HAPPYMODEL Mobula7

Happymodel Mobula7 1S Micro FPV Drone User Manual

Brand: HAPPYMODEL | Model: Mobula7

1. Product Overview

The Happymodel Mobula7 1S Micro FPV Drone is a 75mm whoop drone designed for agile and powerful flight. It features an advanced X12 5-IN-1 AIO flight controller with built-in 2.4G ELRS V2.0 and OpenVTX, offering up to 400mW power. The drone is equipped with new RS0802 KV20000 motors, featuring a unibell design, 1.5mm shaft, and PCB bottom plate for enhanced efficiency and reliability. For clear FPV visuals, it includes a lightweight Runcam Nano3 1/3 CMOS 800TVL camera. This model is compatible with 1S Lipo/LIHV batteries, providing a smooth and powerful flying experience.

Figure 1: Happymodel Mobula7 1S Micro FPV Drone, showcasing its compact design and components.

2. Package Contents

The Happymodel Mobula7 1S Micro FPV Drone (BNF ELRS SPI RX version) package includes the following:

- Happymodel Mobula7 1S Micro FPV Whoop Drone (BNF ELRS SPI RX)
- Spare Propellers
- Small parts and accessories for assembly/maintenance

Note: As a Bind-N-Fly (BNF) version, this package does **NOT** include a remote control, FPV goggles, or flight batteries. These items must be purchased separately by the user.

3. Setup

Before your first flight, ensure you have all necessary external equipment, including a compatible ExpressLRS radio

transmitter, FPV goggles, and 1S LiPo/LiHV batteries (450mAh/550mAh/650mAh recommended) with a suitable charger.

3.1. Initial Inspection

Carefully inspect the drone for any visible damage or loose connections. Ensure propellers are securely attached and free from obstruction.

3.2. Binding with Transmitter

The drone comes with a built-in 2.4G ELRS V2.0 receiver. Refer to your ELRS transmitter's manual for specific binding instructions. Generally, you will need to put both the drone (powered on) and the transmitter into binding mode. Once bound, verify control inputs in Betaflight Configurator.

3.3. Betaflight Configuration (Optional)

For advanced users or troubleshooting, connect the drone to a computer via USB and use the Betaflight Configurator software. This allows for fine-tuning flight parameters, calibrating sensors, and updating firmware.
For general installation guidance on similar drones, refer to the following video:

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Video 1: General Quadcopter Installation Guide (Pavo Femto). While not specific to Mobula7, it demonstrates common FPV drone assembly steps.

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Video 2: Brushless Drone Installation Guide (Meteor65 Pro/Meteor75 Pro). Provides insights into assembling similar brushless FPV drones.

4. Components and Features

The Mobula7 1S is engineered with high-performance components for an optimal micro FPV experience.

- **X12 5-IN-1 AIO Flight Controller:** Integrates 2.4G ELRS V2.0 receiver, OpenVTX (up to 400mW), 12A Brushless Blheli_S ESC, and Betaflight OSD for a compact and powerful control system.
- **RS0802 KV20000 Motors:** New third-generation brushless motors with unibell design, 1.5mm shaft, and PCB bottom plate, offering a 10% increase in thrust compared to previous models.
- **Runcam Nano3 Camera:** A lightweight 1/3 CMOS 800TVL camera providing clear video feed for FPV flying.
- **Durable Frame:** Designed to withstand crashes, making it suitable for learning and aggressive flying.

Figure 2: Detailed view of the Mobula7's key components including propellers, motors, and flight controller.

Figure 3: Close-up of the RS0802 KV20000 brushless motors, highlighting their unibell design.

5. Operating Instructions

The Mobula7 1S is designed for nimble and agile flight. It performs exceptionally well in tight indoor spaces due to its lightweight design and responsive motors. For outdoor flights, ensure minimal wind conditions to maintain optimal control.

5.1. Basic Flight

After binding your transmitter and powering on the drone, arm the motors using your configured switch. Gently increase throttle to lift off. Practice smooth control inputs for hovering, forward flight, and turns.

5.2. Flight Modes

The drone supports various flight modes configurable in Betaflight. Familiarize yourself with Angle mode (self-leveling) for beginners and Acro mode (manual control) for advanced maneuvers.

5.3. Turtle Mode

Turtle Mode allows the drone to flip itself over if it lands upside down. This feature is highly beneficial for FPV pilots,

especially when flying in challenging environments.

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Video 3: Tutorial on Activating Turtle Mode in Betaflight for FPV drones.

6. Maintenance

Regular maintenance ensures the longevity and performance of your Mobula7 1S drone.

- **Propeller Inspection:** Check propellers for cracks, bends, or damage after every crash or hard landing. Replace damaged propellers immediately to prevent vibrations and loss of control.
- **Motor Cleaning:** Keep motors free from dirt, dust, and debris. Use compressed air or a soft brush to clean them.
- **Frame Integrity:** Periodically inspect the frame for any cracks or stress points. While durable, extreme impacts can cause damage.
- **Battery Care:** Always store LiPo/LiHV batteries at storage voltage and avoid over-discharging or over-charging.

7. Troubleshooting

If you encounter issues with your Mobula7 1S, consider the following common troubleshooting steps:

- **No Power:** Ensure the battery is fully charged and correctly connected. Check for any loose power cables.
- **Binding Issues:** Re-attempt the binding process with your transmitter. Ensure both devices are in binding mode and within range.
- **Unstable Flight/Drifting:** Calibrate the accelerometer in Betaflight Configurator. Check for bent propellers or damaged motors.
- **No FPV Feed:** Verify the Runcam Nano3 camera connection to the flight controller and ensure the OpenVTX is powered and set to the correct frequency.

For issues related to drone drifting, refer to the following instructional video:

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Video 4: Guide on Fixing Drifting Issues in Betaflight for FPV drones.

8. Specifications

Feature	Detail
Item Name	Mobula7 1S 75mm Micro FPV Whoop Drone
Wheelbase	75mm
Dimensions	99mm x 99mm x 40mm (3.9"L x 3.9"W x 1.57"H)

Weight	24g
Flight Controller	X12 5-IN-1 AIO (built-in 2.4G ELRS V2.0, OpenVTX up to 400mW, 12A Brushless Blheli_S ESC, Betaflight OSD)
Motors	RS0802 KV20000 Brushless Motors
Camera	Runcam Nano3 1/3 CMOS 800TVL Camera
Recommended Battery	1S 450mAh/550mAh/650mAh LiPo/LiHV (Not Included)
Skill Level	Intermediate or Advanced
Material	PC
Date First Available	April 1, 2022

9. Warranty and Support

For warranty claims, technical support, or further assistance, please contact Happymodel customer service directly. Refer to the official Happymodel website or your purchase documentation for contact information.