



## Field Service Bulletin

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# Field Service Bulletin

## Software 2.0.2 Release

*Confidential & Proprietary*

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## Introduction

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### Purpose/Scope

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This Field Service Bulletin (FSD) documents known behaviors observed in Software Release 2.0.2 and provides corrective actions or operational workarounds where applicable. Command Deck 2.0.2 improves operational efficiency, reduces ambiguity in altitude planning, enhances data accessibility, and strengthens system stability.

Certain behaviors may affect flight safety, mission altitude execution, and aircraft command and control, while others affect payload workflows and user interface functionality.

This bulletin should be shared with operational teams performing mission planning, flight execution, or post-flight data management.

## Overview of Known Behaviors (2.0.2)

Subsystem	Item	Description	Operational Impact	Workaround / Status	Operational Impact
<b>Mapping Array Payload</b>	Live Stream Overexposure	The live video stream from the Mapping Array may appear over-exposed when viewed in the GCS.	No impact to captured images — exposures stored to the CFExpress card are correct.	Monitoring. Image capture pipeline is unaffected.	No Impact
<b>GCS / Controller</b>	Controller Battery Drop on Radio Enable	Battery Drop on Radio Enable  When controller radios are enabled, the displayed battery level may decrease at a rate of 1% per minute even while the controller is connected to external power. This is caused by radio current draw interacting with the internal tablet power rail and battery state estimator, resulting in an apparent rapid discharge that does not reflect actual battery depletion.	If not identified prior to flight, the controller may reach a perceived low-voltage threshold and shut down during operation, leading to loss of telemetry or interruption of mission command and control.	Follow <b>Safety SOP — Controller Battery Drop Issue (Edge 130)</b> .  Verify battery stability after radio activation prior to flight. Engineering investigation ongoing; permanent fix pending firmware and/or hardware update.	Mission Critical
<b>Battery Failsafe</b>	AV Battery	AV's autonomous battery-initiated failsafes are not currently active. Pilots will receive audible warnings of current battery percentage starting at 30%, but no other autonomous action will be taken by the AV and no visual alert is present on the GCS. The operator will not receive a warning at battery critical (default 15%) or battery emergency levels (default 8%).	AV Battery RTL and Land Now failsafes will not engage when battery percentage falls below the thresholds set by the operator. Failure to adhere to audible warnings can result in loss of AV.	Pilots are responsible for continuously monitoring air vehicle battery state throughout flight and should be prepared to initiate recovery actions when the low-battery warning is presented at 30%. All flights must be conducted with system volume set sufficiently high to ensure audible warnings are clearly heard, as described in the	Mission Degraded

				<i>Edge 130 Operator's Manual</i> (General Settings, p. 147). If operational requirements necessitate flying without audio, operators must actively and continuously monitor battery percentage throughout the flight.	
<b>GCS / Navigation</b>	Altitude Reference Mismatch (Local vs Relative)	Both Local Altitude (Alt (Loc)) and Relative Altitude (Alt (Rel)) are used during autonomous mission execution. A known issue may cause these altitude references to drift relative to one another under certain conditions.	If a significant mismatch exists between the two altitude references, mission altitude execution may not reflect the operator's intended values, potentially resulting in incorrect commanded altitudes during autonomous flight.	Operators should display both Alt(Loc) and Alt(Rel) on their instruments panel. If a large discrepancy between Alt (Local) and Alt (Rel) is observed, power cycle the air vehicle prior to mission execution to re-synchronize altitude references. Investigation ongoing; resolution pending future software update.	Mission Degraded
<b>Flight Modes / Autonomy</b>	Hold Mode RTL Reversion During Mission	While executing a mission, commanding the air vehicle into <b>Hold Mode</b> may cause the vehicle to navigate toward the <b>Return-to-Launch (RTL)</b> position and establish a tight loiter pattern, rather than holding at the aircraft's current location.	The aircraft may reposition unexpectedly, resulting in deviation from the intended hold point and reduced operator predictability during mission interruption or inspection tasks.	If <b>Hold Mode</b> behavior is required during a mission, monitor aircraft position closely after mode transition. If unintended repositioning occurs, <b>transition to an alternate flight mode</b> and reissue the desired command. Engineering investigation ongoing; corrective update pending. <b>Planned fix in 2.0.4</b>	Mission Critical
<b>Navigation / Sensors</b>	Ground Compass Drift Due to Vehicle Lights	When vehicle lights are enabled on the ground, they may introduce a small magnetic disturbance that affects the onboard compass. This can result in intermittent compass heading variation prior to takeoff, causing the system	While on the ground, the aircraft may repeatedly switch between Position and Altitude modes, which can create confusion during pre-takeoff checks and reduce confidence in navigation state prior to launch. No in-flight	If this behavior is observed, take off with vehicle lights <b>disabled</b> , transition to flight, and then enable lights once airborne. <b>This issue is uncommon and has been observed only on</b>	No Impact

		to toggle between <b>Position Mode</b> and <b>Altitude Mode</b> while on the ground. This behavior has <b>not been observed during flight.</b>	navigation impact has been observed.	<b>some builds.</b> Investigation ongoing.	
<b>Command Deck</b>	<b>ERROR-099 – Controller Battery Pack Disconnected</b>	In the <b>2.0.2 Command Deck</b> release, an error message is displayed if the aircraft takes off while the <b>left controller battery pack</b> is unplugged. The message states: <i>“Controller Battery Pack Disconnected! Radios will shut down and telemetry will drop. Reconnect immediately.”</i> This message is intended to emphasize the importance of the left battery pack in maintaining radio operational readiness.	A <b>perceived immediate radio shutdown</b> may be inferred from the message; however, radios <b>do not shut off immediately</b> . Radio power degradation occurs <b>only after the internal battery reaches a low-power state (below 50%)</b> . The left battery pack provides sustained power to the radios and is critical for maintaining stable, uninterrupted communications.	The error message will be <b>downgraded to a warning</b> and clarified in the <b>2.0.3 Command Deck</b> release to more accurately reflect actual system behavior.	No Impact

## Operational Notes

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- Do not exceed the recommended operating parameters as the motors in the arms may experience overheating behavior which may affect the operational performance of the air vehicle.
- Mission imagery and metadata are fully maintained regardless of GUI counter display.
- All collected data is stored correctly on payload media (SD or CFExpress), independent of GCS preview.
- Any controller battery decrease exceeding **1% per minute** should be considered abnormal and flagged for investigation. In some instances, enabling the controller radios may cause the displayed battery percentage to decrease rapidly—even while the controller remains connected to an external power source—with observed drops typically exceeding this rate.
  - This behavior occurs when radio activation draws current from the internal tablet power rail, which can interfere with the battery state estimator. The resulting indication may appear as a rapid discharge, despite the battery not actually being depleted at the displayed rate.
- If this condition is not identified prior to flight, the controller may reach a low-voltage threshold and shut down during operation, leading to loss of telemetry or interrupted mission control.

## User Guide Update – Flashing/Loading FlightWave 2.0.2 Software

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- The **User Guide** has been updated to include defined **firmware loading and subsystem flashing steps** for:
  - Air Vehicle (AV)
  - Payload Subsystems (Mapping Array/Overwatch 2.0)
  - Ground Control Station (GCS)
  - Radio & Companion Link Boards

## Summary of 2.0.2 Software Upgrade Process:

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1. Detach the Payload Device, and take out its SD Card.
2. Connect the payload device SD card to your computer via the provided CF Express SD card reader.
3. Copy the new firmware file (provided by our Customer Support team) into the following **SD card folder** location:

```
lib > myota > uploads
```

4. Disconnect the SD card from your computer.
5. Re-insert the SD card into the payload device
6. Reconnect the payload to the fuselage.
7. Launch the Command Deck application.
8. Navigate to **Settings** → **Vehicle Summary** → **Firmware Update**.
  - 8.1 Select the subsystem to flash:
    - 8.1.1 *Air Vehicle Firmware*
    - 8.1.2 *Payload Firmware*
    - 8.1.3 *Companion/Radio Firmware*
9. The system will validate compatibility and initiate updates.
  - 9.1 Wait for confirmation banner: **"Firmware Update Complete."**
10. **Power cycle** the aircraft to apply changes.



### IMPORTANT – Flash Chronology

Flash **each subsystem sequentially** — do not disconnect power until the completion banner is displayed.

## Controller Battery Drop Workaround Procedure:

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### IMPORTANT – Safety Precautions

- Do **not** proceed to flight if a significant controller battery drop is observed after radio activation.
- Always ensure the controller is connected to a **stable external power source** before enabling radios.
- Avoid manipulating power connections while radios are active.
- If abnormal battery behavior is detected, do not launch the aircraft. If airborne, initiate an appropriate recovery action (e.g., RTL) as conditions permit.

### Procedure

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#### Step 1: Pre-Power-On Check

- Confirm external power is connected and supplying proper voltage.
- Verify controller battery level is **≥ 90%**.
- Ensure controller radios are **off** prior to power-on.

#### Step 2: Radio Activation and Battery Check

- Enable controller radios while external power remains connected.
- Record the controller battery percentage at the moment radios are turned on.
- When the system reaches a ready-to-fly state (approximately one minute later), record the battery percentage again.

Evaluate the change:

- **Normal behavior:** Battery remains stable ( $\leq 1\%$  change per minute)
- **Bug condition:** Battery drops more than 1% per minute.

### **Step 3: Response to Battery Drop**

If a battery drop greater than 1% per minute is observed:

- Power off the controller.
- Recharge the controller battery to full capacity.
- Repeat the battery check described in Step 2.
- If the drop persists after recharging, notify **FlightWave Customer Service** before proceeding with any flight activity.

### **Step 4: Clearance for Flight**

If the battery remains stable within the 1% tolerance:

- The controller is cleared for use.
- Flight or testing operations may proceed normally.

### Resolution Status

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This safety procedure remains in effect until the 2.0.3 release and/or hardware correction is implemented and validated by FlightWave Engineering and QA through controlled testing demonstrating stable controller voltage behavior across repeated radio activation cycles.

## Support & Escalation

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If operators experience behavior outside the items listed in this bulletin, capture the following and submit to FlightWave Support:

- Telemetry logs from the GCS
- Payload media (lowest resolution proxy is acceptable)
- Brief description of circumstances (mission type, payload configuration, altitude)

**Support Contact:** [support@flightwave.aero](mailto:support@flightwave.aero)

**Website:** [www.flightwave.aero](http://www.flightwave.aero)

## Closing Statement

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FlightWave is committed to continuous improvement of the Edge platform. Software Release 2.0 advances mission capability and system reliability, while further UI refinements and payload enhancements are already scheduled for upcoming releases.

Thank you for your partnership and continued feedback.

**FlightWave Aerospace Systems**

**Red Cat Holdings**

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