

Microsoft / FlightFX

Jetson ONE Microsoft Flight Simulator User Manual

For Microsoft Flight Simulator 2020 / 2024



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PREFACE

FOR SIMULATION USE ONLY - DESIGNED FOR SINGLE-PILOT OPERATION

This manual is designed to provide clear, concise instructions for operating the Jetson ONE electric vertical takeoff and landing (eVTOL) personal aircraft within Microsoft Flight Simulator. The content herein is tailored for both new and experienced pilots, offering detailed guidance on the unique aspects of the Jetson ONE's operation. This simulation is based on an early development version of the aircraft and may not fully reflect the final production model. Some concessions have been made to simplify single-pilot operations within the simulation environment.

PHOTOSENSITIVE SEIZURE WARNING

A small percentage of individuals may experience seizures when exposed to certain visual stimuli, such as flashing lights or patterns commonly found in video games. This can occur even in individuals with no prior history of epilepsy or seizures. If you experience any symptoms such as dizziness, vision changes, twitching, or loss of consciousness, stop playing immediately and consult a physician.

To minimize the risk of photosensitive seizures:

- Play in a well-lit room.
- Take regular breaks, especially if you feel tired or fatigued.

If you or a family member has a history of seizures or epilepsy, consult a doctor before using this simulation.

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ABOUT THE JETSON ONE

The Jetson ONE is a single-person, electric-powered personal air vehicle designed for recreational purposes. It is optimized for low-altitude flight at speeds up to 63 miles per hour, with a recommended altitude limit of 1,500 feet above ground level. It features a lightweight frame powered by eight electric motors and can carry a pilot weighing up to 200 pounds. The aircraft offers a maximum endurance of 20 minutes under optimal conditions but will experience reduced flight time as payload increases.

Development History

The Jetson ONE, developed by Jetson Aero, is designed for personal aviation with the aim of making flying accessible and easy. Built for recreational flying, it is not intended for regular commuting but can be used in certain circumstances for short distances.

Specifications and Design Features

- Top Speed: 63 mph
- Flight Duration: 20 minutes at maximum payload
- Maximum Payload: 200 lbs (pilot weight)
- Altitude Range: Under 1,500 feet above ground level
- Propulsion: Eight brushless electric motors
- Battery: Swappable 52V Lithium Ion

COCKPIT OVERVIEW



1. Information Display
2. Battery Recharge Click Spot
3. Kill Switch
4. Arm Button
5. Cruise Button
6. Flight Mode Selector
7. Left-Hand Controller
8. Right-Hand Controller

Key Instruments

Key instruments include battery life indicators and mode selectors. The pilot operates the aircraft using two main controls: the left-hand throttle controls altitude via engine power, and the Right-Hand Controller provides lateral (forward, back, side-to-side) movement in flight.

Key Components

- **Arm Button:** Small push button located next to the kill switch cord used to ready the aircraft systems and engines for flight.
- **Info Display:** Displays essential information such as battery life, aircraft status, and flight modes.
- **Kill Switch:** The prominent kill switch can shut down the motors in case of an emergency. However, in the sim, it only is designed to enable the engine start and will not perform an emergency cutoff while in flight.

DEFINITION OF FLIGHT PHASES

The Jetson ONE operates in three distinct flight phases. Understanding these phases and the corresponding control inputs is essential for safe and efficient operation of the aircraft.

Ground Phase

- **Condition:** The aircraft is on the ground with the motors not armed.
- **Controls:** Minimal control inputs are required during this phase. The kill switch and arm motors button are used to initiate flight readiness.

Flight

- **Condition:** The Jetson ONE is airborne with a low speed suitable for hover.
- **Controls:** The Left-Hand Controller controls ascent/descent, while the Right-Hand Controller manages lateral movement and heading. The aircraft hovers by maintaining altitude through vertical thrust from the motors.

Maneuvering

- **Condition:** The aircraft achieves forward flight mode by holding down the Right-Hand Controller and pitching forward.
- **Controls:** The Left-Hand Controller will ascend/descend, while the Right-Hand Controller adjusts the nose pitch and yaw to establish a steady forward motion. In forward flight, the aircraft operates more efficiently with reduced battery consumption compared to hover mode.

FLIGHT MODES

The Jetson ONE operates with three primary flight modes, which adjust the vehicle's responsiveness and power usage:

Basic Mode

- **Use Case:** Ideal for beginners or for maximizing flight time.
- **Features:** In Basic mode, the Jetson ONE operates with reduced speed and power draw, extending battery life at the cost of performance. It is best suited for pilots still familiarizing themselves with the handling characteristics of the aircraft.

Normal Mode

- **Use Case:** For experienced pilots looking to unlock more of the aircraft's capabilities.
- **Features:** This mode allows for greater speed and maneuverability compared to Basic mode. Pilots can transition into more dynamic flying while still maintaining a balance between performance and battery consumption.

Sport Mode

- **Use Case:** For high-performance flying with the fastest possible speeds and response times.
- **Features:** Sport mode maximizes the Jetson ONE's potential but at a cost. The motors spin faster, and the vehicle responds more aggressively to control inputs, but battery consumption increases significantly. This mode is best used when performance is prioritized over flight duration.

CONTROL RESPONSES IN DIFFERENT FLIGHT PHASES

Each flight phase has different control responses, and the handling of the Jetson ONE changes accordingly. Understanding how the controls behave in each phase is essential for smooth flight operations.

Ground Phase Controls

- **Kill Switch:** The kill switch is held by the pilot during ground operations to immediately shut off the motors if necessary.
- **Arm Motors:** This button enables the motors, transitioning the vehicle into a flight-ready state.
- **Left-Hand Controller:** Bring power forward past mid-point to start engines.
- **Take-Off:** Bring power further past midpoint using Left-Hand Controller while pushing forward on Right Controller - this will start a slow, controllable takeoff at which point the Right-Hand Controller takes authority in maneuvering laterally.

Flight Phase Controls

- **Left-Hand Controller (Throttle):** Controls target vertical speed - moving out of midpoint throttle will ascend or descend.
- **Right-Hand Controller (Lateral Speed):** Adjusts the lateral speed by pulling back for reverse flight and pushing forward for forward flight. Left and right bank will invoke a sideslip. The center position neutralizes movement. In general, the JetsonOne will attempt to hold position in all lateral axes if the right-hand throttle is neutralized.

CRUISE MODE

For gameplay purposes, the Jetson ONE is equipped with a Cruise Mode to reduce pilot workload during forward flight, allowing for more efficient energy management and easier flight control.

Cruise Mode Activation

- **Activation:** Cruise Mode is engaged by releasing the right hand control (no input) and depressing the Red button atop the grip once.
- **Function:** This mode automatically maintains forward flight by dropping the Jetson ONE's nose. This reduces pilot workload by relieving having to keep the Right-Hand Controller pushed forward.

Exit Cruise Mode

- **Deactivation:** Depress the Red button atop the grip once. Alternatively, move the Right-Hand Controller in any direction to deactivate Cruise Mode.
- **Function:** Manual control of lateral movement is restored to the pilot.

INSTRUMENTATION INDICATIONS

Energy (Battery Capacity)

- **Display:** Shows the remaining battery capacity as a bar graphic.
- **Battery source:** 52V Swappable Lithium Ions
- **Usage:** The battery capacity indicator functions similarly to a fuel gauge, showing how much energy remains for flight operations (Red - Low, Yellow - Moderate, Green - Full/Near-full).



Flight Mode

- **Display:** Indicates which performance mode is selected
- **Dynamic Updates:** The pilot can change the performance mode on the thumb dial of the Left-Hand Controller and the panel will reflect the Flight Mode selection accordingly.

GLOSSARY OF TERMS

1. **Basic Mode:** A flight mode designed for beginners or those wishing to conserve battery life. This mode reduces speed and performance for longer flight endurance.
2. **Forward Flight:** A flight phase where the Jetson ONE transitions from vertical lift to horizontal flight.
3. **Hover Mode:** A flight phase where the jetson ONE maintains a relatively stationary position in the air.
4. **Sport Mode:** The highest-performance flight mode, designed for experienced pilots seeking maximum speed and agility. This mode consumes more battery power and reduces overall flight time.
5. **Thrust:** Airflow generated by the propellers of the Jetson ONE that lifts the craft into the air, hovers it, and propels it during flight.
6. **Yaw:** The movement of the aircraft's nose left or right, controlled by twisting the Right-Hand Inceptor (RHI) or using a twist axis on a joystick. Yaw control is critical during hover and turning.
7. **Pitch:** The up or down movement of the aircraft's nose. By adjusting the pitch, you control whether the Jetson One tilts nose up or nose down. For forward flight, you must pitch the nose down to gain momentum, while pulling the nose up will cause the aircraft to slow down or even move backwards.
8. **Roll:** The tilting motion of the aircraft along its longitudinal axis (from nose to tail). In traditional aircraft, roll causes the plane to bank left or right, which in turn changes its heading. However, in the Jetson One, the design doesn't facilitate banking in the traditional sense. Instead, lateral movements are achieved through side-slip rather than roll, making the aircraft's roll control a bit unique compared to standard aircraft.