

Reference design firmware for mini drones

Applications & demonstrations	Remote Control	Flight Control	Motors
	Sensor Management	AHRS	PID
Middleware	BLE Stack		USB Virtual COM
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)		
Hardware	STEWAL-FCU001V1		STEWAL-FCU001V2

Features

- Implementation of a flight controller unit based on the STEVAL-FCU001V1 and STEVAL-FCU001V2 evaluation boards
- Open source code available on Github
- High performance stabilization for quadcopters in aerial movements
- Full support for the on-board gyroscope and accelerometer
- Barometer support for holding altitude available
- Magnetometer support for direction detection available (only for STEVAL-FCU001V1)
- Embedded routine to accept commands from the most common remote controls

Description

The **STSW-FCU001** firmware enables the **STEWAL-FCU001V1** and **STEWAL-FCU001V2** evaluation board to support quadcopter drone design.

It comes with six main applications: a remote control interface to interpret data command from remote control; sensor management to retrieve sensor data; an attitude heading reference system (AHRS) to elaborate sensor data in roll pitch yaw angles (quaternions); flight control merging the AHRS output and information coming from the remote control to define the flight strategy; PID control to give commands to the four quadcopter motors.

Product summary	
The STSW-FCU001 firmware enables the STEVAL-FCU001V1 and STEVAL-FCU001V2 evaluation board to support quadcopter drone design.	STSW-FCU001
Flight controller unit evaluation board for toy drones	STEWAL-FCU001V1/ STEWAL-FCU001V2
Applications	Drones

Revision history

Table 1. Document revision history

Date	Version	Changes
27-Nov-2017	1	First release.
28-Aug-2024	2	Updated Cover image, Features and Description. Added Product summary.

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