

Black Swift SØ™ UAS



Aircraft Specifications

Vehicle Characteristics

Wingspan	54.6 in
Wing Area	292 in ²
Aspect Ratio	11.1
Dihedral	1.6°
Weight	3.5 lbs
Wing loading	27.5 oz/ft ²
Cruise Speed	17 m/s (38 mph)
Max Endurance	90 minutes
Relative Wind Velocity Resolution:	0.38 m/s
Relative Wind Velocity Accuracy:	± 0.48 m/s
Temperature Range:	-40° to 85°C
Temperature Accuracy:	± 0.3°C
Barometric Pressure Resolution:	0.012 mbar
Barometric Pressure Accuracy:	1.5 mbar
Relative Humidity Range:	0-100% RH
Humidity Accuracy at 21°C:	± 3% RH
Magnetic Field Sensitivity:	13nT
Accelerometer Resolution:	0.002 m/s ²
Gyroscope Resolution:	0.6°/sec

A UAS Designed Specifically for High Resolution Atmospheric Thermodynamic Measurements

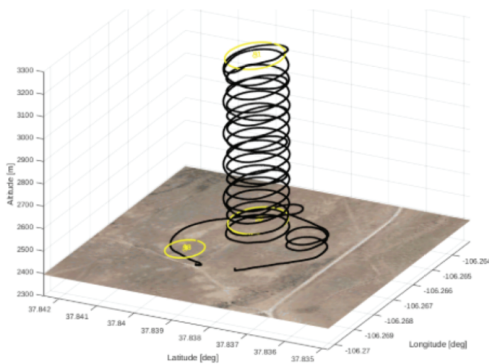
The Black Swift SØ™ UAS is an intelligent unmanned aircraft capable of completely automatic flights at altitudes up to 15,000 feet AGL. Its unique tail design enables deep-stall landing with near vertical descent and 10-foot landing accuracy. The rapid ascent and descent allow the SØ to quickly and accurately capture 3-dimensional wind profiles at various levels. With a flight duration of up to 90 minutes, the Black Swift SØ has the endurance and comprehensive sensor suite necessary to capture a profile of upper air parameters including air temperature, wind speed and direction, dewpoint, and atmospheric pressure—quickly and efficiently.

Manufactured entirely in the USA, the SØ was engineered from inception for flights in extreme atmospheric conditions, including hurricane deployments. Its advanced avionics enables fully autonomous operation with minimal training. Designed for rapid atmospheric profiling, the SØ's automated sampling patterns and scripting allow for "launch-and-forget" operations

Purpose-Built, Research-Ready

The SØ is a cost-effective aerial solution perfect for determining the thermodynamics of the atmosphere. Its modular design allows for rapid integration of new sensors and capabilities. This flexibility enables the SØ's functionality to expand to provide air quality monitoring and trace gas detection simply by switching out the sensor payloads.

Black Swift Technologies is recognized as a leading manufacturer of reliable, robust, and highly accurate unmanned aircraft systems flying scientific payloads in demanding atmospheric environments (high-altitude, arctic, desert, corrosive particulates, and strong turbulence). These purpose-built scientific aerial platforms are used around the globe for a variety of specialized atmospheric research missions in extreme conditions. With the goal of ubiquitous UAS usage through advanced capabilities, all Black Swift's solutions leverage its acclaimed SwiftCore™ Flight Management System (FMS), an advanced end-to-end avionics solution enabling users to control, communicate, and command their UAS for fully autonomous flight. SwiftCore FMS enables advanced control systems. These "smart" control systems provide industry leading sensor-based control of the UAS minimizing operator workload while improving the quality of observed data by autonomously modifying the flight path based on sensor inputs.



Example flight pattern to be flown to determine wind speed and direction as well as other thermodynamic parameters at altitudes up to 15,000 ft AGL.

Aircraft Design Parameters

- Highly maneuverable and aggressive control to allow flights in very high winds.
- Efficient, low drag design to enable climbs up to 15,000 ft (AGL) on a single battery.
- Compact size for easy handling and deployment.

