PRODUCT CATALOG

AeroVironment™

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VERSION 240110

CONTENTS

AEROVIRONMENT HAS DELIVERED THE **VAST MAJORITY** OF ALL UNCREWED AIRCRAFT IN THE U.S. DEPARTMENT OF DEFENSE INVENTORY*

35K+ UNITS DELIVERED WORLDWIDE

4 MM+ ACCUMULATED UAS FLIGHT HOURS (EST)

55+ ALLIED NATIONS USE OUR LMS, UAS, UGV & SUPPORT SERVICES

WHO WE ARE

At AeroVironment, we are relentless in our efforts to deploy technology in ways that push beyond the realm of what's possible. With each innovation, we strive to broaden our customers' horizons and elevate their capacity to make smarter, quicker decisions.

We develop technologies and solutions that enable customers to operate beyond the horizon, enabling them to see the world in powerful new ways, complete ever-more ambitious missions and overcome seemingly intractable challenges. By pushing the boundaries of future-defining technologies, we move beyond what is currently possible to create a powerful, interlocking family of products spanning missions, domains and worlds.

** Source: United States Department of Defense Unmanned Systems Roadmap 2013-2038, page 5*

MULTI-DOMAIN ROBOTIC SYSTEMS

JUMP® 20

T-20™

PUMA™ LE

PUMA™ 3 AE

SOLAR HAPS

PUMA™ VTOL KIT

SWITCHBLADE® 600

SWITCHBLADE® 300 BLOCK 20

INTRODUCING **P550**™

RAVEN® B

BLACKWING™

VAPOR® 55 MX

DDL™ NETWORK ANTENNAS

TOMAHAWK™ GROUND CONTROL STATIONS

UNCREWED GROUND VEHICLES

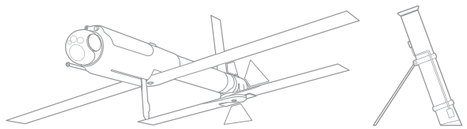
LOITERING MUNITION SYSTEMS

LMS

AeroVironment's Switchblade® loitering munition systems (LMS) close the gap between observation and action, giving troops the ability to identify threats and precisely deliver a lethal payload with minimal collateral effects. Their small size and low acoustic, visual and thermal signatures make Switchblade systems difficult to detect or track, even at close range.

Rapidly deployable and highly maneuverable with high-performance optics and scalable munition payloads, our LMS enable warfighters to easily launch, track and engage beyond-line-of-sight targets, including light armored vehicles, across domains. These qualities make Switchblade the loitering munition of choice in Ukraine.

SWITCHBLADE® 600 LOITERING MUNITION



LAUNCHER DIMENSIONS
Length: 60 in (1.5 m)
Diameter: 7.5 in (19.2 cm)

WEIGHT
Munition: 33 lb (15 kg)
AUR: 65 lb (29.5 kg)

RANGE
37.2 mi (60+ km)
56+ mi (90+km)
w/ Forward Pass

ENDURANCE
40+ min

SPEED
Loiter: 70 mph (113 km/h)
Sprint: 115 mph (185 km/h)

EFFECTS ON TARGET
Anti-armor &
anti-personnel effects

FIRE CONTROL SYSTEM	Tablet-based FCU with tap-to-target guidance & built-in mission planner & trainer
TARGETING OPTICS	2-axis, 4-sensor gimbal (Dual EO/IR) integrated sensor suite
OPERATING ALTITUDE	Below 650 ft (198 m) AGL; ceiling >15,000 ft (4572 m) MSL
LAUNCH METHOD	Self-contained launcher for ground, air & maritime
LETHALITY	Precision strike with anti-armor warhead

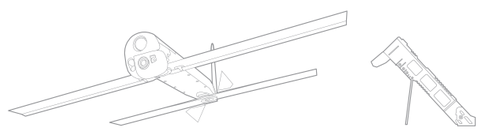
KEY FEATURES

- *Patented wave-off feature & recommit capability*
- *Enhanced frequency hopping Digital Data Link™ covering more frequencies & supporting AES-256-bit encryption*
- *Intuitive touch screen tablet Fire Control Unit (FCU)*
- *<10 minute system setup & launch*

ALL-IN-ONE, MAN-PORTABLE, ANTI-ARMOR, SMART MUNITION SYSTEM

Best-in-Class Sensor Suite
Anti-Armor Warhead
Self-Contained Tube-Launcher
Mission Planning on FCU
Integrated Training Simulator (T-sim)
Fire Control System

SWITCHBLADE® 300 BLOCK 20



WEIGHT
Munition: 3.69 lb (1.68 kg)
AUR: 7.2 lb (3.27 kg)

RANGE
30 km with
Extended Range Antenna

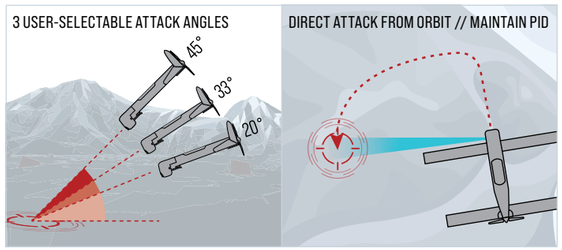
ENDURANCE
20+ min

SPEED
Loiter: 63 mph (101 km/h)
Sprint: 100 mph (161 km/h)

FIRE CONTROL SYSTEM	Tablet-based FCU with tap-to-target guidance & built-in mission planner & trainer
TARGETING OPTICS	Enhanced EO/IR with forward to left hand panning camera suite
OPERATING ALTITUDE	Flight <500 ft (152.4 m) AGL; supports operation >15,000 ft (4572 m) ASL
LAUNCH METHOD	Self-contained launcher for ground, air & maritime; configurable multipack capability
LETHALITY	Anti-personnel effects; precision strike with low collateral effects

KEY FEATURES

- *Patented wave-off feature & recommit capability*
- *Enhanced frequency hopping Digital Data Link™ covering more frequencies & supporting AES-256-bit encryption*
- *Intuitive touch screen tablet Fire Control Unit (FCU)*
- *Advanced Munition—multiple commit angles, user-selectable point of detonation, left hand commit with continuous Positive Identification (PID)*



BLACKWING™ LOITERING RECONNAISSANCE SYSTEM

DIMENSIONS
Wingspan: 27 in (68.6 cm)
Length: 19.5 in (49.5 cm)
Diameter: 3 in (7.6 cm)

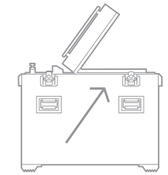
WEIGHT
4 lb (1.8 kg)

SENSORS	Integrated EO/IR sensors—day/night operations
LAUNCH METHOD	Underwater-to-air delivery canister, tube, MPL

KEY FEATURES

- *Rapid response ISR*
- *C3 tactical data relay from UAS to UUV*
- *Modular payload*

MPL MULTIPACK LAUNCHER



DIMENSIONS
36 in D x 30 in W x 36 in H

WEIGHT
~130 lb empty
~160 lb loaded

CONFIG-URATIONS	6-pack standard (Alternates for 2-20 AURs possible)
MOUNTING	Hold-downs for vehicle or shipboard use
POWER	Solar panel & internal battery, Shore/TacVeh power augments to maintain internal operating temps
CONTROL	100 ft remote operation control cable (FOB/COP ops cell bunker/ buildings, tactical vehicles, ship CIC)

KEY FEATURES

- *Compatible with Switchblade® 300 & Blackwing™*
- *Rapid Reload—<30 seconds per round*
- *Low observable remote ops*
- *Tactical vehicle/MRAP*

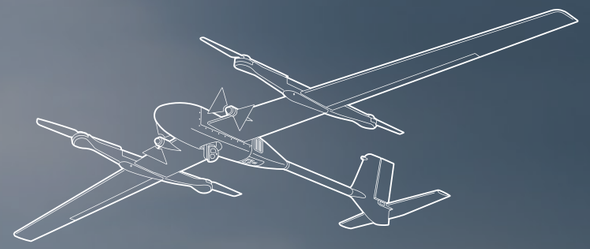
SMALL UAS

SUAS

Over the last decade, members of AeroVironment's growing family of small uncrewed aircraft systems (SUAS) — P550™, Puma™ LE, Puma™ 3 AE, Raven® and VAPOR® Helicopter UAS — have been adopted by more than 55 allied nations.

The reason for their appeal is straightforward. Under battlefield conditions, they have proven themselves ideal for low-altitude intelligence, surveillance and reconnaissance missions. Lightweight, rugged and easy to operate, our SUAS deliver real-time color and/or infrared imagery to ground control and remote viewing stations. With their enhanced communications and interoperability, they are a critical for multi-domain operations.

INTRODUCING **P550™** AUTONOMOUS eVTOL UAS



DIMENSIONS
Wingspan: 17 ft (5 m)
Length: 9 ft (2.8 m)

WEIGHT
Up to 55 lb (24.9 kg) MGTOW

LINK RANGE
40 km Standard;
Up to 60 km with DDL range depending on GCS Radio

ENDURANCE
Up to 5 hr

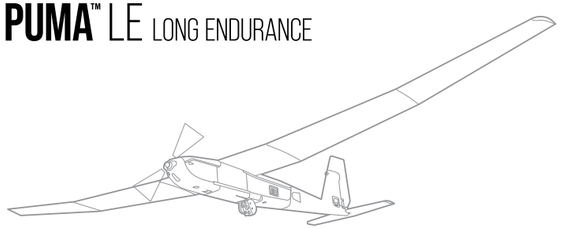
TOTAL PAYLOAD CAPACITY
Up to 15 lb (6.8 kg)

SPEED	15-27 m/s (30-52 kts)
OPERATING ALTITUDE	Max. Flight DA 14K ft (4267 m) Max. Launch DA 10K ft (3000 m)
GCS	Vigilant Spirit GCS with Quattro STANAG 4586 (Baseline) & Kinesis GCS
LAUNCH & RECOVERY	VTOL

KEY FEATURES

- *Advanced mission system enabling secure ATR/ Autonomous missions*
- *mDDL-FH // Advanced Day-Night VIO Navigation for A2/ AD Ops*
- *Modular architecture supporting 3rd party payloads, radios, and control options*

PUMA™ LE LONG ENDURANCE



DIMENSIONS
Wingspan: 15 ft (4.6 m)
Length: 7.3 ft (2.2 m)

WEIGHT
23.5 lb (10.7 kg) with Mantis™ i45/i45 N

LINK RANGE
12.4 mi (20 km)
37.3 mi (60 km) with LRTA

ENDURANCE
6.5 hr with Puma™ Smart 2500 Battery*

TOTAL PAYLOAD CAPACITY
5.5 lb (2.5 kg)**

SPEED	Cruise: 29 mph (47 km/h) 25 kts Dash: 47 mph (76 km/h) 41 kts
OPERATING ALTITUDE	300–500 ft (91–152 m) AGL, typical Max. launch 10K ft (3,048 m) MSL
GCS	Tomahawk GCS
LAUNCH METHOD	Hand-launched, bungee or vehicle launch
RECOVERY METHOD	Autonomous or manual skid landing

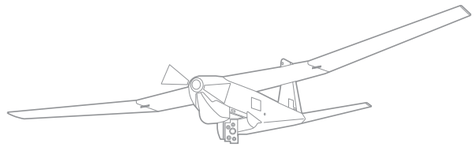
* Puma™ Smart 2500 Battery is not compatible with other Puma™ AE aircraft

**Payload capacity is reduced by 0.3 lb (140 g)

KEY FEATURES

- *6.5 hours of ISR capability & full-motion video in all environments*
- *Support two flights with 2-case mission packout*
- *Dedicated secondary payload bay with power supply & Ethernet*

PUMA™ 3 AE ALL ENVIRONMENT // RQ-20C



DIMENSIONS
Wingspan: 9.2 ft (2.8 m)
Length: 4.6 ft (1.4 m)

WEIGHT
15.4 lb with Mantis™ i45/i45 N (7 kg)

LINK RANGE
12.4 mi (20 km)
37.3 mi (60 km) with LRTA

ENDURANCE
3 hr with PS2500 Battery*
2.5 hr with Puma™ Smart Battery*

TOTAL PAYLOAD CAPACITY
4 lb (1.8 kg)

* with Mantis™ i45

SPEED	Cruise: 30 mph (49 km/hr) 26 kts Dash: 47 mph (76 km/h) 41 kts
OPERATING ALTITUDE	300–500 ft (91–152 m) AGL, typical Max. launch 10K ft (3,048 m) MSL
GCS	Tomahawk GCS
LAUNCH METHOD	Hand-launched, optional bungee launch or VTOL kit
RECOVERY METHOD	Autonomous or manual deep-stall; land or sea; VTOL option

KEY FEATURES

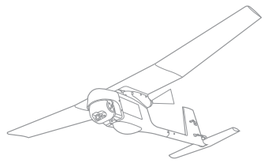
- *Increased payload capacity with optional underwing transit bay for secondary payloads*
- *Single-case mission packout provides two full flights*

INTEROPERABLE LRU SHARING ACROSS PUMA™ PRODUCT LINE

Puma™ 3 AE and Puma™ LE share many of the same Line Replaceable Units (LRUs), retaining similar operation, transport and logistics support within the Puma™ family.

i45/i45 N · *Motor/Props* · *Avionics* · *GPS/INS* · *DDL™ Radio* · *GCS* · *Servo* · *Batteries* · *UBC* · *Laptop*

RAVEN® B RQ-11B



DIMENSIONS
Wingspan: 4.5 ft (1.4 m)
Length: 3 ft (0.9 m)

WEIGHT
4.8 lb (2.2 kg)

LINK RANGE
6.2 mi (10 km)

ENDURANCE
75+ min

SPEED	Cruise: 32 km/h (17 kts), Dash: 81 km/h (44 kts)
OPERATING ALTITUDE	100–500 ft (30–152 m) AGL, typical Max. launch 14K ft (4,267 m) MSL
GCS	Tomahawk GCS
LAUNCH METHOD	Hand-launched
RECOVERY METHOD	Autonomous or manual deep-stall

PUMA™ KITS AND ACCESSORIES

COMPATIBLE WITH PUMA™ PRODUCT LINE

PUMA™ BUNGEE LAUNCH SYSTEM

- For environmental scenarios where hand launch is not preferred
- Setup & operational in <10 min
- Multiple ground fastener options securely installed in a variety of soil types or mounted to low, immovable objects

COMPATIBLE WITH PUMA™ 3 AE ONLY*

PUMA™ VTOL KIT

- Automated one-button launch & recovery in confined environments
- Fixed-wing to VTOL in minutes
- Available as add-on or retrofit kit

PUMA™ UNIVERSAL TRANSIT BAY

- Optional under-wing transit bay for additional payload capacity
- Easy integration of third-party payloads
- Three heights available: 1.75 in, 2.25 in & 3 in

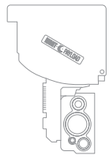
PUMA™ VNS VISUAL NAVIGATION SYSTEM

- Seamless mission continuity through GPS-denied environments
- Low-SWAP retrofit kit on existing & new Puma™ AE
- Enables integration of future autonomy capabilities

*Puma VTOL kit and Puma VNS cannot be installed and operated at the same time.

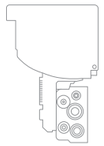
MANTIS™ IMAGING PAYLOAD SENSORS

COMPATIBLE WITH PUMA™ PRODUCT LINE



MANTIS™ i45 N

- Maximum visibility during night & low-light ISR
- Wide & narrow LWIR camera imagers
- 5 MP monochrome Low Light camera
- Enhanced laser illuminator



MANTIS™ i45

- Superior daylight & low-light capabilities
- Dual 15 MP high-res EO cameras
- Low Light, LWIR cameras
- Laser illuminator

COMPATIBLE WITH RAVEN®

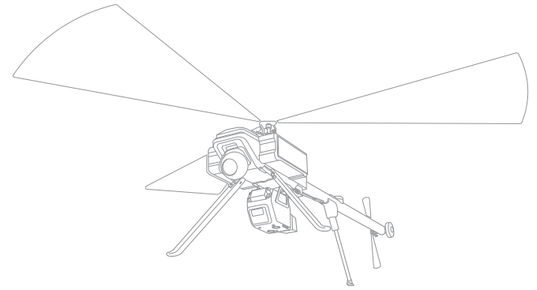
MANTIS™ i23 D

- High-performance daytime imaging
- Dual 18 MP high-res EO sensors
- 25x digital zoom

MANTIS™ i23

- Daylight & thermal imaging system
- 5 MP EO camera imager
- Laser illuminator

VAPOR® 55 MX ALL-ELECTRIC HELICOPTER UAS



DIMENSIONS
Aircraft: 6 ft x 2.2 ft x 2.1 ft
(1.8 m x 0.67 m x 0.64 m)
Rotor Diameter: 7.5 ft (2.29 m)

GTOW WEIGHT*
55 lb (24.9 kg) for commercial use
68 lb (30.8 kg) for defense missions with less endurance

RANGE
Up to 19.8 mi (32 km)

ENDURANCE
Cruise: 75 min, Hover: 60 min (2-batteries)*
Cruise: 105 min, Hover: 80 min (3-batteries)*

USABLE PAYLOAD*
Up to 10 lb (4.5 kg) @ 55 lb
Up to 24 lb (10.9 kg) @ 68 lb

GROUND SPEED LIMIT	33 mph (15 m/s)
OPERATING ALTITUDE*	0-12,000 ft (3,657 m) MSL (density)
MAX WIND PEAK*	Sustained: 34.5 mph (30 kts)
DATA LINKS	900 MHz, 2.4 GHz or 5.89 GHz (video), Persistent Systems MPU5 (Standard), options Silvus, DTC

*FAA restricts the max Gross Take-off Weight (GTOW) of drones operating in the NAS to 55 lb unless you have special authorization

KEY FEATURES

- *Payload Flexibility—payload modules with rail design enables quick & easy payload integration for increased mission flexibility*
- *Sleek, modular airframe design for easy assembly & disassembly*
- *Telescoping tail & folding landing gear for greater portability*

EXAMPLES OF POSSIBLE PAYLOADS

EO/IR Sensor · *SIGINT* · *Drop Mechanism*** · *Lidar* · *Hyperspectral* · *PPK Mapping* · *Multi-Payload*

**With HD-25 - up to a 15-18 lbs droppable payload

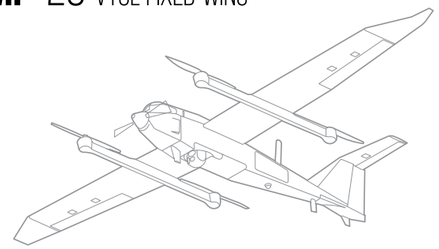
MEDIUM UAS

MUAS

With a 185-kilometer operating range, AeroVironment's fixed-wing medium uncrewed aircraft systems (MUAS)—JUMP® 20 and T-20™—are excellent choices for exacting reconnaissance, surveillance and target acquisition applications, due to their ability to carry some of the most powerful and versatile imaging sensors available.

The JUMP® 20 is the first fixed-wing UAS extensively employed by U.S. forces capable of vertical take-off and landing (VTOL). It features a 30-pound payload capacity and more than 13+ hours of uninterrupted flight.

JUMP® 20 VTOL FIXED-WING



DIMENSIONS
Wingspan: 18.8 ft (5.7 m)
Length: 9.5 ft (2.9 m)

WEIGHT
215 lb MGTOW* (97.5 kg)
Fuel & Payload

LINK RANGE
115 mi (185 km)

ENDURANCE
13+ hr

USABLE PAYLOAD CAPACITY
Up to 30 lb (13.6 kg)

POWER SUPPLY
MOGAS, 190 cc EFI Engine
Battery Powered VTOL Jump

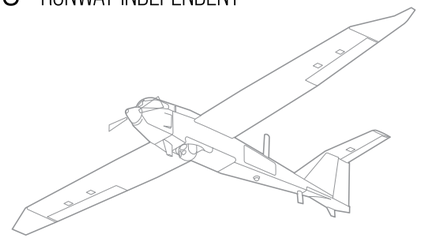
OPERATING ALTITUDE	17,000 ft DA
GCS	Common GCS with T-20™
LAUNCH METHOD	No launch system or runway required; vertical take-off & landing (VTOL)
RECOVERY METHOD	VTOL landing

*MGTOW - Maximum Gross Take-off Weight

KEY FEATURES

- *Multi-INT/Multi-Domain in a single integrated aircraft*
- *Best-in-class range & endurance, delivering superior performance*
- *Fully Integrated Payload Options—synthetic aperture radar, mapping capabilities, laser designation, anti-jamming, COMINT/SIGINT*
- *Compatible with ACE™ (Autonomous Control Engine) enabling fully-autonomous launch & landing from a moving vehicle or vessel*

T-20™ RUNWAY INDEPENDENT



DIMENSIONS
Wingspan: 18.8 ft (5.7 m)
Length: 9.5 ft (2.9 m)

WEIGHT
225 lb MGTOW* (102 kg)
Fuel & Payload

LINK RANGE
115 mi (185 km)

ENDURANCE
24+ hr

USABLE PAYLOAD CAPACITY
Up to 50 lb (22.7 kg)

POWER SUPPLY
MOGAS, 190 cc EFI Engine

OPERATING ALTITUDE	20,000 ft DA
GCS	Common GCS with JUMP® 20
LAUNCH METHOD	Catapult-launched
RECOVERY METHOD	Autonomous or manual skid landing

*MGTOW - Maximum Gross Take-off Weight

KEY FEATURES

- *Runway Independent—small operational footprint with PLS (catapult)*
- *High-Performance Optics—long-range day/night imaging, onboard tracking & stabilization*
- *Class-leading endurance & payload flexibility in a Group 3 UAS*
- *Group 4 capabilities in a Group 3 footprint*

SENSOR OPTIONS

EO
MWIR
SPOTTER

HOODTECH 09E0960/09E0IR3

EO
MWIR
LD

HOODTECH 11E0IR5

EO
MWIR/SWIR
SPOTTER

TRILLIUM HD80/95

EO
MWIR
SPOTTER

HOODTECH 06E0IR

SWAPPABLE IMAGING SYSTEMS
» Superior long-range day and night imaging systems that offer onboard tracking, MWIR, image stabilization, analog and digital output with H.264/5 compression.

DATA LINKS
» Provides ISR support, MUM-T interoperability, OSRVT downlink to ground or air forces, and the ability to communicate across multiple channels and bands.

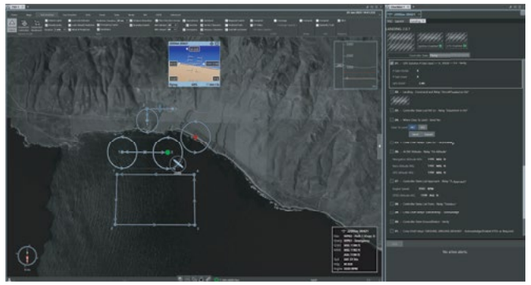
COMMUNICATIONS RELAY
» Provides unobstructed ground-to-ground and pilot-to-ground voice/video communication in urban environments or challenging terrain.

ISR SERVICES

AeroVironment's ISR services ensures uninterrupted operations and mission success through effective mission planning, on-site operational support, maintenance, repairs, and timely supply chain management. Our highly trained staff of Field Service Representatives (FSR) are ready to quickly mobilize to support customer mission requirements in any theater of operation.

- **Fully Equipped & Staffed Turnkey Solutions** *for COCO & GOCO operations*
- **OEM-SME** *remote pilot certified operators, instructors & maintainers*
- **Design & Development** *of mission-tailored TTPs & SOPs*
- **Development** *of on-site sustainment operations & delivery*
- **Total Logistical & Operational Support** *mission planning, coordination & monitoring*
- **Maintenance & Repair Services** *on-site to ensure mission sustainment & success*

TRAINING AND FIELD SERVICES



STUDENT TRAINING
- *Training includes classroom and live flights*
- *Tailored FSR training for air vehicle operators and mechanics to include a "dual qualification" in 8 weeks*
- *Training offered at AV facilities or Customer Location*
- *Built in robust simulator offers realistic training conditions and scenarios*

FIELD SERVICE
- *Factory support program*
- *Ongoing global logistics support*
- *Component replacement tracking*
- *On-site FSRs*
- *Crew member currency training support*

AUTONOMY & PERCEPTION

AeroVironment's AI-driven autonomy and perception technologies provide warfighters with critical advantages from reduced cognitive load to faster decisions across any domain and platform – accelerating autonomy on every level.

For currently fielded Group 1+ UAVs, the ARK™ (Autonomy Retrofit Kit) is a quick-connect payload that introduces a new suite of AI-enabled mission capabilities and collaborative teaming operations, safely bringing critical intelligence and oversight to warfighters.

Pre-installed with AVACORE™ and SPOTR-Edge™ software, ARK comes with an open framework for rapid development of autonomy behaviors and one of the most powerful computer vision platforms in defense.

ARK™ AUTONOMY RETROFIT KIT

ARK is a quick-connect payload that brings AV's accelerated autonomy to fielded Group 1+ UAV assets and future uncrewed platforms, providing critical advantages to warfighters. Directly compatible with Puma™ 3 AE and Puma™ LE, ARK is designed as an open and modular system that also enables easy integration of AI-driven autonomy and computer vision on a wide range of uncrewed platforms.

The ARK system accelerates autonomy across uncrewed platforms, allowing defense forces to accomplish various tasks without constant operator oversight. ARK enhances mission efficiency while enabling faster responses to dynamic situations.

ENABLING TEAM COLLABORATION

Operators can task single UAVs or teams with autonomous missions, distributing intelligence and oversight to dismounted units using a mesh network and ATAK. ARK also enables networked remote tasking for powerful control of aircraft and sensors between primary operators and command personnel – wherever they are located.

COMPATIBILITY
Puma™ 3 AE & Puma™ LE

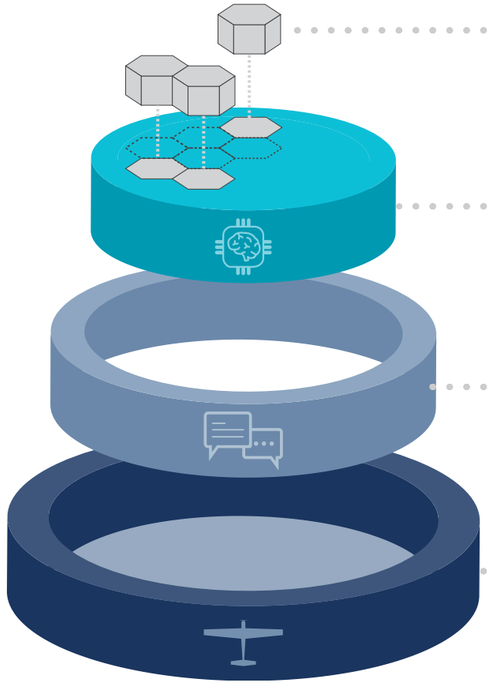
INTEGRATION
ATAK & MANET Radio

SINGLE- OR MULTI-AGENT CAPABILITIES

MULTI-REGION SEARCH	Terrain-aware sensor coverage of multiple search regions using onboard AI target detection
AREA SURVEY	Create 3D area map with EO or IR imagery
OVERWATCH	Persistent observation of desired area for target detection
TRACK & FOLLOW	Track and follow targets, including evasive targets
ISTAR WITH STRATEGIC COMMS	Automatically configure UAV radio to comply with geo-tagged EMCON rules while conducting autonomous ISTAR missions
TRIPWIRE	Event or condition-based responses to real-time perception
CROSS-CUE	Accept and/or send target information from/to other assets
COMPOSITE MISSIONS	Combine above capabilities for composite multi-stage missions

AVACORE™ AUTONOMY SOFTWARE

AVACORE is AV's autonomy software that implements autonomous missions for uncrewed systems. It provides a framework for rapidly adopting new behaviors and algorithms for these missions.

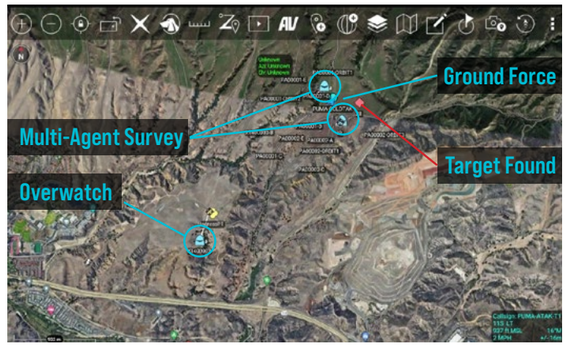


PLUG-INS
- Plug-in interfaces allow alternative waypoint planning, target detection, team behaviors, and other algorithms
- Discovered at run-time to dynamically enhance behaviors

AVACORE
- Executes complex, adaptable missions for single agent or team autonomy
- Missions are defined by behavior trees that can be loaded at run-time, delivering maximum flexibility for users
- Common message definitions provide the canonical data model for adapting specialized platform hardware to mission

BRIDGE
Software interface adapters for each of the platform devices

PLATFORM
Uncrewed Vehicle platform to be enhanced by AVACORE
- Autopilots
- Sensors
- Emitters/Designators
- Kinetic Payloads
- Radios
- Drop Mechanisms
- User Interfaces



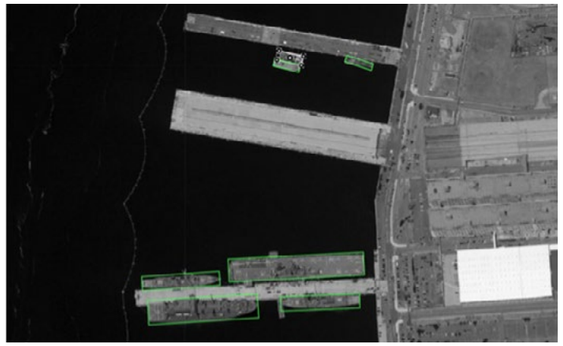
Through AVACORE, ATAK with SPOTR-Edge™ provides multi-agent collaborative autonomy

Modular to support mission specific or third-party AI models

SPOTR-Edge™ COMPUTER VISION SOFTWARE

SPOTR-Edge is a suite of computer vision and video analytics capabilities for embedded applications including robotic systems, edge devices, and other low size, weight and power (SWaP) environments. Core functions include object detection, classification, localization / geolocation, tracking, and re-identification – day or night. SPOTR-Edge consumes video and metadata sources in standard formats and outputs real-time data products to the onboard autonomy software and/or other downstream consumers.

Messaging APIs adhere to an interface control document (ICD) and streaming outputs include MISB-compliant KLV (key-length-value) metadata for platform and target track data. The baseline software includes a library of operationally relevant object classes including persons and different types of vehicles and maritime vessels; additional models can be provided to meet mission-specific requirements and use cases. Target models are swappable in the field and online for maximum flexibility, and to allow for upgrades and extensibility.



ACE™ AUTONOMOUS CONTROL ENGINE

ACE (Autonomous Control Engine) is a vision-based navigation solution that enables fully-autonomous UAS operation, including push-button takeoff and landing from confined spaces, moving vehicles, and moving vessels. ACE enables centimeter-level precision landing in dynamic conditions without GPS.

This optical guidance system enables fully autonomous UAS launch and recovery onto a small passive optical marker, without GPS.

ACE system tracks a passive visual fiducial called a "tag" during takeoff and landing to achieve centimeter-level accuracy and real-time operation.

KEY FEATURES

- *Suitable for UAS that needs to operate from moving vehicles and vessels on land or at sea*
- *GPS-optional operation*
- *Standard open interfaces for compatibility with third-party and legacy systems*
- *Enables mobile tethered UAS for long duration missions*

NETWORK CONNECTIVITY

AeroVironment's small UAS feature a completely refreshed ground control experience and integration with Tomahawk's Grip controller and Kinesis software ecosystem. Tomahawk™, an AeroVironment product line, provides operators with a new core GCS software architecture and tactical hardware.

The Tomahawk GCS seamlessly integrates with the broadband digital network module, Digital Data Link™, for enhanced command and control in a network-centric battlefield. Featuring robust data encryption across multiple frequency bands, this IP-based module is designed for maximum flexibility and interoperability between small airborne systems and ground systems with limited power requirements.

TOMAHAWK™ GROUND CONTROL STATIONS

The Tomahawk GCS is an AI-enhanced, open-architecture common control system providing multi-domain, multi-robotic command-and-control capabilities. Tomahawk's Kinesis software and Kinesis SDKs enable rapid development, integration, and deployment of 3rd-party technology to the warfighter at the edge, and unlock an extensive ecosystem of protocols, comms, robotic platforms, and AI to the warfighter.

TOMAHAWK HARDWARE

(A) GRIP S20

Grip S20 is a rugged controller designed around the Samsung Galaxy S20 Tactical Edition smartphone. Grip S20 is military-hardened and provides an intuitive UI to simplify UxV control. Available with an optional hinged MOLLE chest mount.

(B) KxM

KxM is a 4-port hub and edge processor providing users with a ruggedized platform to ingest large amounts of data for high-speed, body-worn computation at the tactical edge, reducing cognitive load, and fusing raw intelligence data for real-time decision-making. KxM can host a federated TAK/ATAK server while performing AI-based video classification.

(C) MxC-MINI

MxC-Mini is a Nett Warrior-compliant data link that seamlessly integrates with the leading tactical UxVs. Available with multiple operating frequencies and radio modules including Wi-Fi - choose your uncrewed system, strap the corresponding MxC-Mini to your kit, and deploy the UxV with the knowledge that the link is secure and reliable across the tactical network.

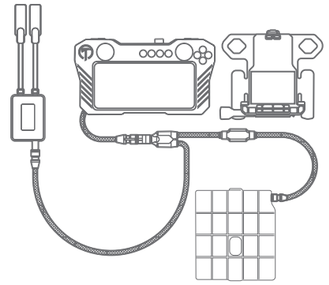
(D) RAID

RAID is an all-in-one tactical GCS solution designed to provide powerful networking and edge processing using hot-swappable radios and batteries to support multi-domain, multi-robotic control via the included Grip controller bringing C2 and AI-enhanced capabilities to the warfighter. RAID couples all the functionality of the KxM and Kinesis ecosystem into a lightweight, snag-free backpack.

KINESIS SOFTWARE

At the heart of the Tomahawk GCS is Kinesis, a powerful tactical software solution enabling multi-robotic command-and-control, tactically-optimized mission planning, TAK/ATAK integration to provide video rebroadcasting, COT messaging, and bi-directional syncing of POIs. Kinesis optimizes the vehicle pairing process, enables UxV formations and control, and a map engine that supports multiple sources via layers, DTED, and coordinates in both Lat Long and MGRS.

TOMAHAWK ULTRALIGHT GCS



PORTABILITY
Wearable

SETUP TIME
5 min

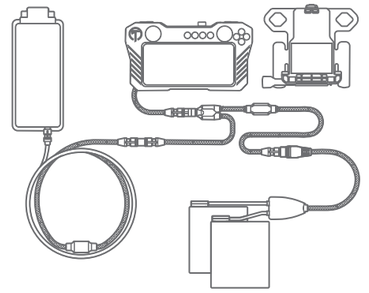
LINK RANGE
5 km

WEIGHT
System: 4.7 lb (2.1 kg)

USE CASE

Single operator (wearable); ideal for on-the-move and mobile ISR operations; virtual touch screen or tactile joystick of UAS and payloads

TOMAHAWK TACTICAL GCS



PORTABILITY
Backpackable

SETUP TIME
10 min

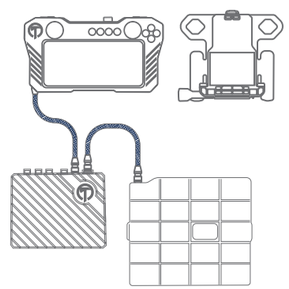
LINK RANGE
20 km

WEIGHT
System: 8.6 lb (3.9 kg)

USE CASE

Single operator deployment and launch; full control of UAS and payloads through virtual or tactile joysticks; wearable, lightweight, rugged for use in any environment with an operational range up to 20 km

TOMAHAWK COMMON CONTROL GCS



PORTABILITY
Wearable

SETUP TIME
5 min

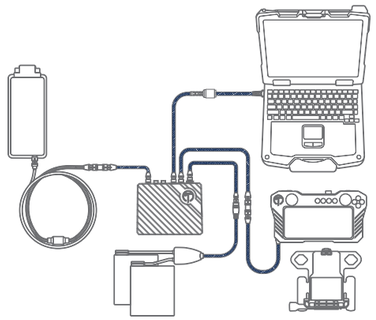
LINK RANGE
Determined by Datalink

WEIGHT
System: 5.4 lb (2.4 kg)

USE CASE

Single operator (wearable); provides situational awareness, battlefield coordination and support to large and/or small teams; multi-domain and multi-robotic control

TOMAHAWK COMMAND GCS



PORTABILITY
Man-packable

SETUP TIME
15 min

LINK RANGE
20 km

WEIGHT
System: 14.3 lb (6.49 kg)

USE CASE

Single or dual operator deployment; all-in-one modular and flexible ground control system and payloads through tactile joysticks; ideal for AI-enhanced command-level operations; semi-fixed positions

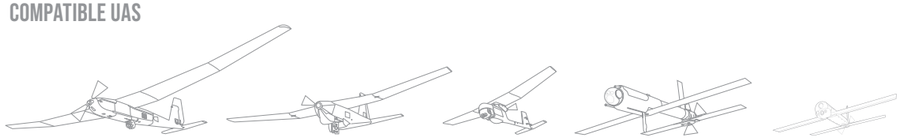
DDL™ NETWORK ANTENNAS

AeroVironment's Digital Data Link™ (DDL™) is a small, lightweight, broadband digital network module enabling enhanced command and control of SUAS and LMS. DDL is IP-based, allowing maximum flexibility and interoperability between small airborne and ground systems with limited power and bandwidth to maximize the number of systems that can operate in a given area. DDL is compatible with AeroVironment's network connectivity solutions and antennas, providing command and control ranges that extend from the wearable, short-range pDDL™ (5 km) to the Long Range Tracking Antenna (60 km).

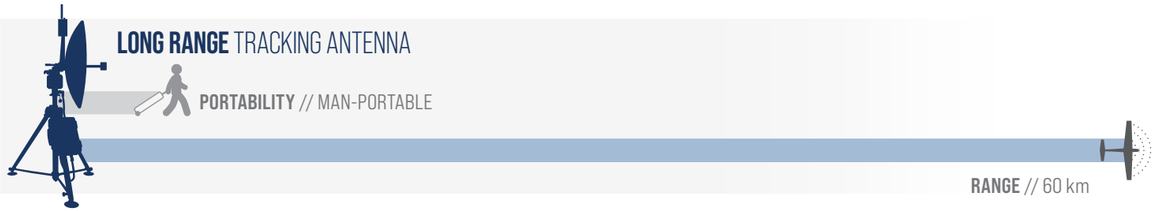
DDL™ FREQUENCIES

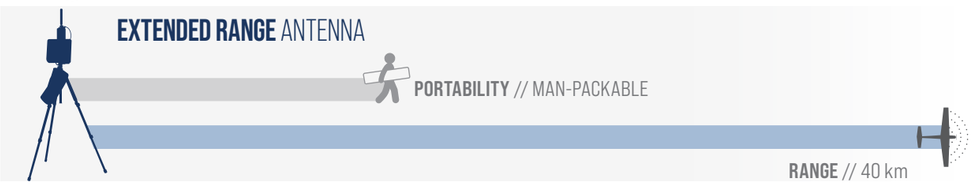
M1/2/5 OR
M3/4/6

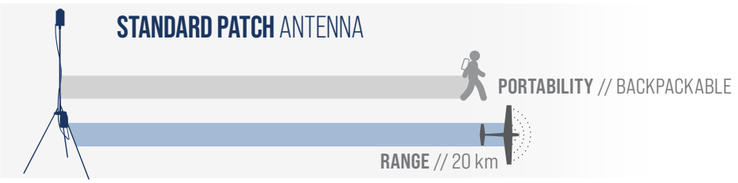
COMPATIBLE UAS

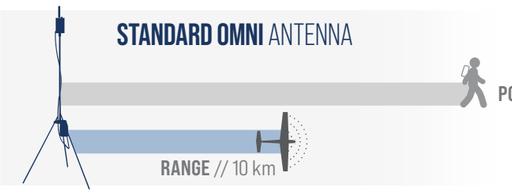


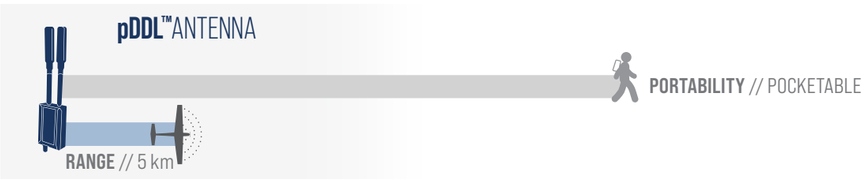
PUMA™ LE | **PUMA™** 3 AE | **RAVEN®** | **SWITCHBLADE®** 600 | **SWITCHBLADE®** 300 BLOCK 20









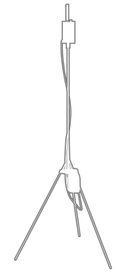


pDDL™ ANTENNA

DIMENSIONS
4 in x 2.25 in x 0.75 in
(10.2 cm x 5.7 cm x 1.9 cm)

WEIGHT
7.1 oz (201 g)

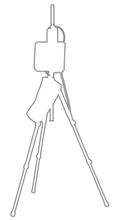
STANDARD RANGE ANTENNA



DIMENSIONS
Height: 6.5 ft (2 m)
Base Diameter: 3 ft (0.9 m)

WEIGHT
3 lb (1.3 kg)

ERA EXTENDED RANGE ANTENNA



DIMENSIONS
Height: 4.25–7 ft (1.3–2.2 m)
Base Diameter: 3.75–8.2 ft (1.1–2.5 m)

WEIGHT
10.8 lb (4.9 kg)

Note: excludes the GCS RF Head, hub and system battery

LRTA LONG RANGE TRACKING ANTENNA

DIMENSIONS
Height: M1/2/5: 5.8–9.4 ft (1.8–2.9 m)
M3/4/6: 5.25–8.8 ft (1.6–2.7 m)
Base Diameter: 5.3 ft (1.6 m)

WEIGHT
M1/2/5: 304 lb (138 kg)
M3/4/6: 300 lb (136 kg)

	pDDL	STANDARD RANGE	ERA	LRTA
LINK RANGE	Up to 5 km	Up to 20 km	Up to 40 km	Up to 60 km
OPERATING BANDS	M1/2/5 or M3/4/6	M1/2/5 or M3/4/6	M1/2/5 or M3/4/6	M1/2/5 or M3/4/6
RX SENSITIVITY	-98 dBm @ 2 Mbps -93 dBm @ 6 Mbps	-98 dBm @ 2 Mbps -93 dBm @ 6 Mbps	-98 dBm @ 2 Mbps -93 dBm @ 6 Mbps	-98 dBm @ 2 Mbps -93 dBm @ 6 Mbps
POWER CONSUMPTION	9 W	20 W	20 W (pass through, not additional)	275 W (nom., heater off) 460 W (max., heater on)
OPERATING VOLTAGE	5.5–16 V	5.5–16 V	5.5–16 V	90-250 V ac, 47-65 Hz
DATA RATE	4.5 Mbps	4.5 Mbps	4.5 Mbps	4.5 Mbps
SUPPORTED COMPRESSION	MPEG2 or H264 SD	MPEG2 or H264 SD	MPEG2 or H264 SD	MPEG2 or H264 SD
INTERFACES	USB	Ethernet/RS-232/RS-485	Ethernet/RS-232/RS-485	Ethernet/RS-232/RS-485
ENCRYPTION	AES-128/AES-256	AES-128/AES-256	AES-128/AES-256	AES-128/AES-256

UNCREWED GROUND VEHICLES

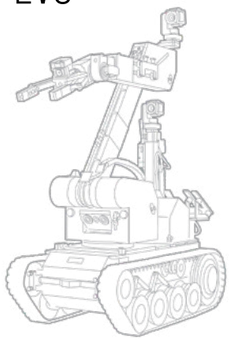
UGV

Our family of uncrewed ground vehicles (UGV) share the same purpose as our uncrewed aircraft and loitering munition systems: to keep operators out of harm's way.

Our UGVs have proven themselves in a variety of dangerous ground applications, including the localization and mitigation of threats due to explosive ordnance disposal (EOD), hazardous materials handling (HAZMAT), chemical, biological, radiological and nuclear (CBRN) threat assessments, and special weapons and tactics (SWAT) team operations.

With their advanced, specialized, precision manipulators, autonomous functionality and intuitive operation, our rugged, all-terrain UGVs accommodate a high degree of mission flexibility. That's why they have been adopted in 45 countries for homeland security, emergency response and defense purposes.

tEODor™ EVO



DIMENSIONS
54 in x 27 in x 44 in
(1370 mm x 685 mm x 1130 mm)

WEIGHT
844 lb (383 kg)

LIFTING CAPACITY
220 lb (100 kg)

GRIPPER WIDTH
12 in (300 mm)

MANIPULATOR
6-axis manipulator with linear axis

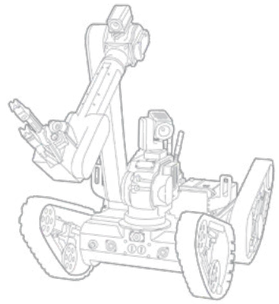
CLIMB STAIRS & SLOPES
45°

TOTAL PAYLOAD CAPACITY	771 lb (350 kg)
SPEED	1.8 mph (3 km/h)
DRIVE MECHANISM	Dual track–independent high-torque motors
FUNCTIONALITY	Upward Reach with Vertical Gripper: 113 in (2860 mm) Upward Reach with Horizontal Gripper: 95 in (2410 mm) Forward Reach: 73 in (1860 mm) Downward Reach: 50 in (1260 mm)
GCS	Robo Command

KEY FEATURES

- *Laser rangefinder, video input & data interface integrated into gripper*
- *Universal interfaces–multiple firing system connection options*
- *Expansive payload bay eliminates round-trip load-outs*

telemax™ EVO PLUS



DIMENSIONS
34 in x 27 in x 29 in
(870 mm x 680 mm x 740 mm)

WEIGHT
249 lb (113 kg)

LIFTING CAPACITY
176 lb (80 kg)

GRIPPER WIDTH
8 in (200 mm)

MISSION DURATION
Up to 12 hr

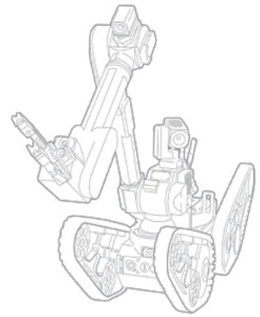
CLIMB STAIRS & SLOPES
45°

TOTAL PAYLOAD CAPACITY	154 lb (70 kg)
SPEED	3.1 mph (5 km/h)
DRIVE MECHANISM	4-track running gear with individually adjustable flippers
FUNCTIONALITY	Obstacle Height: 16 in (400 mm) Gap Width: 20 in (500 mm)
GCS	Robo Command

KEY FEATURES

- *Heavy lift capable precision 6-axis manipulator*
- *Tool Center Point Control provides precise, humanlike movement of the manipulator*
- *Double payload bay provides space for additional batteries & sensors*
- *Pre-programmed automatic manipulator & flipper motion sequences*

telemax™ EVO HYBRID



DIMENSIONS
32 in x 16 in x 30 in
(815 mm x 400 mm x 770 mm)

WEIGHT
Max. 176 lb (80 kg)

LIFTING CAPACITY
82 lb (37 kg)

GRIPPER WIDTH
8 in (200 mm)

MISSION DURATION
Up to 10 hr

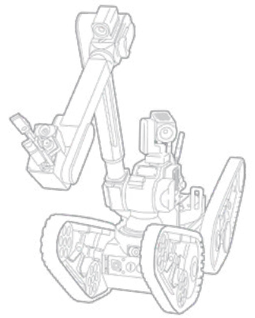
CLIMB STAIRS & SLOPES
45°

TOTAL PAYLOAD CAPACITY	68 lb (31 kg)
SPEED	Max. 6.2 mph (10 km/h)
DRIVE MECHANISM	4-track running gear with individually adjustable flippers; optional wheels
FUNCTIONALITY	Obstacle Height: 20 in (500 mm) Gap Width: 24 in (600 mm)
GCS	Robo Command

KEY FEATURES

- *Compact design suited for confined spaces, e.g., airplanes, underground trains & buses*
- *Tool Center Point Control provides precise, humanlike movement of the manipulator*
- *Pre-programmed automatic manipulator & flipper motion sequences*

telemax™ EVO PRO



DIMENSIONS
31 in x 16 in x 29 in
(775 mm x 400 mm x 750 mm)

WEIGHT
Max. 169 lb (77 kg)

LIFTING CAPACITY
44 lb (20 kg)

MANIPULATOR
7-axis with telescopic reach

MISSION DURATION
Up to 10 hr

CLIMB STAIRS & SLOPES
45°

TOTAL PAYLOAD CAPACITY	77 lb (35 kg)
SPEED	Max. 6.2 mph (10 km/h)
DRIVE MECHANISM	4-track running gear with individually adjustable flippers; optional wheels
FUNCTIONALITY	Obstacle Height: 20 in (500 mm) Gap Width: 24 in (600 mm) Gripper Width: 4.7 in (120 mm) Reach Height: 106 in (2690 mm)
GCS	Robo Command

KEY FEATURES

- *Telescopic joint allows for extended horizontal & vertical reach*
- *Tool Center Point Control provides precise, humanlike movement of the manipulator*
- *Pre-programmed automatic manipulator & flipper motion sequences*

MISSION VARIANTS

EOD
Explosive Ordnance Disposal

HAZMAT
Hazardous Materials

CBRNE
Chemical, Biological, Radiological, Nuclear & Explosives

SWAT
High Risk Law Enforcement Operations

INTERCHANGEABLE ACCESSORIES

Optics/Visual Augmentation

UGV Communications

Power Sources

Wheels/Tracks

Tooling & Hauling

Render Safe Options

FIELD OPERATIONS AND CUSTOMER SUPPORT

SUPPORT SERVICES

FIELD OPERATION SERVICES

» AeroVironment provides world-class field operation services on a global scale. Our field operation services include fully-equipped and staffed turnkey solutions and outstanding OEM-certified operators, instructors and maintainers.

FIELD SERVICE REPRESENTATIVES

» Our Field Service Representatives (FSRs) provide on-site field service support and act as the liaison between customers and our engineering team. The FSRs are highly qualified to provide on-site flight standardization program development and training support package development.

PROGRAM MANAGEMENT AND SME SUPPORT

» We supply customer-focused program management and subject matter expert (SME) support. Our exceptionally skilled staff provides tailored mission planning and operational support, and we include engineering support from the original equipment manufacturer. We also offer on-site sustainment operations development and delivery.

SUSTAINMENT OPERATION

» We support our customers with sustainment operations, including professional inventory control and comprehensive logistical services. Our logistical support includes extensive planning, coordination and monitoring to successfully plan and maintain operations.

AIRWORTHINESS

» AeroVironment's airworthiness organization monitors and evaluates airworthiness regulation initiatives in key markets and regions across the globe to ensure our products conform to our customers' airworthiness certification needs.

TRAINING

» We specialize in student-centered learning using state-of-the-art, interactive 3D digital training media that aids in the retention of information and promotes student participation. Courses include simulator-focused mission scenarios providing a real world digital experience, hands-on practical exercises, mission planning and live flight field operations. We offer all levels of operator training from basic to advanced courses in a safe and controlled environment. Our distinctive training program is recognized both domestically and internationally.

QUALITY

» AeroVironment's ISO-9001:2015 production and service facility ensures the highest level product and support quality. The company's unmatched experience and technology roadmap combine to deliver an outstanding customer experience in situations where reliability and effectiveness can make the difference between success and failure.