

<u>Fuel</u>	Not applicable NOTE: The Puma AE is powered by a Lithium rechargeable battery, see information listed under <u>Battery</u> section	
<u>Engine (Propulsive Unit) Limits</u>	Maximum power output: 1.0 HP Maximum RPM: 10,000 RPM Maximum motor temperature: 180 °F NOTE: The motor temperature is managed by the Puma AE system and not displayed to the operator. Maximum motor, controller sub-assembly temperature: 194 °F (90 °C) Minimum voltage, motor battery during pre-flight engine run up after 3 secs at max throttle: 20.0 V	
<u>Propeller and Propeller Limits</u>	(1) AeroVironment, Inc., Model 50330 FAA Propeller Type Certificate: None Propeller Type: 2-blade, hinged (folding), carbon fiber reinforced plastic, fixed pitch, tractor <u>Propeller Sub-Assembly:</u> Manufacturer: Aeronaut Model: CAM 13 x 10 Diameter (Nominal): 13.3 in.	
<u>Battery</u>	Lithium rechargeable battery Manufacturer: AeroVironment, Inc 13.5 Amp hour, 22.2 V (nominal) – P/N 50318; or 21.7 Amp hour, 21.6 V (nominal) – P/N 67881 Note: The battery supplies power for the motor, command and control, and payload modules	
<u>Airspeed Limits (IAS)</u>	V _{NE} (Never Exceed Speed)	58 knots (30 m/s)
	V _{NO} (Maximum Cruising Structural Speed)	41 knots (21 m/s)
	V _A (Maneuvering Speed)	41 knots (21 m/s)
	Landing Speed: The landing configuration can be engaged (autoland) at any speed.	
<u>Center of Gravity (C.G.) Range</u>	12.75 - 13.75 inches aft of datum	
<u>Empty Weight C.G. Range</u>	Not applicable	
<u>Datum</u>	Front of motor case	
<u>Mean Aerodynamic Chord (MAC)</u>	10.23 inches (259.8 mm) long with leading edge 9.11 inches (231.4 mm) from datum	
<u>Leveling Means</u>	Not Applicable	
<u>Maximum Weights</u>	Ramp	15.5 lbs.
	Takeoff	15.5 lbs.
	Landing	15.5 lbs.

Empty Weight 8.0 lbs.
 Note: Empty weight excludes weight of the battery and payload modules

Frequencies 1625-1725 MHz,
 1755 -1850 MHz

Notes: FCC license is required to utilize the above frequencies;
 Uplink, downlink, and video are on the same frequency

Computer Software Motor Controller Interface Board Software:
 PN 58841 Revision A, Software Version 1.0.6
 Avionics CPU, C-Code, Puma AE
 PN 64321 Revision A, Software Version 52.02.27

Minimum Crew (1) The Puma AE system can be operated by a single operator.

Number of Seats (0) Not Applicable

Fuel Capacity Not Applicable

Oil Capacity Not Applicable

Max. Operating Altitude 2000 ft. AGL (610 M)

<u>Control Surface Movements</u>	Elevator	Up 50°	Down 24°
	Flaps	N/A	N/A
	Rudder	Left 45°	Right 45°

Nominal Endurance 13.5 amp hr battery:
 120 minutes above 32 °F (0 °C); 60 minutes below 32 °F (0 °C)
 21.7 amp hr battery:
 200 minutes above 32 °F (0 °C); 100 minutes below 32 °F (0 °C)

Flight Limitations

1. Day Visual Flight Rules (VFR) in visual meteorological conditions (VMC)
2. Flight through visible moisture: PROHIBITED
3. Flight operations in icing conditions at assigned operational altitudes: PROHIBITED
4. Ambient Outside Air Temperature (OAT)
 - a. Maximum OAT: 120°F/49°C
 - b. Minimum OAT at Altitude: -20°F/-29°C
5. Wind. See Note 5.
6. Flight Operations. See Note 4.
7. For this operation only one Puma AE can be airborne at any given time.
8. Over water operation: PERMITTED
9. Over land operation: PERMITTED
10. Flight operations permitted only in the designated Arctic Area as defined by the FAA Modernization and Reform Act of 2012, Section 332(d)(1).
11. An authorization for the specific location of operation issued by the Administrator is required and must be available at the control station. AFM number 72373, dated July 16, 2013 or later FAA approved revision, and certificate of airworthiness (C of A) must be available at the control station (reference FAA Memorandum, "Certification of Unmanned Aircraft", from AAL-7 to ANM-100L, dated June 19, 2013). Additionally, any certificates of authorizations or waivers must be available at the control station.
12. Operation with any inoperative instruments or equipment: PROHIBITED

<u>Serial Numbers Approved:</u>	Air Vehicle: 1723, 1726, 1728, 835, 836, 837 Hand Controller: 07532, 07528, 06922, 04706
<u>Certification Basis</u>	Restricted Category Only 14 CFR part 21.25(a) (2) for the special purpose of aerial survey, 14 CFR part 36, amendment 29, Appendix G
<u>Production Basis</u>	None
<u>Hand Controller</u>	P/N 64303
<u>UAS Support Equipment:</u>	Use of PUMA AE launcher, P/N 68674 is optional. See Notes 15 and 16.

NOTES:

NOTE 1	A current weight and balance report must be provided for each aircraft at the time of original certification. The maximum aircraft weight with payload and battery is 15.5 lb.
NOTE 2	Placards Required: None
NOTE 3	This UAS must be maintained in accordance with AV Puma AE Maintenance Operation Manual, 72407_10X, or later FAA accepted revision
NOTE 4	UAS shall be operated under 14 CFR part 91, operating requirements, as mitigated. Operations shall be conducted in accordance with a waiver of flight regulations applicable to the operation, including but not limited to 14 CFR § 91.113, issued by the Administrator and specific to the intended operation, including geographical limitations.
NOTE 5	Wind Limitations: 25 knots
NOTE 6	Personnel Keep Out Zones. Typical exclusion zones apply for Launch and Recovery as described in the AFM.
NOTE 7	This Type Certificate Data Sheet (TCDS) is the principal document for Puma AE Operation. For any operational discrepancies among the TCDS, AFM 72373, etc., this TCDS takes precedence.
NOTE 8	Restricted category aircraft may not be operated in a foreign country without the express approval of that country.
NOTE 9	This aircraft has not been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 of the Convention on International Civil Aviation. This aircraft meets 14 CFR § 21.25(a)(2).
NOTE 10	Deleted

- NOTE 11 Operations shall be conducted by properly certificated airmen who have completed training, checking, currency, and recency of experience requirements as approved by the Administrator.
- NOTE 12 The Flight Standards Board (FSB) report is available on request. Contact the Long Beach AEG (LGB-AEG-NM17).
- NOTE 13 No aircraft may be manufactured under this approval.
- NOTE 14 Compliance to §21.25 (a) (2) was shown by following the deviation Memo dated July 5, 2013, in lieu of Order 8110.56 Revision A.
- NOTE 15 When using optional PUMA AE launcher, P/N 68674, instructions in the “PUMA AE TACTICAL LAUNCHER USER’S GUIDE”, document 70188_13, dated May 2014 or later FAA accepted revision, must be used.
- NOTE 16 The launcher, when used, must be that listed under UAS Support Equipment of this Type Certificate Data Sheet.
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