



- Up to 110 minutes of endurance ² with 2.8 kg payload
- 23 liters of payload volume
- Quick replaceable battery cartridge
- Low vibration
- Low noise signature
- Catapult, car-top or runway takeoff
- Onboard 6V and 12V onboard power output
- Wide range of standard subsystems and options
- Extensive documentation set
- Short lead time for standard configurations
- Free Piccolo® Configuration files

PENGUIN BE ELECTRIC UNMANNED PLATFORM



Electric Penguin's philosophy:

Electric Penguin BE unmanned aircraft platform shares the same flexibility as original gas engine Penguin BE unmanned aircraft. The electric version of the Penguin BE is a perfect choice for the short duration missions. Electric propulsion offers simple and clean operation with excellent reliability and simple maintenance. Electric propulsion has outstanding low noise and low vibration characteristics.

The aircraft is available as a platform, ready for the autopilot and payload integration by the customer. Electric propulsion retrofit package is available for converting gas Penguin BE to electric propulsion.

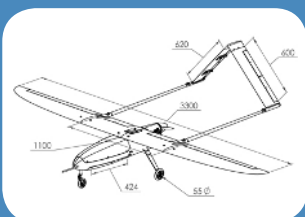
Specifications:

Parameter	Value
MTOW	21.5 kg
Empty Weight ¹	14.9 kg
Wing Span	3.3 m
Length	2.27 m
Wing Area	0.79 m ²
Propulsion type	Geared brushless
Propulsion power	2700 W
Battery type	Lithium polymer
Battery cartridge capacity	640 Wh
Max Payload	6.6 kg
Onboard voltage	6V, 12V
Onboard continuous power	100 Watts
Takeoff method	Runway, catapult or car-launched
Environmental protection	Sealed against rain

¹ With standard landing gear, with battery cartridge



UAV Factory recommends using Piccolo® autopilot systems from Cloud Cap Technology. Penguin B autopilot configuration files are available at no cost to all Penguin B and Piccolo users.



CAD model of Penguin B available to simplify the payload and autopilot integration for the clients.



Extensive Documentation for Penguin B aircraft and subsystems.

UAV Factory USA LLC
50 South Buckhout Street
Irvington, NY 10533 USA
Phone: +1 (914) 591 3070
Fax: +1 (914) 591 3715
sales@uavfactory.com

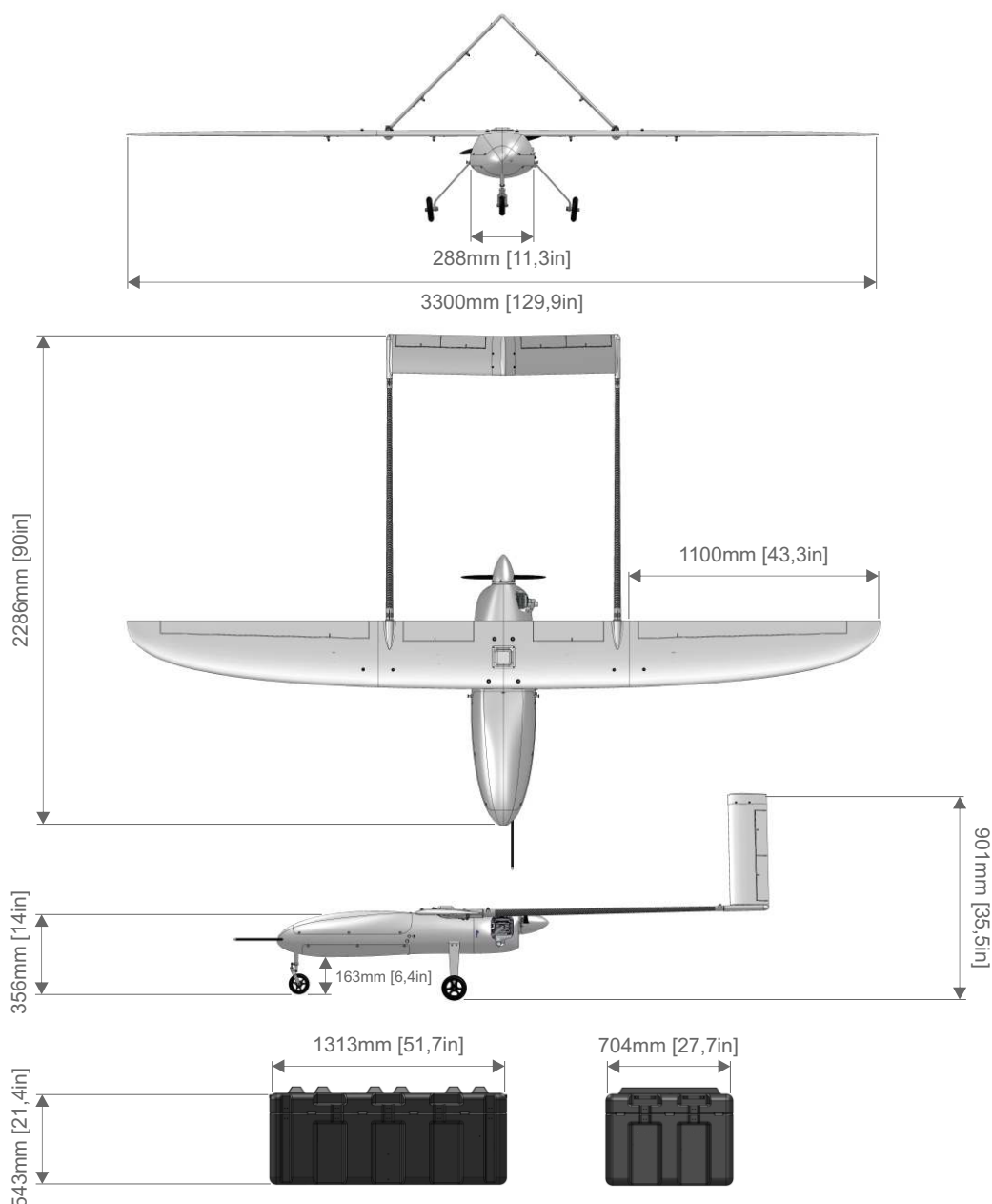
Performance:

Parameter	Value
Endurance ²	110 minutes with 2.8 kg payload
Cruise Speed	22 m/s
Stall Speed (with high lift system)	13 m/s
Max Level Speed	36 m/s
Takeoff run ³	30 m
CL max (45° flap deflection)	1.7
CL max (clean wing)	1.3
Ceiling	6000 m

² In belly landing configuration

³ Sea level altitude, 15 kg aircraft weight, 15 C°

Dimensions:





Onboard 6V and 12V power output with 100W continuous capacity.



Takeoff from anywhere using portable pneumatic catapult.



Optional heavy duty landing gear allows landing on rough terrain.



Heated pitot probe for preventing ice formation.

Performance:

Sleek and efficient design gives best in class performance. Highly efficient, optimized electric propulsion with the matched propeller allows up to 110 minutes of endurance ² with 2.8 kg payload. The maximum payload capacity is 6.6 kg. The optimized high lift flap system provides stall speeds of less than 13 m/s.



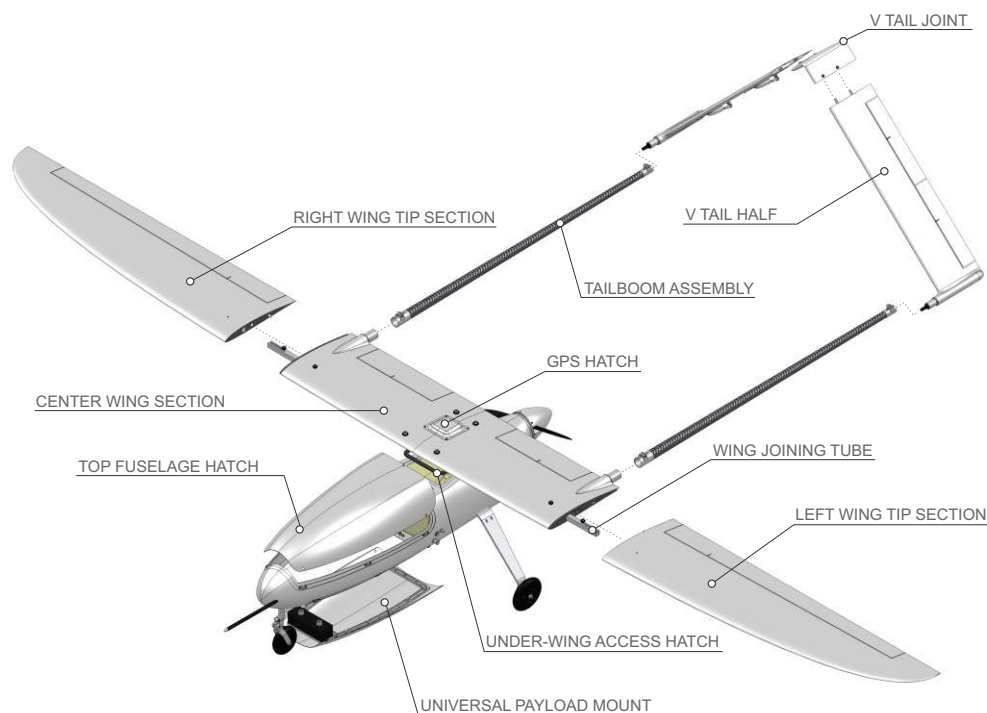
Battery Cartridge:



The 640 Wh battery cartridge is custom made from 48 Lithium Polymer cells and has 145 Wh/kg specific energy. The cartridge has rugged aluminum structure and integrated PCB that reduces the amount of wiring and simplifies charging. Battery cartridge can be changed in less than 1 minute.

Modular design:

All components of the **Penguin BE** are easily removable and completely interchangeable. Wing splits in three 1.1 meter sections and the V-tail splits in two parts. High-end industrial grade push-pull connectors are installed in tail-boom joints as standard. The quick release fastening is used extensively in the **Penguin BE** airframe. Oversize access covers are equipped with DZUS type 1/4 turn quick fasteners, tail-booms are equipped with a purpose developed quick release aluminum joints. Battery cartridge is fastened with the quick release spring loaded pins.



Universal Payload Mount:

Electric Penguin BE has a swappable universal payload mount that can be removed in seconds and used for various payloads. Payload mount is inserted from the underneath of the fuselage and includes a large section of the lower fuselage surface to facilitate the installation of the camera gimbal. The most sophisticated payloads such as retractable gimbals can be installed by integrators into the fuselage and utilize the available space efficiently. The universal payload mount has predetermined mounting points that are precisely machined into the aluminum frame as well as removable ballast slugs that will simplify the payload integration process considerably. Due to the compact size of electric propulsion and battery cartridge, there is a large amount of space available for payload integrators. The fuselage is split into two main payload areas – the forward payload bay and the rear payload bay.



Quick release joints for quick assembly.



Industrial electrical connectors.



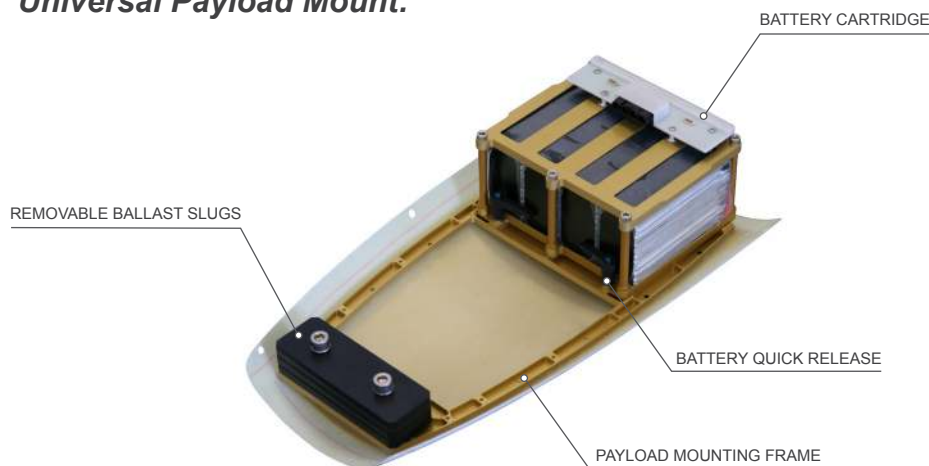
Optional portable control station. Compatible with any autopilot system such as Cloud Cap Piccolo®, Procerus Technologies Kestrel®, Micropilot® autopilots and many more.



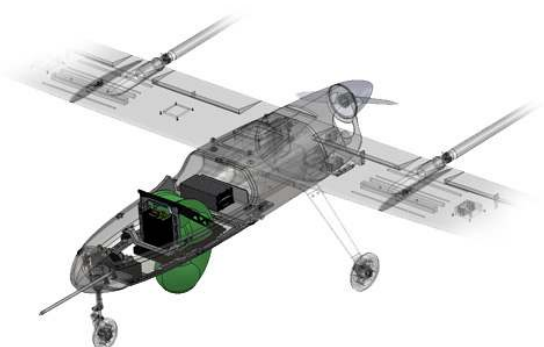
Efficient motor cooling for wide temperature range operation.

UAV Factory USA LLC
50 South Buckhout Street
Irvington, NY 10533 USA
Phone: +1 (914) 591 3070
Fax: +1 (914) 591 3715
sales@uavfactory.com

Universal Payload Mount:



Integrators can design custom payload mounts for their payload in CAD software. Fuselage and payload mount CAD models are available to the clients.

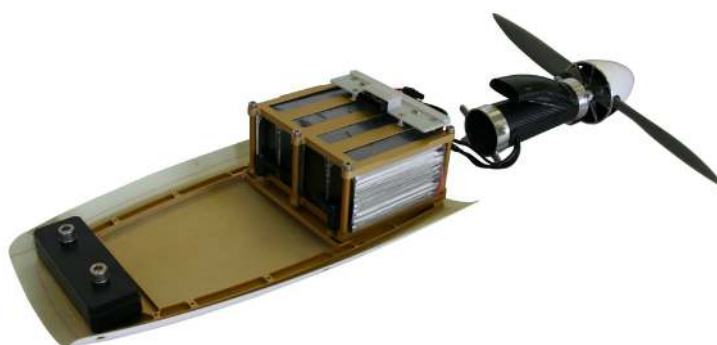


Payload specifications:

Parameter	Value
Fuselage volume available for payload	23 liters
Maximum payload weight	6.6 kg

Retrofit Kit:

Retrofit kit allows installing the electrical propulsion package into the original Penguin BE aircraft. The installation takes under 2 hours and does not require any modification of the existing structure.



Optional Equipment:

Electric Penguin BE is available with a large array of options from the original gas-powered Penguin BE. These options include portable pneumatic catapult, transportation cases and ground control station.

List of options:

Electric Penguin BE Preconfigured Package:



Electric Penguin BE

- Penguin BE composite airframe
- Electric Propulsion
- Preinstalled main landing gear
- Steerable suspension nose leg with servo
- Spinner
- Wing GPS compartment
- Push-pull connectors between the wing and the tailplane
- Digital servos
- Aluminum servo mounts for wing and tail plane
- Propeller assembly
- Servo wiring

Maximum endurance of the system is 110 minutes.

Does not include: autopilot, antennas, payload, battery cartridge.

Battery Cartridge:



640 W Lithium Polymer quick replaceable battery cartridge.

Power distribution unit:



Onboard power distribution unit with 6V and 12V power outputs. Continuous 100 Watt power output for avionics and payload.

Launch Systems:



Portable Pneumatic Catapult. Takeoff from unprepared area in broad wind conditions. Powerful and reliable pneumatic launcher with the advanced safety features. Training available at the company's facilities, as well as at the client's facilities.



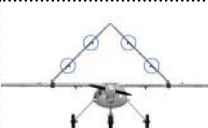
Car Top Launcher. Takeoff from car. Simple, small and low-cost solution for reliable automatic takeoff from the unprepared area. Integrated and safe engine starter is available.

Landing Gear Upgrade:



Heavy Duty Landing Gear. Land on the unprepared fields. High shock absorbing capacity, large inflatable wheels.

Various Accessories and Upgrades:






4-servo V tail upgrade. Each tail plane control surface is split in two equal sides, each having own servo - total of 4 servos into the tail plane. This option increases reliability of the system in case of a tail plane servo failure.




Pitot-Static tube. Combined Pitot-Static tube provides both dynamic and static pressure measurements in a single package. Can be mounted and removed using two screws for the simple UAV transportation.


Various Accessories and Upgrades:

	<p>Heated Pitot-Static tube. Heated Pitot-Static tube for operations at the low temperatures. Low-power design with smart fault detection signal output. Swappable with standart Pitot-Static tube.</p>
	<p>Push-pull connectors for wing. Preinstalled Fischer 102 Series push-pull industrial connectors between the center and the tip wing sections.</p>
	<p>Rugged Transportation Case. Rugged and watertight transportation case for maximum protection of the Penguin BE UAV. Supplied with additional internal case for small components, spare bolts, screwdrivers and tools.</p>


Autopilot Configuration files:

	<p>Cloud Cap Technology Piccolo Autopilot configuration File. Available at no cost. Validated for autonomous flight, autonomous catapult takeoff and autonomous runway landing using laser altimeter.</p>
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Ground Control Station:

	<p>Portable Ground Control Station. Universal portable ground control station for Penguin BE and other UAVs. Dual display functionality, advanced safety features and hot-swappable lithium battery cartridges. User-configurable for any autopilot system. Data-links, software and Panasonic Toughbook need to be purchased separately.</p> <p>See separate datasheet for details.</p>
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Balancer:

	<p>UAV Balancer. The Penguin BE balancing rig considerably simplifies the balancing and weighting procedure. Balancer is used for setting up the correct center of gravity, as well as for aircraft weighting.</p>
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