

GENERAL INFORMATION

RAVEN SMALL UNMANNED AIRCRAFT SYSTEM (SUAS) (RQ-11B)

NSN 1550-01-538-9256 EIC: N/A

Equipment Description And Data

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

SYSTEM SPECIFICATIONS

The Raven (RQ-11B) Air Vehicle can be launched and recovered in minutes without special equipment on unprepared terrain. The system employs a self-stabilizing air vehicle configuration with stability augmentation avionics, and provides ease of control and steady video imagery. Air and ground components are lightweight and easily configured for rucksack transport. The Raven (RQ-11B) Air Vehicle is battery-powered and has low visual, acoustic, and thermal signatures.

The system includes two nose cones. One houses two color electro-optical (EO) cameras (front- and side-look); one houses a side-look infrared (IR) camera with laser illuminator. The Raven (RQ-11B) Air Vehicle flies for 60-90 minutes on rechargeable Lithium Ion (Li-ion) battery packs.

The Raven (RQ-11B) system is typically operated by a two-person team consisting of a Vehicle Operator (VO) and a Mission Operator (MO).

COMPONENT QUANTITY

Air Vehicle 3

EO Payload Nose, Forward- and Side-look 2 IR Payload Nose, Side-look 2

Ground Control Station (GCS)/Remote Video Terminal (RVT) 2

RSTA Kit (separate Government Furnished Equipment (GFE) 1

Initial Spares Package 1

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS

AIR VEHICLE

The Raven (RQ-11B) Air Vehicle is assembled from eight components. It is broken down for storage and transportation into the Air Vehicle Soft Pack. A foam liner supports and protects the air vehicle and accessories from damage, and the waterproof “dry bag” keeps the system dry when submersed up to two meters for up to two hours. The Air Vehicle Soft Pack carries one air vehicle, one air vehicle battery, two payload noses, and a Field Repair Kit (FRK).

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS –CONTINUED

The Raven (RQ-11B) Air Vehicle is equipped with four channels/frequencies to allow multiple systems to operate in close proximity (though it is recommended that systems operate no closer than 400m to one another).

The data links operate at the frequencies listed below.

CHANNEL UPLINK (MHZ) DOWNLINK (MHZ)

1 (b) (3), 10 U.S.C. § 130

2

3

4

PAYLOADS

EO Payload Nose

The Raven (RQ-11B) EO payload is equipped with a digital side-look camera capable of pan, tilt and zoom functions.

Zoom Levels

When the side-look camera is selected, the following three zoom magnifications are available: 1, 1.42 and 2.85. These correspond to horizontal fields of view of 34 deg., 24 deg. and 12 degs.

Pan and Tilt

When in loiter (LOIT) mode and with mid-level or full zoom selected, the joystick moves zoomed center field of view within the constraints of non-zoomed field of view. Most of this is performed automatically, depending on which mode is selected. These pan and tilt functions are only available in LOIT mode.

Image Stabilization Mode

If the air vehicle is operating in Manual (MAN), Altitude Hold (ALT), HOME, or navigation (NAV) mode, the pan and tilt functions act to digitally stabilize the camera using inputs from the air vehicle's gyroscopes. The air vehicle can be flown normally at all zoom levels while the image stabilization occurs automatically.

AIR VEHICLE CHARACTERISTICS

PARAMETER CHARACTERISTIC

Wingspan 55 in.

Length 36 in.

Structure modular, Kevlar composite Weight (with payload) 4.2 lb.
Payload Nose Weight 6.5 oz.

Normal Operating Altitude 150 to 1,000 ft. above ground level (AGL)

Cruise Speed 26 Knots

Range 10 Kilometer (km) line of sight (LOS)

Climb Rate 800 ft./min. at 2,000 ft. mean sea level (MSL)

Turn Rate 360° in 24 seconds

Motor Direct drive electric

Air Vehicle Batteries Li-Ion (rechargeable)

Flight Duration 60-90 min.

Launch Hand launch

Landing Autoland deep stall

Navigation P(y)-code Global Positioning System/Selective Availability

Anti-Spoofing Module (GPS/SAASM) (WGS84) and electronic compass

Flight Control Manual or autonomous

SYSTEM LIMITATIONS

PARAMETER CHARACTERISTIC

LAUNCH ALTITUDE ● Minimum Launch Altitude: No restrictions ● Maximum Launch Altitude: 10,000 ft. MSL

Launching above 10,000 ft. MSL can be accomplished but with reduced climb rate and thus increased risk of impact with nearby obstacles.

LANDING ALTITUDE ● Minimum Landing Altitude: no restrictions. ● Maximum Landing Altitude: 10,000 ft. MSL

Landing above 10,000 ft. MSL can be accomplished but at higher than normal descent rate and risks causing excessive damage to Air Vehicle.

FLIGHT ALTITUDE ● Minimum Flight Altitude: No restrictions ● Maximum Flight Altitude: 300-500 ft. AGL, 10,500 ft. MSL

Operating above 500 ft. AGL can be accomplished but with reduced video sensor performance. Operating above 10,500 ft. MSL can be accomplished, but with an overall impact in flight performance, primarily reduced climb rate and flight endurance.