VERGE AERO

X7 User Manual

Revision 1.0

Verge Aero™ X7 User Manual

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Contact the Verge Aero Support Portal for the latest documentation and help with technical questions.

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Overview

Introduction

Verge Aero's X7 is a purpose-built drone for performing drone light shows. Every aspect of the design has been developed to make your experience deploying drone light shows as seamless and easy as possible. With its swappable smart battery, built-in charging, blindingly bright LED, and top-of-the-line sensors, the X7 makes deployment a breeze!

Intended Use

The Verge Aero X7 is intended for commercial drone show purposes only and not for consumer or recreational use.

The X7 can only be operated by a fully trained and certified pilot in command (PIC). The PIC must read, understand, and agree to all documentation for the entire Verge Aero software suite and show operations workflow prior to using the X7.

The PIC is responsible for knowing and complying with all laws and regulations. Use the X7 only as intended in full compliance with all aviation authority and local regulations. Always maintain, store, and operate the X7 in accordance with published specifications and limitations.

Cautions and Warnings

By using this product, you signify that you have read, understand, and accept the terms and conditions of this manual and all relevant instructions provided by Verge Aero. **THE PRODUCT AND ALL MATERIALS AND CONTENT AVAILABLE THROUGH THE PRODUCT ARE PROVIDED "AS IS" AND ON "AS AVAILABLE BASIS" WITHOUT WARRANTY OR CONDITION OF ANY KIND.** This product is not intended for children.

WARNING: RISK OF SERIOUS INJURY FROM ROTATING PROPELLERS!

Do not disassemble or modify the X7. Do not open the X7 body. There are no user serviceable parts or replaceable parts inside.

DO NOT use the aircraft in severe weather conditions including heavy wind exceeding 10 m/s, snow, rain, fog, hail, or lightning.

DO NOT fly the aircraft near areas with magnetic or radio interference, including Wi-Fi hotspots, routers, Bluetooth devices, high-voltage lines, large scale power transmission stations, radar stations, mobile base stations, and broadcasting towers.

Buildings, mountains, and trees may block the satellite signal and affect the on-board compass.

Do not operate the X7 in areas where animals are present. Animals may damage the X7, or may be injured interacting with the X7.

The PIC must check multiple items to safe X7 operation of the UAS before and during flights, including but not limited to:

Signal interference	Before each flight, confirm that all communication signals are as strong as expected and unimpeded by any intentional or unintentional interference.
Satellite Signal	Nearby buildings may affect GNSS accuracy. Typically, at any given location, GNSS accuracy varies over time and should be continuously monitored before and during flights. Confirm number of available satellites and signal strength.
Magnetic interference	Verify compass headings. Certain equipment or materials may cause compass deviation at the airfield.
Weather	It is critical to maintain awareness of weather patterns expected before and during the times of the Light Show. Weather can change quickly impacting the ability to provide safe operation.

Safety zone	Ensure sufficient security, barricades, signage, etc is in place before flight operations commence to ensure the safety zone remains clear of people, moving vehicles, etc.
Clear Airspace	The X7 should not be operated if any air traffic or other aerial elements may intrude in the Flight Operations Area.

Battery

CAUTION: BATTERIES ARE HIGHLY FLAMABLE AND SHOULD BE TREATED AS EXPLOSIVES AT ALL TIMES. HANDLE WITH EXTREME CARE.

Never leave batteries unattended while charging. During and immediately after charging is when batteries are most at risk of ignition. Monitor charging and recently charged batteries using a thermal camera. Batteries that are significantly hotter than the rest need to be removed from the charger and separated immediately.

DO NOT use a battery if it is swollen, leaking, damaged or has been involved in a crash or heavy impact.

All batteries must be suitably discharged prior to shipment in accordance with regulations.

NEVER SHIP DRONES WITH BATTERIES ON PASSENGER AIRCRAFT!

BATTERIES SHIPPED WHEN NOT MOUNTED IN A DRONE MUST CONFORM TO UN3480.

The batteries should be used at a temperature between -10° and 40° C (14° and 104° F). A high temperature can cause an explosion or fire. A low temperature will reduce the performance of a battery.

Keep batteries out of the reach of children and animals.

Extinguish any battery fire using water, sand, or a dry powder fire extinguisher.

DO NOT charge the battery immediately after flight. The battery temperature may be too high and may cause serious damage to the battery. Allow the battery to cool down to close to room temperature before charging. Charge the battery at a temperature range of 5° to 40° C (41° to 104° F). The ideal charging temperature range is 22° to 28° C (72° to 82° F). Charging at the ideal temperature range can prolong battery life.

DO NOT expose the battery to fire. DO NOT leave the battery near heat sources such as a furnace, heater, or inside a vehicle on a hot day. Avoid storing the battery in direct sunlight.

Operation

This manual describes using the Verge Aero X7 to perform drone shows and has important information . Shows are programmed with the Verge Aero Design Studio and operated from the Flight Control Hub. Consult their respective documentation for full instructions on use.

Preparing the aircraft

Upon removing each X7 from its shipping container, a visual inspection should be conducted to ensure the drone is flight ready and that the motors and propellers have no defects (nicks, etc).

If the landing gear is retracted, place them in the lowered position.

Calibration

Occasionally drones may need to have their magnetometers recalibrated. To do so, follow the procedure using the Flight Control Hub.

Charging

A USB-C connector is located on the rear of the drone. Insert a standard USB-C cable to charge the drone. It takes approximately one hour to complete a full charge.

The state of a battery's charge can be seen by pressing the button on the battery and viewing the indicator LEDs. Four green LEDs indicate a fully charged battery.

Powering the aircraft

Press the power button on the top of the X7 to turn it on and prepare for flight. The X7 is now ready to receive signal from the Flight Control Hub and commence operations. Refer to the Flight Control Hub documentation for full instructions on operating the X7 in a show.

Depowering the aircraft

After the show, the X7 can be turned off by pressing the power button or sending a power off command from the Flight Control Hub.

QR Code

Scan the QR code on top of the X7 with the Verge Aero app to access detailed records such as flight data and maintenance history.

Specifications

Dimensions and Weight		
Prop-to-prop Width	48	cm
Hub-to-hub Width	28	cm
Height (Flight Configuration)	14	cm
Height (Landing Gear Retracted)	9	cm
Weight	830	g
Performance		
Max Horizontal Speed	10	m/s
Max Vertical Speed	6	m/s
Max Sustained Wind	9	m/s
Max Flight Time (Show Time)	12	minutes
Operating Temperature	5 to +40	°C
LED Brightness (Full White)	1600	lumens
Battery		
Cell Type	Li-ion	
Voltage	10.8	V
Capacity (mAh)	4200	mAh
Capacity (Wh)	45.4	Wh

Regulatory

Regulatory information can be viewed at any time from the Verge Aero Console software by navigating to Help -> Regulatory.

FCC/ISED Compliance Statements

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Revision History

Revision	Date	Description
Rev1 0	1/1/24	Initial Release.