

AgriDock Drone

Pilot's Manual & Operation Guide

Version 2.0

Complete guide to flying, maintaining, and optimizing your AgriDock Drone

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1. Safety & Legal Compliance

Critical Safety Notice

The AgriDock Drone is a professional agricultural UAV. Operators must be trained, certified, and comply with all local aviation regulations before operating this aircraft.

Safety Requirements

- Always maintain visual line of sight during manual operations
- Keep clear of people, animals, and buildings (minimum 100m radius)
- Do not fly in adverse weather (strong winds, rain, lightning)
- Check all components before every flight
- Keep emergency landing procedures in mind
- Follow all local FAA, CAA, and regional drone regulations

Legal Requirements

Operators must maintain current commercial UAV certification/Part 107 license. Insurance coverage is highly recommended. Comply with all airspace restrictions and obtain necessary permissions from local authorities.

2. Getting Started

Components Overview

- **Aircraft Frame:** Folding design, compact storage
- **Propulsion System:** 4 brushless motors with automatic braking
- **Battery:** 30,000 mAh LiPo 6S battery (hot-swappable)
- **Spray System:** 20L tank with 8 precision nozzles
- **Camera:** 4K with 1" CMOS sensor + NIR multispectral
- **Navigation:** RTK GPS, obstacle avoidance radar
- **Controller:** Professional remote with telemetry display

What's in the Box

- AgriDock Drone (main unit)
- 2 Intelligent Batteries (40 min flight time each)
- Professional Controller
- Charging hub (4-battery capacity)
- USB charger and cables
- Carrying case
- User manual and quick start guide
- Spare propellers and seals

3. Pre-Flight Checklist

Daily Pre-Flight Inspection (10 minutes)

- Visual frame inspection (no cracks or damage)
- Propeller condition (no cracks, properly balanced)
- Motor operation (smooth and no unusual sounds)
- Battery voltage and health status
- GPS signal acquisition (minimum 12 satellites)
- Compass calibration status
- Camera function and SD card space
- Spray system priming (no leaks)

Weather Assessment

Do not fly in conditions with wind speeds exceeding 12 m/s, heavy rain, dense fog, or electrical storms. Check local weather before each mission.

Area Verification

- Clear landing zone (at least 10m² flat area)
- No people or animals within 100m radius
- No obstacles above flight path
- Safe battery and fuel disposal area identified

4. Flight Operations

Takeoff Procedure

- 1 Pre-flight checks:** Run complete checklist and verify all systems green in the app
- 2 Position aircraft:** Place on flat, clear ground away from people
- 3 Controller connection:** Ensure remote is paired and showing strong signal
- 4 Arm motors:** Follow controller sequence (double-click stick down)
- 5 Gradual throttle:** Slowly increase throttle until aircraft leaves ground

Flight Performance

Specification	Value
Max Flight Time	40 minutes (no wind, no spray)
Max Speed	25 m/s (90 km/h)
Max Range	15 km (line of sight)
Max Altitude	3,000 m AGL

Landing Procedure

Gradually descend at controlled rate. Activate auto-landing mode if using AgriDock Station (aircraft will dock autonomously). For manual landing, reduce throttle smoothly until aircraft touches down, then disarm motors.

5. Spray System Operation

Tank Filling

Important: Always use approved agricultural chemicals. Refer to product labels for mixing ratios and compatibility.

- Remove cap from 20L spray tank
- Use included funnel and filter to prevent contamination
- Fill to maximum line (do not overfill)
- Secure cap and prime system before flight

Spray Control

Spray system is controlled via mobile app or controller buttons. Variable flow rate allows adjustment from 0.6 to 8 L/min. Spray width is approximately 7 meters at optimal altitude and speed.

Coverage Calculation

Coverage Rate: Approximately 15 hectares per hour at optimal settings. Actual coverage depends on terrain, altitude, speed, and spray rate.

Post-Spray Cleaning

- Rinse tank thoroughly with clean water
- Flush nozzles and hoses completely
- Allow all components to air dry before storage

- Never leave chemical residue in the system

6. Dock Integration

Compatibility

The AgriDock Drone is fully integrated with AgriDock Station for seamless automated operations. When docking is available, the aircraft will autonomously return to the station, dock, and prepare for the next mission.

Automatic Docking Process

- 1 Drone identifies station:** Aircraft locks onto station GPS and visual markers
- 2 Precision approach:** Aircraft flies to dock using RTK GPS ($\pm 2\text{cm}$ accuracy)
- 3 Automated landing:** Aircraft descends and locks into docking connectors
- 4 Autonomous service:** Battery swapped, tank refilled, pre-flight checks completed automatically
- 5 Ready for next mission:** Aircraft automatically launches or waits for next command

Manual Docking

If docking fails, manually dock by positioning aircraft above station and using remote controls to lower aircraft into dock receptacle. Contact support if repeated docking issues occur.

7. Maintenance & Care

Regular Maintenance Schedule

Frequency	Task
After Every Flight	Inspect frame, propellers, and battery contacts
Weekly	Clean body and sensors, check spray system seals
Monthly	Calibrate compass, test camera, verify battery health
Quarterly	Professional inspection, motor bearing check

Battery Care

- Store at 50% charge if not flying for more than 3 days
- Never leave fully charged battery on charger for extended periods
- Charge and discharge completely once monthly
- Replace battery if swollen, damaged, or voltage drops below 18V

Propeller Maintenance

Inspect propellers after every 10 flight hours. Replace if any cracks, splits, or deformations are visible. Always use genuine AgriDock replacement propellers.

8. Troubleshooting

Won't Take Off

Check: Battery voltage, motor responsiveness, propeller balance, payload weight. Verify aircraft is armed correctly.

Unstable Flight

Solution: Recalibrate compass, verify propeller balance, check for loose components, reduce spray system payload if partially filled.

GPS Signal Loss

Solution: Move away from obstacles and tall buildings, wait for signal to stabilize (2-3 minutes), verify RTK base station is active.

Camera Not Recording

Solution: Check SD card has space, power cycle aircraft, verify camera is selected in app settings, try different SD card.

Spray System Malfunction

Solution: Verify tank has chemical, check nozzles aren't clogged, prime system, confirm spray valve is opening in test mode.

9. Technical Specifications

Physical Specifications

Specification	Value
Dimensions (Folded)	1.2m × 0.8m × 0.6m
Dimensions (Unfolded)	3.2m × 3.0m × 0.8m
Weight (Empty)	22 kg
Max Takeoff Weight	55 kg

Performance Specifications

Specification	Value
Max Flight Time	40 minutes (no wind, no spray)
Max Speed	25 m/s (90 km/h)
Max Wind Resistance	12 m/s (Beaufort Scale 6)
Max Operating Altitude	3,000 m AGL

Battery & Power

Specification	Value
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Battery Type	LiPo 6S, 30,000 mAh
Voltage	22.2V nominal
Charge Time	60 minutes (standard charger)
Operating Temp Range	-10°C to 45°C

For technical support: support@agridock.com | Phone: +1 (555) 123-4567

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