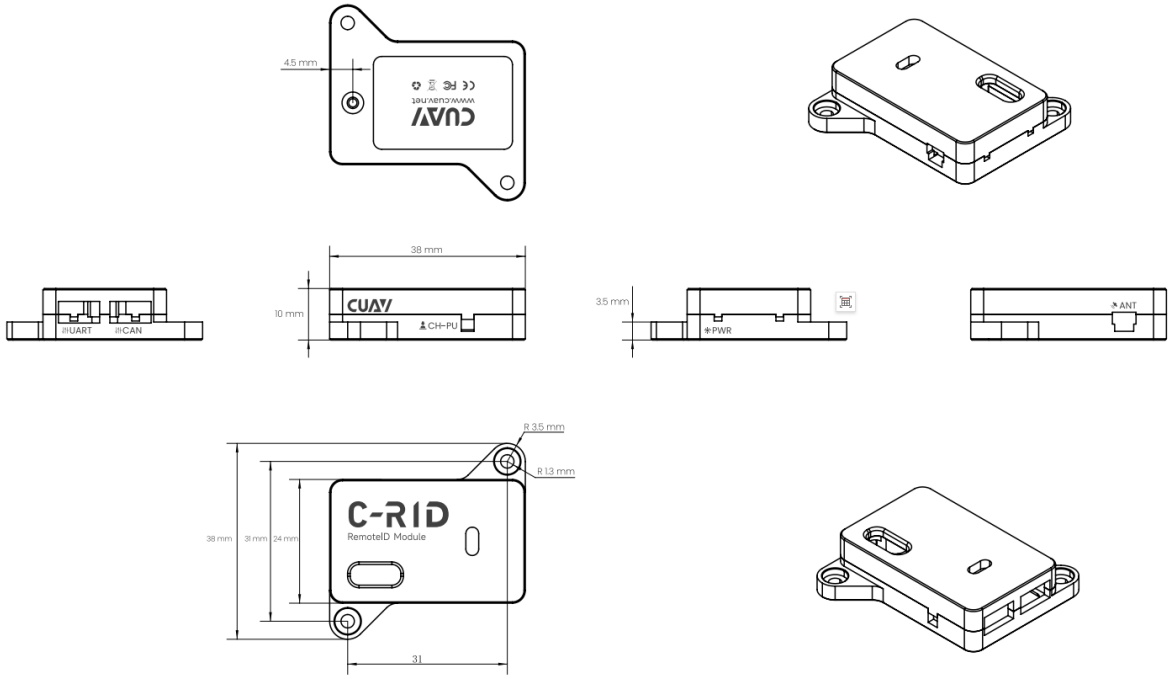
Remote ID information requires support and configuration from the ground station. The LGC ground station is recommended for more complete compatibility. If the ground station is not connected or the ground station that is not compatible with remote ID information is running, the drone will not be allowed to unlock for takeoff due to the lack of mandatory data.

C-RID is designed based on Chinese national standards (GB/T 41300-2022 / GB42590-2023) and ASTM F3411-22a standards (for the EU and the U.S.). Using C-RID does not mean compliance with laws and regulations, and you need to check the legal and regulatory requirements of your region by yourself.

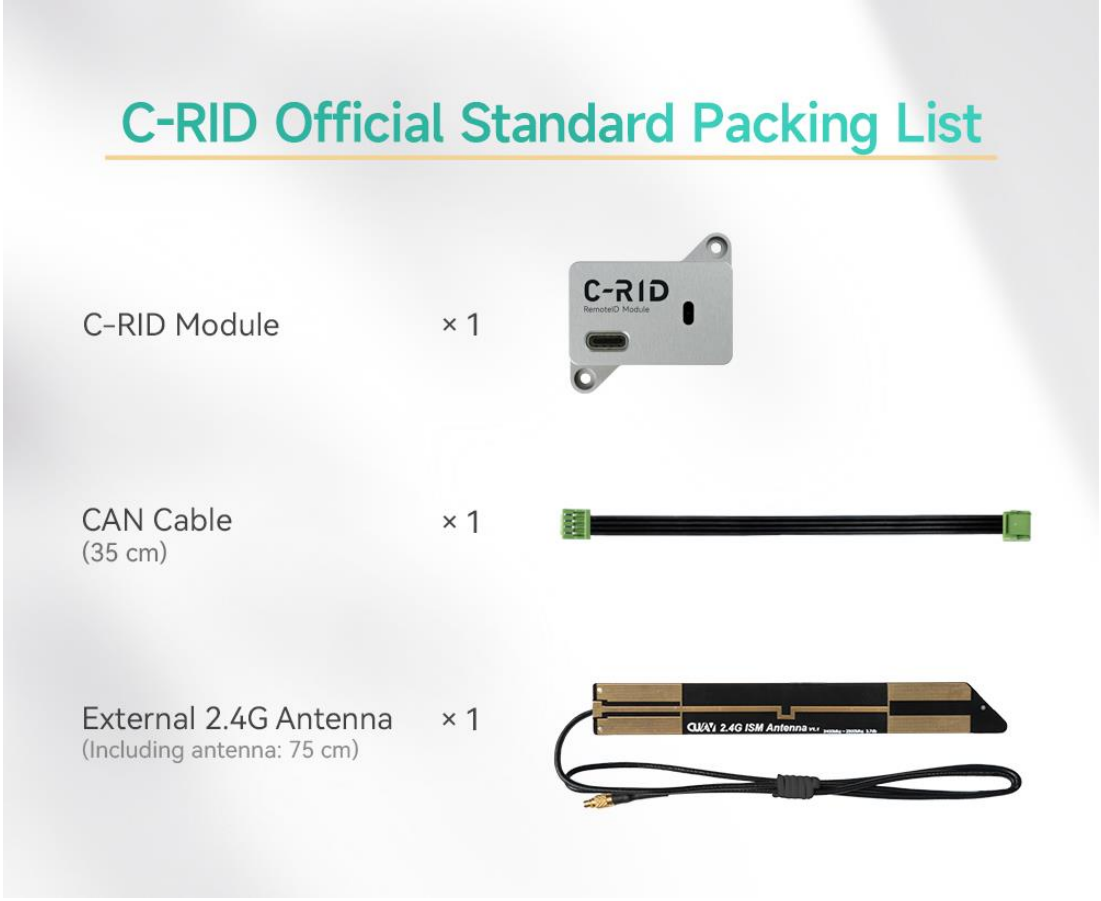
Hardware Parameters

Category	Parameter
Processor	Xtensa® 32-bit LX7 dual-core processor
Transmitting Power	20 dBm
Communication Frequency	2.4 GHz
Communication mode	WIFI or Bluetooth broadcast
Range	>300m
Protocol	Dronecan/UART(mavlink)
Firmware	ArduRemoteID (Supports OTA online upgrade)
Ports	1 x CAN （4 Pin GH1.25） 1 x UART (4 Pin GH1.25) 1 x ANT (MMCX)
Shell Material	Aviation Aluminum
Operating voltage	4.7~5.2V
LED (main) status	Off: not connected or not working Red always on: Configuration not complete Green is always on: Configuration is successful, unlockable
Weight	15.5g

size

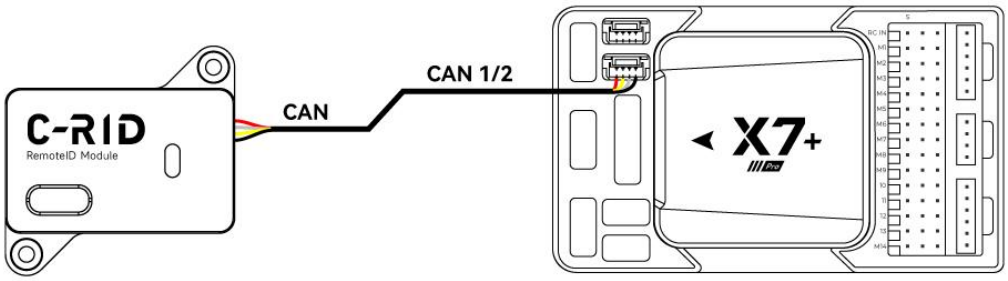

4.5 mm
38 mm
10 mm
UART
CAN
CH-PU
3.5 mm
PWR
ANT
R 3.5 mm
R 1.3 mm
C-RID
RemoteID Module
38 mm
31 mm
24 mm
31

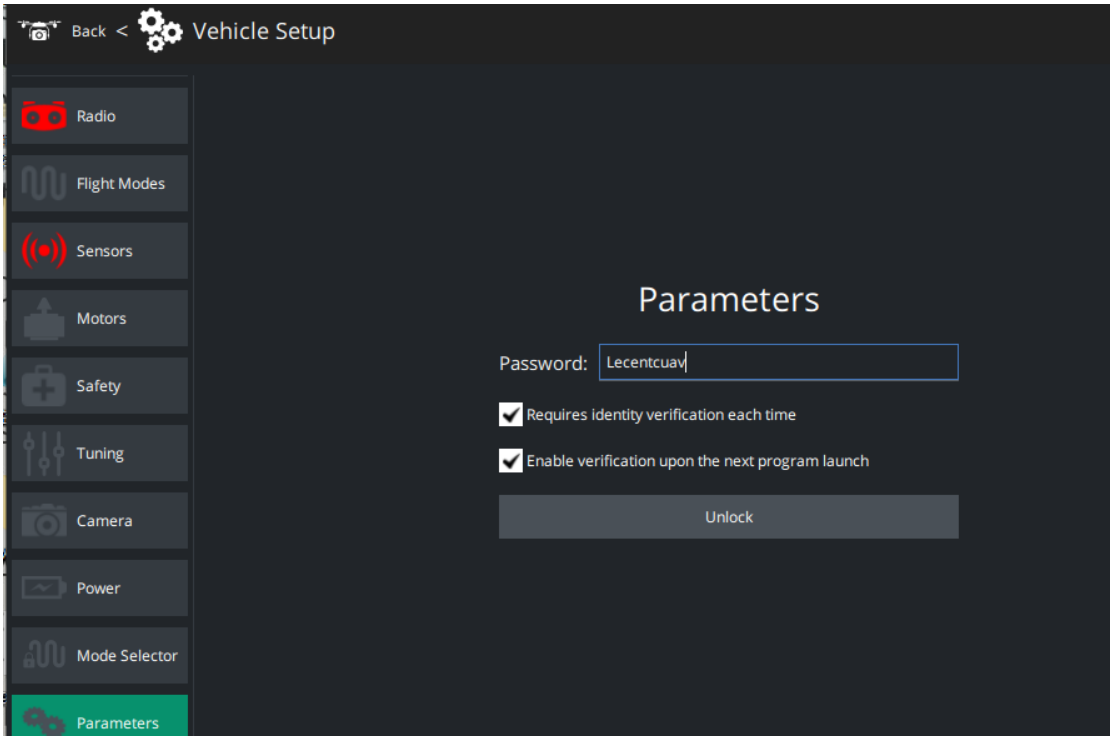
List of accessories



Hardware connection and enablement of C-RID

Install the antenna of C-RID and install it to the appropriate position of the aircraft. Use CAN cable to connect C-RID to the controller.





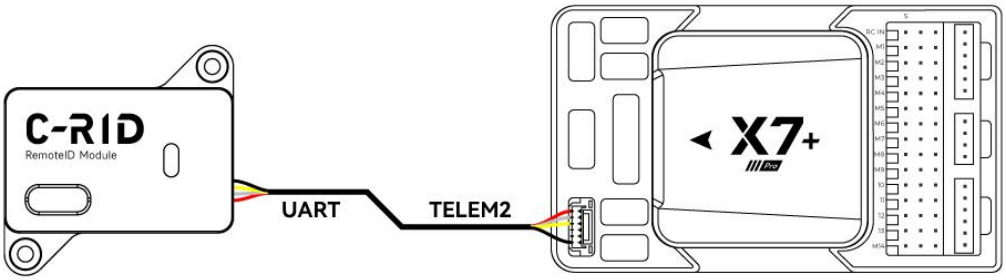
Connect the LGC ground station to the entry controller parameter (password is Lecentcuav) setting interface.

- CAN_P1_DRIVER=1(First driver) // Enable CAN1
- CAN_P2_ DRIVER=1(First driver) // Enable CAN2
- DID_ENABLE=1(Enable) // Enable Remote id
- DID_CANDRIVER= 1 // Number of remote IDs
- DID_MAVPORT= -1 //Disable Remote ID MavLink Serial Port
- Restart the controller after setup is complete

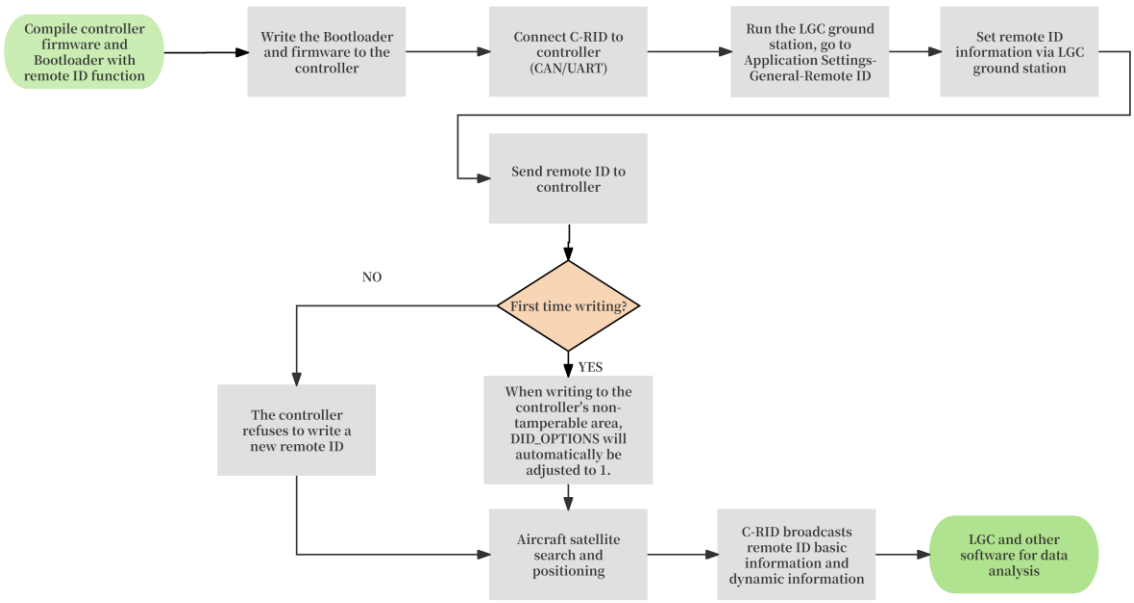
DID_BARO_ACC	-1.000 m	Barometer vertical accuraacy
DID_CANDRIVER	Driver1	DroneCAN driver number
DID_ENABLE	Enabled	Enable ODID subsystem
DID_MAVPORT	Disabled	MAVLink serial port
DID_OPTIONS	1	OpenDroneID options

// If you set the following parameters through UART communication and connect the hardware as shown in the figure

- DID_ENABLE=1 (Enable) // Enable the remote ID function
- DID_CANDRIVER= 0 // Number of remote IDs
- DID_MAVPORT= x //x is the serial port number to connect to C-RID



Configuration guide



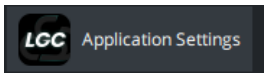
Compile and load specific remote ID firmware:

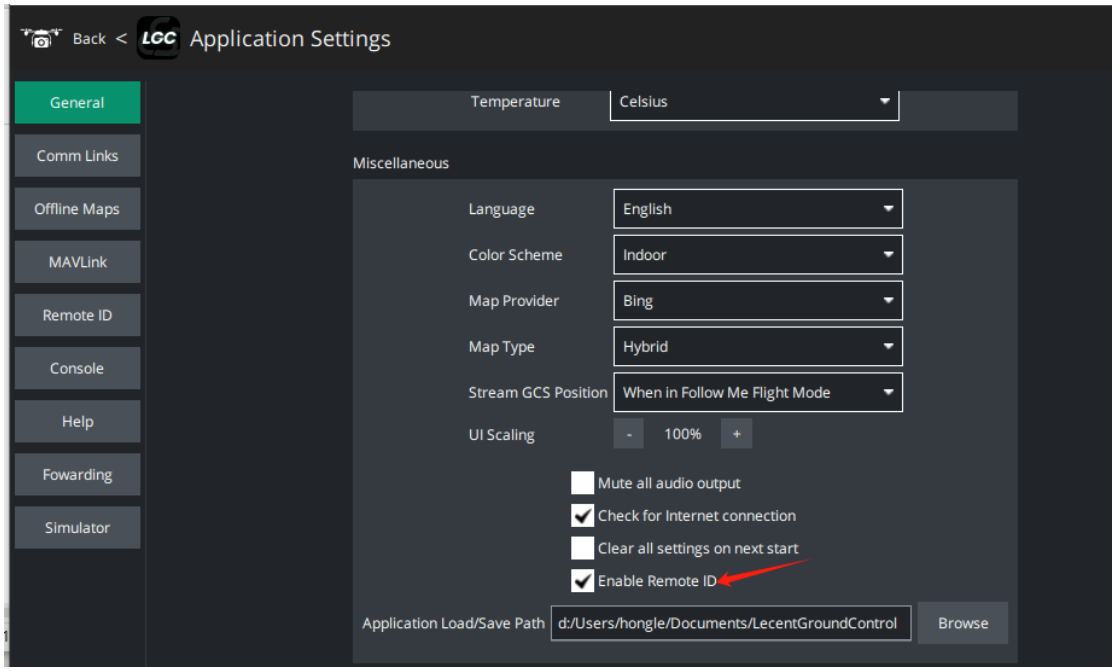
The PX4/ArduPilot standard firmware does not include the remote ID function; you need to modify and compile the firmware according to the remote ID guide. And load it into the controller (the remote ID firmware requires a different motherboard ID than the ArduPIilot standard firmware; you may need to use an STLINK or other burner).

Note:

The remote ID firmware requires a specific board ID and must be updated along with the bootloader. Any bootloader with remote ID functionality enables the main firmware check. If the board ID does not match, the system will not run the main firmware, the controller will fail to function properly, and the ArduPilot standard firmware cannot be loaded after configuration.

Remote ID setup process

1、Run the LGC ground station and click the icon go  to ‘application settings’ 



2、Start the controller and C-RID module and turn on the WIFI function of the computer/mobile device; run the LGC ground station. Click to enter the information setting interface and set the remote ID broadcast data.

Onfigure column	note	
Operation area	In the flight operation area, different areas refer to different regulations and rules to configure remote ID information. Currently, it supports China, EU and US	Must
Aircraft Classification Area	Divided into custom, Chinese, and EU.	Must

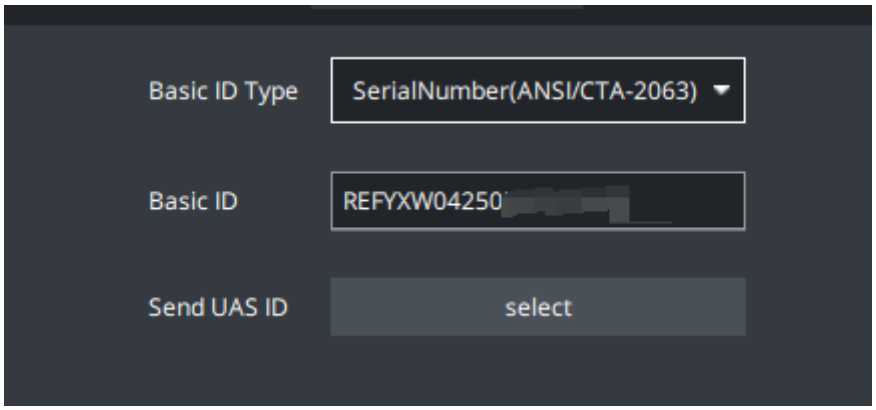
	Chinese drones have five major levels (micro, light, small, medium, and large) EU drones are Class 0 to Class 6, reserved.	
Categorty	Operation categories are set according to the region; China/EU is mainly divided into open, licensed and approved categories; reserved for undefined	Must
Aircraft Class	Class of aircraft. China: divided into micro, light small, medium and large EU: divided into Class 0 to Class 6, reserved for undefined	Must
GCS location	**Live GNSS:** By connecting the NMEA (GPS) device to the ground station device or reading the GPS position in the device, the aircraft home point coordinates are used when neither of the above two can be obtained. **Fixed**: Enter the current location coordinates	Must
UA Type	Aircraft frame type, with 16 options including multirotor/helicopter, etc.	Must

Basic ID Type	The type of aircraft ID that needs to be broadcast. It can be: None, serialNumber, CAA, UTM, specific	Must
Basic ID	The aircraft remote ID code (unique identification code) must be registered/filed and applied for with the local or national management agency.	Must
Send UAS ID	When you select an aircraft during the first setup, you can write the UAS ID code to the controller. This is only valid for the first setup of each aircraft.	Valid for the first time
Operator ID type	CAA	
Operator ID		China and the US are optional, but the EU must
Self ID	Self-declaration mainly sends some prompt messages to the broadcast object; such as emergency status, other status, etc. The declaration content is freely editable	Must

3、If it is the first time to set up, after the setting is completed, click Specify Aircraft-UAV-Confirm to send UAS ID, and the UAS ID will be written to the

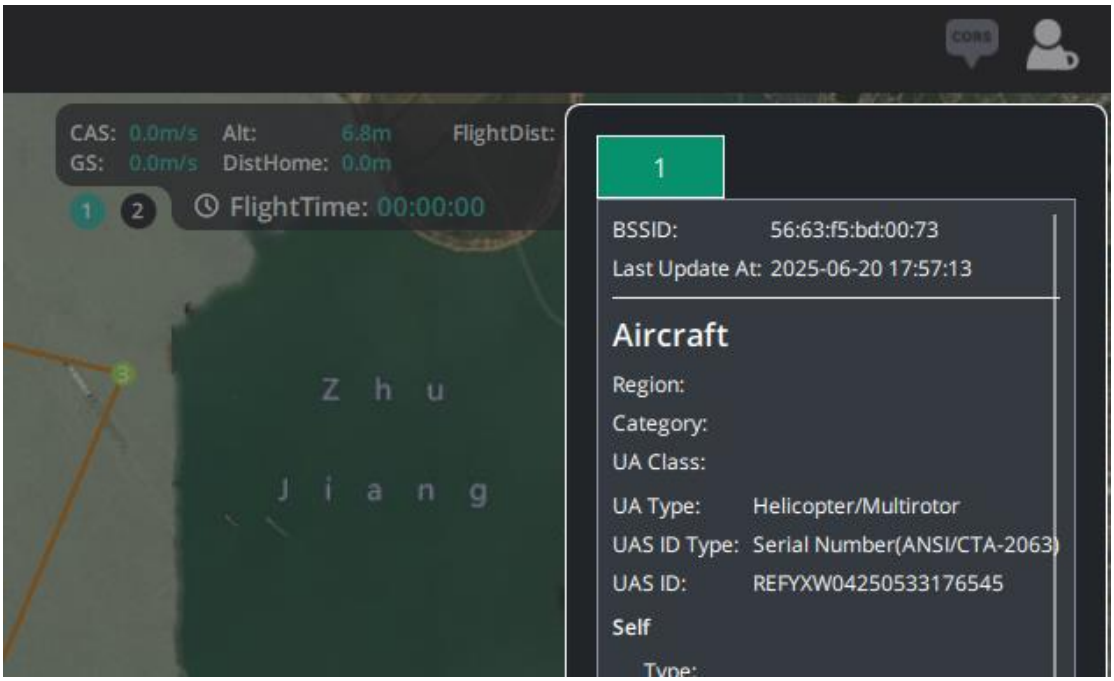
controller storage; the controller DID_OPTIONS parameter will be set to 1 automatically, and the system no longer supports storing new UAS IDs.

4、Place the aircraft outdoors (in a place with a good view of the sky) to obtain a position fix.



5、C-RID broadcasts remote ID basic information and aircraft dynamic information

6、Run the LGC ground station (no need to connect to C-RID WIFI), click the icon on the right side  of the software, Open the remote ID resolution data interface to view the broadcast data.



For Android systems, you can download the OSM software (download from Google Store) to perform remote ID data analysis.

Test verification

To facilitate testing and verification, CUAV provides test-specific controller firmware with remote ID function; if necessary, please contact CUAV staff.

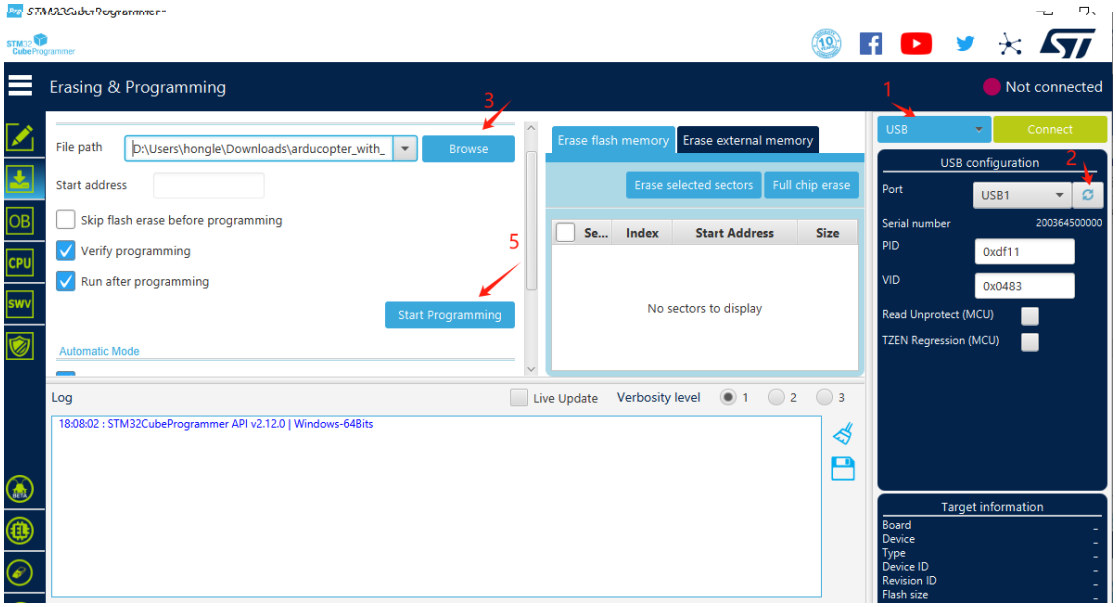
Note: Test firmware is for testing purposes only. It is not a stable version and cannot be used for flight. Because the firmware needs to have a unique board ID from the manufacturer, we cannot provide stable firmware that can be directly applied.

Download firmware

Download the Stm32cubeprogrammer tool and run it.

Press the BOOT button on the side of the controller, then plug in the USB to connect to the computer; the controller MCU will enter DFU burning mode.

Follow the instructions in the figure below to burn the program.



FAQ

1、How to tell whether the USA ID code has been written into the controller?

The DID_OPTIONS value is 1 if the controller does not have a USA ID code stored in it, and 5 if a USA ID code is stored in it.

2、Why are there two unique product identification codes?

When C-RID receives the DID_OPTIONS sent by the controller, it has already stored the remote ID information. Please use the Drone gui software tool to reset the remote ID information; the product unique identification code should be based on the controller storage.

3、How to achieve anti-tampering requirements?

When compiling the firmware, you can set read-only parameters to prohibit users from changing them. The DID_OPTIONS value is read-only, and after receiving the first remote ID, no new values will be stored. At the same time, the LOCK_LEVEL parameter of C-RID can be used to restrict users from tampering with the remote ID information through the Dronecan GUI.

4、 Why can't the controller run ArduPilot standard firmware when using C-RID?

According to the remote ID, it has anti-tampering requirements. Running dedicated firmware can effectively prevent users from attacking and damaging the system through firmware programs, etc. At the same time, it can effectively prevent the import of firmware that is inconsistent with the boot loader motherboard ID.

5、What is C-RID? What is it used for? How does it facilitate drone monitoring?

C-RID is a module that broadcasts the unique identification code of drone products. It can broadcast the drone identification code and other information via WIFI or Bluetooth. Its main purpose is not to monitor drones, but to help users' drones comply with the laws and regulations of various regions, while strengthening self-discipline to maintain flight safety.

6、What is the relationship between C-RID and ArduPilot RemoteID?

C-RID is designed and developed based on the ArduPilot RemoteID open source solution, and the code is hosted in the ArduPilot code base.

7、C-RID's WIFI password?

WIFI name: C-RID_XXXXXX; wifi password is cuav12345678

Related links

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LGC Ground station

ArduPilot Remote iD

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