WS500 COMMISSIONING REPORT

Cube Orange Flight Controller · ArduPilot / ArduCopter Firmware

Aircraft	WS500
Frame type	Quadcopter X
Flight controller	
Autopilot firmware	
Ground control station	
ESCs / motors	
Propellers	
Battery type & capacity	
Technician	

1. Hardware inspection

Frame & mechanical

- ☐ Frame arms, plates, and standoffs correct, no cracks or stress marks
- ☐ Landing gear secure and level
- ☐ All fasteners tight and secured

Propulsion

- ☐ Motors mounted securely, spin freely by hand with no bearing noise
- ☐ Motor-to-ESC wiring matches intended motor order (per frame convention)
- ☐ Propellers correct pitch/size for airframe and balanced
- ☐ Propeller rotation direction correct per motor position (CW/CCW)
- ☐ Props removed for all bench power-up and calibration steps

Power system

- ☐ Battery connector polarity verified before first connection
- ☐ Power distribution board / power module wiring inspected, no shorts
- ☐ Amass-MR30 connectors fully seated and soldered joints inspected

2. Flight controller installation

- ☐ Cube Orange mounted and secured
- ☐ Carrier board orientation matches AHRS_ORIENTATION / BOARD_ORIENTATION parameter
- ☐ HereFlow optical flow sensor mounted level, oriented forward, and connected via CAN
- ☐ Telemetry radio, RC receiver, and buzzer connected per Carrier Board pinout
- ☐ All cabling secured with strain relief, no tension on connectors

3. Firmware & software setup

- ☐ Cube Orange firmware flashed (4.6.3 or 4.7)
- ☐ Frame class and frame type parameters set (FRAME_CLASS, FRAME_TYPE)
- ☐ Full parameter list backed up to file immediately after initial load
- ☐ Battery monitor configured (BATT_MONITOR, voltage/current pin mapping)
- ☐ Battery capacity and low-voltage thresholds entered

4. Sensor calibration

- ☐ Accelerometer calibration completed (6-position)
- ☐ Compass calibration completed (onboard + external, offsets within limits)
- ☐ Compass orientation validated against known heading (compare to known-good compass/phone)
- ☐ Radio (RC) calibration completed, all channels reach full travel
- ☐ ESC calibration completed (all motors respond together at same throttle)

5. Radio, telemetry & failsafe configuration

- ☐ RC transmitter/receiver bind confirmed and range-checked
- ☐ Flight mode switch positions assigned and verified in GCS
- ☐ Telemetry link established, signal strength (RSSI) verified at working distance
- ☐ All failsafe configured and tested (RC, GCS/telemetry, and battery)

6. Motor & propeller test (props off)

- ☐ Motor test function used in GCS to confirm each motor spins in correct order
- ☐ Motor rotation direction confirmed correct for each position
- ☐ No abnormal ESC beeps, vibration, or overheating during test

7. Ground testing (props on, when in cage for flight)

- ☐ Arm and disarm sequence tested via transmitter and confirmed safe
- ☐ All flight modes cycle correctly on the ground (Stabilize, AltHold, etc.)
- ☐ Pre-arm checks pass with no warnings in GCS
- ☐ Stick response and control direction confirmed correct (roll, pitch, yaw)

8. First flight test

- ☐ Takeoff and stable hover in Stabilize or AltHold mode
- ☐ Control response verified in roll, pitch, yaw, and throttle
- ☐ Controlled landing and disarm completed

9. Commissioning outcome

Overall result:

- ☐ PASS — aircraft approved for operational flight
- ☐ CONDITIONAL PASS — approved with noted limitations (see notes)
- ☐ FAIL — aircraft not approved, remediation required before re-test

Notes / limitations / follow-up actions:

Sign-off

Role	Name / signature	Date
Build technician		
WS expert		