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## VANTAGE ROBOTICS

### Next Generation UAV & Nano UAV



**Designed, built, and serviced in Silicon Valley.** We're a team of Stanford and Yale-trained Silicon Valley engineers who set out to expand the aerial frontier. We design and build our products in our headquarters in San Leandro California so we can maintain control over design, production, and quality, as well as bring together the latest technologies from Silicon Valley and beyond at unparalleled speed. We service what we sell in the same facility so you can be sure we have your back.

The team at Vantage has over two centuries of combined experience developing and manufacturing high tech products, both at premier design consultancies like IDEO as well as within our own companies (we've started a collective seventeen of them). Previously, we've helped win the DARPA Grand Challenge, set world records in aviation, created revolutionary micro fuel-cell power systems, and helped prove Einstein's theories. The company has the backing of investors who have founded pioneering drone companies and taken over 20 high tech companies from seed or founding through acquisition or IPO. We have done nothing over the last seven years but focus on making the safest and most powerful flying camera the world has ever seen.

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#### More Information:

Web Link Presentation: <https://www.esc.guide/vantagerobotics>

Official Website: <https://vantagerobotics.com>

## 1. VESPER MILITARY - GRADE ISR

The Vesper UAV from Vantage Robotics provides field operators with American-made ISR, extended flight time, unmatched low light performance, and a 3-axis stabilized tri-sensor payload. This complete aerial reconnaissance system was designed to solve the pain points of operators utilizing aerial data collection in the field today. Our light, rugged, and truly portable stealth drone is backpack ready, easy to use, and has been tested with thousands of flight hours. Vesper's modular design and uncompromising build quality meet the needs of a range of mission-critical operations at a moment's notice.

- **CAPABLE CAMERA:** 48x combined zoom, 4K EO / 320p thermal
- **EXCEPTIONAL ENDURANCE:** 50 min flight time / 40 km total endurance
- **PORTABLE:** 1 kg / 2,300 cm<sup>3</sup> packed
- **STEALTHY:** Unseen and inaudible at 50 m
- **MODULAR:** Quick assembly and reconfiguration
- **EXTENSIVE RANGE:** 5 km GCS video range
- **SECURE:** AES-256 encryption / Made in the USA / NDAA compliant



## Specifications

### AIRCRAFT

- 50 minute flight time with Recon Rotor Set
- 32 minute flight time with Shrouded Rotor Set
- 690 g AUW
- 18 m/s / 40 mph / 35 kts speed
- <37 dBA at 25 meter range
- Not visible at 50 m seen against terrain
- Operational in 40 km/h wind
- -20° to 45° C operational temperature range
- IP53 ingress protection
- Redundant GNS, GNSS, VIO and optical flow for position control indoors and outdoors
- Downward facing sonar for obstacle avoidance (requires future SW update)

### SECURITY

- Designed, sourced, and built in USA
- AES-256 encryption on all communications and data storage
- GPS-denied capable with VIO
- Maintains control & usable video during high packet loss
- Bonded construction prevents tampering
- No remote data transmission

### COMMUNICATIONS

- 5 km maximum link range with standard antenna
- Microhard 1.8 GHz or 2.4 GHz radio options
- Selectable 4 or 8 MHz bandwidths
- WiFi for short range rapid data transfer to GCCS
- 8 km maximum data link range with long range GCS antenna option (under development)

### COMPATIBILITY

- Supports MAVLink and QGC for controller flexibility
- Compatible with Vantage Vision GCS, Kutta KTAC, Samsung S20 TE, Tomahawk Grip, and Auterion SkyNav

### GIMBAL & CAMERA

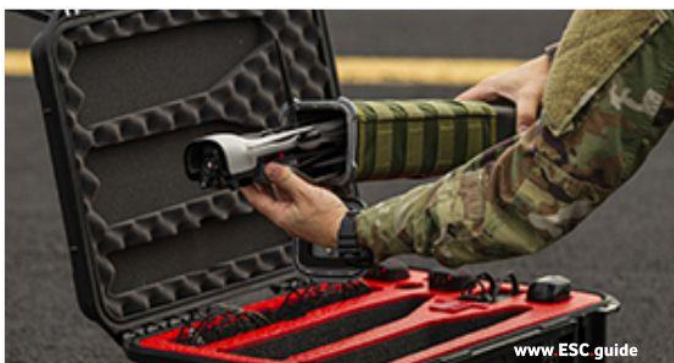
- Dual EO sensors + thermal
- 3-axis stabilized gimbal
- User controllable +30° – -90° gimbal pitch control
- Dual 4K Sony IMX 334 EO image sensors, 3840 x 2160p x 8MP still images
- <0.01 lux low light capability
- 48x combined optical and digital zoom (3.5° - 63° HFOV)
- 6 mm f/1.0 navigation lens
- 25 mm f/2.4 telephoto lens
- 1080 or 4K MPEG-4 video recording format
- Thermal sensor: 320 x 240p uncooled vanadium oxide sensor with 65 mK sensitivity

### PORTABILITY

- Deployable within 90 seconds
- IP67 waterproof field case
- Withstands 90 kg crush and 1m drop in case
- 1 kg/ 2,300 cm<sup>3</sup> packed in Field Case
- Watertight, dust-proof, dent-proof Transport Case, with hasps and foam lined interior

### MODULARITY

- Battery attaches magnetically and swaps in seconds
- Multiple rotor set options: Shrouded for indoor and flight near people, Recon for endurance, stealth and speed
- Field replaceable gimbal can be swapped in minutes



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## 2. TRACE MILITARY - GRADE NANO

The Trace UAV from Vantage Robotics provides field operators with a trusted American-made nano drone with an unmatched combination of sensor capabilities, weight, and stealth. This complete aerial reconnaissance system was designed to solve the pain points of operators utilizing aerial data collection in the field today.

- **CAPABLE CAMERA:** 48 MP EO / 320p thermal
- **LIGHTWEIGHT:** 150 g / 5.3 oz. aircraft weight
- **PORTABLE:** 300 g / 1600 cm<sup>3</sup> packed
- **STEALTHY:** Unseen and inaudible at 30 m
- **EXTENSIVE RANGE:** 3 km video LOS 400m video NLOS
- **FAST DEPLOYMENT:** <45 second launch time
- **SECURE:** AES-256 encryption / Made in the USA / NDAA compliant



## Specifications

### AIRCRAFT

- 21 minute flight time with standard battery
- 150 g AUW
- 36 km/h flight speed
- <34 dBA at 30 meter range
- Not visible at 50 m seen against terrain
- Operational in 20 knot wind
- -20° to 45 C° operational temperature range
- IP53 ingress protection
- Redundant GNS, GNSS, VIO and optical flow for position control indoors and outdoors
- Front and downward obstacle avoidance cameras
- Can be launched from hand or ground
- Perch and stare capable

### SECURITY

- Designed, sourced, and built in USA
- AES-256 encryption on all communications and data storage
- GPS-denied capable with VIO
- Maintains control & usable video during high packet loss
- Bonded construction prevents tampering
- No remote data transmission

### COMMUNICATIONS

- 3 km maximum data link range LOS
- Flexible Sub-GHz radio options; 355 MHz, 450 MHz, 900 MHz, others
- Automatic channel hopping enables robust simultaneous connections
- Wi-Fi for short range rapid data transfer to GCS
- Supports MAVLink and QGC for controller flexibility
- Hopping channel center frequencies can be aligned to within 3 Hz to handle CONUS/OCONUS frequency allocation requirements

### GIMBAL & CAMERA

- EO + thermal sensors
- 2-axis stabilized gimbal
- User controllable -90° to +30° gimbal pitch control
- 48 MP EO camera with autofocus
- 25× digital zoom (67° - 2.7° HFOV)
- Sharp, bright f/1.8 EO lens
- 2x2 hardware binning for improved low-light performance
- 1080p or 4K MPEG-4 video recording format
- 8000x6000 px still images
- Thermal sensor: 320x240 uncooled VOx sensor with 57° HFOV

### PORTABILITY

- Deployable within 45 seconds
- IP53 waterproof field case
- Withstands 90 kg crush and 1m drop in case
- 300 g / 1600 cm<sup>3</sup> packed in Field Case
- Watertight, dust-proof, dent-proof Transport Case, with hasps and foam lined interior



### 3. VISION - GROUND CONTROL STATION



#### **PURPOSE BUILT UAS CONTROL. Superior Sensor Management for Select Operators**

Designed for the most demanding field users with a daylight viewable screen, rugged & lightweight enclosure, and a four hour battery life. DoD grade security and NDAA compliant manufacturing to meet the needs of government customers.

#### **HARDWARE**

- 7", 1080p, 2500 NIT daylight viewable screen
- 4 hour battery life
- Intel i3 processor capable of creating 3D terrain models in minutes
- 256 GB n board storage for 15 hours of mission video and data
- Haptic feedback for warnings

#### **CONNECTIVITY**

- 1.8 GHz and 2.4 GHz frequency options
- 1080p HD video stream
- 5 km video and control range with standard antenna
- 8 km video and control range with long range directional antenna - in development
- Optional LTE cloud data link - in development

#### **SECURITY**

- AES 256 data and communications encryption
- Designed and built in the USA
- NDAA and TAA compliant
- Secure user authentication

#### **FLIGHT CONTROL**

- QGroundControl for manual and waypoint flight modes
- Automated return to home and safety geofencing
- Displays UAS battery level, altitude, and location
- Displays last known vehicle location for locating downed systems

#### **SOFTWARE COMPATIBILITY**

- Built for Reveal Farsight rapid automated 3D map creation (optionally available)
- Photogrammetry compatible (e.g. PIX4D, DroneDeploy, SkyeBrowse...)
- Ubuntu OS

#### **MOBILITY**

- IP54 ingress protection
- ABS / PC rugged enclosure for maximum drop protection
- -10° – 48° C operating temperature
- 1.9 pound weight
- Rugged waterproof clasped hard case for transport

## 4. VISION2 - GROUND CONTROL STATION



Improved universal GCS for UxS operators, with daylight readable screen, onboard GPS, interchangeable radios, and multiple control applications to meet different user demands. Pocket stowable design retains ruggedness at less than 600 grams. DoD-grade security and NDAA compliant manufacturing.

### HARDWARE

- 7", 1080p, 2500 NIT sunlight readable display
- Octa core Qualcomm Snapdragon processor
- 64 GB onboard memory
- 4 hour battery life
- Radio Link - 3km - 15km
- GNSS system (GPS, Galileo, Glonass)
- 600 g (1.3 lb) weight (w/o radio)

### CONNECTIVITY

- DoD standard swappable Radio
- Radio Supported - Microhard, MPU5, DL Helix, BluSDR6
- WiFi 6E / Bluetooth 5.2
- USB-C - Charging and external hub
- Net Warrior / SWAK kit compatible

### SECURITY

- AES 256 data-at-rest and communications encryption
- Designed and built in the USA
- NDAA and TAA compliant
- Secure user authentication
- System wipe after failed login option
- Android 10 OS modified to be DoD security-scan ready

### CONTROL

- 3 two-axis analog sticks, 14 tactile control buttons with haptic feedback
- Multitouch touch screen
- Supports ATAK, UAS Tool, QGroundControl, Kineses, and RAC2
- Runs custom APKs as needed

### KEY FEATURE

- Integrated swappable radio
- Wireless and wired display casting
- Supports return to pilot, follow me feature
- Net Warrior / SWAK kit compatible
- Field replaceable USB C adapter port
- Ruggedized USB-C to NW cables available

### DURABILITY

- IP54 ingress protection
- -10° – 48° C operating temperature (fanless)
- 1 m (3 ft) drop robustness with Magnesium and PC/ABS body
- Rugged waterproof clasped hard case for transport



**5. BUNDLE PRICING - VESPER SMALL UNMANNED AERIAL SYSTEM**

<p><b>2-Vesper 1.8GHz Bundle</b></p> <p>Part number 820-000045-002. Includes:</p> <p>2× Vesper UAV including:</p> <ul style="list-style-type: none"> <li>– Fuselage with Greenseer Gimbal &amp; 1.8 GHz radio</li> <li>– Recon Rotor Set</li> <li>– Field Case</li> <li>– Field Repair Kit</li> </ul> <p>1× Vision 1.8 GHz hand-held ground control station</p> <p>1× GCS charger with cable</p> <p>1× Shrouded Rotor Set</p> <p>4× Vesper Endurance Batteries</p> <p>2× Vesper Battery Chargers</p> <p>1× Rolling transport case for 2-UAV Bundles</p>	<p><b>\$21,289</b></p>	<p><b>2-Vesper 2.4GHz Bundle</b></p> <p>Part number 820-000045-001. Includes:</p> <p>2× Vesper UAV including:</p> <ul style="list-style-type: none"> <li>– Fuselage with Greenseer Gimbal &amp; 2.4 GHz radio</li> <li>– Recon Rotor Set</li> <li>– Field Case</li> <li>– Field Repair Kit</li> </ul> <p>1× Vision 2.4 GHz hand-held ground control station</p> <p>1× GCS charger with cable</p> <p>1× Shrouded Rotor Set</p> <p>4× Vesper Endurance Batteries</p> <p>2× Vesper Battery Chargers</p> <p>1× Rolling transport case for 2-UAV Bundles</p>	<p><b>\$19,449</b></p>
<p><b>1-Vesper 1.8GHz Bundle</b></p> <p>Part number 820-000045-003. Includes:</p> <p>1× Vesper UAV with 1.8 GHz radio, including:</p> <ul style="list-style-type: none"> <li>– Fuselage with Greenseer Gimbal &amp; 1.8 GHz radio</li> <li>– Recon Rotor Set</li> <li>– Field Case</li> <li>– Field Repair Kit</li> </ul> <p>1× Vision 1.8 GHz hand-held ground control station</p> <p>1× GCS charger with cable</p> <p>1× Vesper Endurance Battery</p> <p>1× Vesper Battery Charger</p> <p>1× Transport case for 1-UAV bundles</p>	<p><b>\$12,889</b></p>	<p><b>1-Vesper 2.4GHz Bundle</b></p> <p>Part number 820-000045-004. Includes:</p> <p>1× Vesper UAV with 2.4 GHz radio, including:</p> <ul style="list-style-type: none"> <li>– Fuselage with Greenseer Gimbal &amp; 2.4 GHz radio</li> <li>– Recon Rotor Set</li> <li>– Field Case</li> <li>– Field Repair Kit</li> </ul> <p>1× Vision 2.4 GHz hand-held ground control station</p> <p>1× GCS charger with cable</p> <p>1× Vesper Endurance Battery</p> <p>1× Vesper Battery Charger</p> <p>1× Transport case for 1-UAV bundles</p>	<p><b>\$11,449</b></p>
<p><b>1-Vesper 1.8GHz UAV - BYO GCS Bundle</b></p> <p>Part number 820-000065-006. Includes:</p> <ul style="list-style-type: none"> <li>1 x 1.8GHz Vesper UAV</li> <li>1× Vesper battery</li> <li>1 x Vesper battery charger</li> <li>1 x Recon Rotor Set</li> <li>1 x Field Case</li> <li>1 x Transport Case</li> </ul> <p><b>Does not include Vision GCS.</b> Can be flown with Vantage’s Vision GCS, Auterion’s SkyNav, or Toga with a pDDL1800 Microhard radio.</p>	<p><b>\$7,889</b></p>	<p><b>1-Vesper 2.4GHz UAV - BYO GCS Bundle</b></p> <p>Part number 820-000064-005. Includes:</p> <ul style="list-style-type: none"> <li>1 x 2.4GHz Vesper UAV</li> <li>1× Vesper battery</li> <li>1 x Vesper battery charger</li> <li>1 x Recon Rotor Set</li> <li>1 x Field Case</li> <li>1 x Transport Case</li> </ul> <p><b>Does not include Vision GCS.</b> Can be flown with Vantage’s Vision GCS, Auterion’s SkyNav, or Toga with a pDDL2400 Microhard radio.</p>	<p><b>\$7249</b></p>

## 6. SKU PRICING UNITS, ACCESSORIES & REPLACEMENT PARTS

<b>1.8GHz Vision CGS — 820-000046-001</b>	<b>\$5,089</b>
1 Vision handheld ground control station (GCS) (1.8GHz) and GCS charger.	
<b>2.4GHz Vision GCS - 820-000046-002</b>	<b>\$4,449</b>
1 Vision handheld ground control station (GCS) (2.4GHz) and GCS charger.	
<b>Greenseer Gimbal — 820-000029</b>	<b>\$2,899</b>
3-axis dual 4K EO and 320x240 LWIR gimbal, standard fitment on Vesper UAV	
<b>1.8 GHz Vesper Fuselage — 820-000043-002</b>	<b>\$4,489</b>
Replacement fuselage with 1.8 GHz radio (does not include Greenseer Gimbal)	
<b>2.4GHz Vesper Fuselage — 820-000043-001</b>	<b>\$3,849</b>
Replacement fuselage with 2.4 GHz ISM band radio (does not include Greenseer Gimbal)	
<b>Vesper UAV Battery — 820-000028</b>	<b>\$349</b>
65 Watt-hour Lithium-Ion smart battery with magnetic attachment to UAV fuselage	
<b>Vesper UAV Battery Charger — 820-000057</b>	<b>\$139</b>
3A fast battery charger with AC/DC adapter and AC cable	
<b>Recon Rotor Set — 820-000030</b>	<b>\$1,399</b>
Vesper rotor set w/ 8" propellers, folding titanium arms and magnetic attachment to Vesper fuselage	
<b>Recon Rotor Spare Propellers — 820-000055</b>	<b>\$115</b>
4ea quick-change 8" propellers for Vesper Recon Rotor Set	
<b>Shrouded Rotor Set — 820-000034</b>	<b>\$499</b>
Vesper rotor set w/ 6" propellers, composite shrouds and magnetic attachment to fuselage	
<b>Shrouded Rotor Spare Propellers - 820-000108</b>	<b>\$115</b>
4ea 6" spare propellers for Vesper Shrouded Rotor Set	
<b>2-Vesper Transport Case — 820-000058</b>	<b>\$499</b>
Waterproof, rugged hard-case with wheels, extending handle to store all components in the 2-UAV bundle	
<b>1-Vesper Transport Case — 820-000047</b>	<b>\$299</b>
Waterproof, rugged hard-case with handle to store all components in the 1-UAV Vesper bundle	
<b>Vesper Field Case — 820-000054</b>	<b>\$145</b>
Lightweight, compact, waterproof case with magnetic lid closure for rugged field storage of full Vesper	
<b>Field Repair Kit for Vesper, No SRS — 820-000157</b>	<b>\$169</b>
Lens cleaning brush, and 4x Quick Change Spare Propellers in zipper-closure soft-sided case	