FULLY AUTONOMOUS CONTROL FOR UNMANNED VEHICLES

Northwest UAV

Where Precision and Reliability Soar!

VERONTE

• Triple Redundancy
• Fully Autonomous Control
• OPA (Optionally Piloted Aircraft)
• Hybrid VTOL, Multirotor, Fixed-wing, Heli, Missile, Ground Vehicle, Boat and more
• BLOS Communications (4G, Satcom)
• Cloud Connectivity
• DO-178B-ED-12, DO-254B, DO-160 and IP67 Compliant

VERONTE AUTOPILOTS

• Sense and Avoid
• Adaptive Control
• RTK & RTCM Positioning
• 4x Redundant Configurations
• One-Click Missions
• Curve Based Navigation
• Fly-by-Camera and Gimbal Auto Tracking

Veronte Autopilot Is The Flight Controller’s Choice for Advanced and Professional UAV and Unmanned Vehicle Control

INTEGRATE, TRAIN, AND FLIGHT TEST AT NORTHWEST UAV
The Veronte Autopilot is designed to control any unmanned vehicle: UAVs, multicopters, helicopters, airplanes, Hybrid VTOL, blimps … as well as ground and surface vehicles, and many others. Custom flight phases and control channels provide support for any aircraft layout and performance. Compatible with any payload (gimbal, camera, cargo release, transponder, etc.).

**VERONTE AUTOPILOT**

**VERONTE REDUNDANT AUTOPILOT 4X**

Veronte Redundant Autopilot 4x is the optimal choice for critical applications, where the risk of casualties in civilian applications or the failure of military operations, is not an option.

It incorporates three complete Veronte Autopilot modules and connectivity for a fourth external module. The dissimilar arbiter includes advanced voting algorithms for selecting the control module, eliminating single points of failure.

### APPLICATIONS

- Mapping
- Firefighting
- Surveillance
- Agriculture
- Defense
- Delivery

### MAIN FEATURES

- Cloud Connectivity
- Automations
- Sense and Avoid / UTM
- Custom Flight Phases
- RTK Precise Positioning
- Certification Support

### APPLICATIONS

- Optionally Piloted Vehicles (OPV)
- Populated Areas
- MALE/HALE
- Restricted Airspace
- Critical Operations
- Law Enforcement

### MAIN FEATURES

- Highly Reliable
- Automations
- Sense and Avoid / UTM
- Custom Flight Phases
- RTK Precise Positioning
- Certification Support

### SPECIFICATIONS & HIGHLIGHTS

**VERONTE AUTOPILOT**

<table>
<thead>
<tr>
<th>Sensors</th>
<th>1x Magnetometer, 1x Pilot, 2x IMU, 2x Barometer, 2x GNSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS</td>
<td>Dual GNSS; 72 Channels, RTK &amp; RTCM, GPS, GLONASS, BeIDou</td>
</tr>
<tr>
<td>Attitude Aiding</td>
<td>Differential GNSS</td>
</tr>
<tr>
<td>Speed</td>
<td>IAS up to 382 Km/h (Optional up to 2900 km/h)</td>
</tr>
<tr>
<td>Pitch / Roll / Yaw</td>
<td>0.5 / 0.5 / 1.5 deg (0.2 / 0.2 / 0.3 deg upgrade)</td>
</tr>
<tr>
<td>Weight / Size</td>
<td>190 g / 63 x 39.6 x 67.9 mm (90 g 52.6 x 34.7 x 55 mm no enclosure)</td>
</tr>
<tr>
<td>Processor</td>
<td>DSP + Dissimilar Supervisor</td>
</tr>
<tr>
<td>Supervised FCUs</td>
<td>N/A</td>
</tr>
<tr>
<td>Casing</td>
<td>Sealed Anodized Aluminium, IP67 Waterproof, EMI Shielding</td>
</tr>
<tr>
<td>Temperature</td>
<td>-40° to 65°C</td>
</tr>
<tr>
<td>I/O Ports</td>
<td>PWM / GPIO, DIGIN, CAN Bus, ADC, EQEP, 12C, UART, USB, RS232, RS485, FTS</td>
</tr>
<tr>
<td>LOS Data-link</td>
<td>Encrypted 400 MHz, 900 MHz or 2.4 GH + External</td>
</tr>
<tr>
<td>BLOS Communication</td>
<td>Satcom Compatibility, Embedded M2M LTE Module</td>
</tr>
<tr>
<td>Certifications</td>
<td>DO-178C, DO-254, DAL-8</td>
</tr>
<tr>
<td>Power Input</td>
<td>Dual Independent (6.5 – 36 VDC)</td>
</tr>
<tr>
<td>Device Compatibility</td>
<td>Transponder, Gimbal, Altimeter, Obstacle Detection, Companion …</td>
</tr>
<tr>
<td>Advanced Control</td>
<td>Fly-by-Camera, Curve Based Navigation, Follow Me, One Click Missions, Adaptive Control …</td>
</tr>
</tbody>
</table>

**VERONTE REDUNDANT AUTOPILOT 4X**

<table>
<thead>
<tr>
<th>Sensors</th>
<th>3x Magnetometer, 6x IMU, 6x Barometer, 6x GNSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS</td>
<td>6x GNSS; 72 Channels, RTK &amp; RTCM, GPS, GLONASS, BeIDou</td>
</tr>
<tr>
<td>Attitude Aiding</td>
<td>Differential GNSS</td>
</tr>
<tr>
<td>Speed</td>
<td></td>
</tr>
<tr>
<td>Pitch / Roll / Yaw</td>
<td></td>
</tr>
<tr>
<td>Weight / Size</td>
<td>660 g / 117 x 70 x 82 mm</td>
</tr>
<tr>
<td>Processor</td>
<td>N/A</td>
</tr>
<tr>
<td>Supervised FCUs</td>
<td>3 Individual Autopilot Units + Optional External Autopilot</td>
</tr>
<tr>
<td>Casing</td>
<td>Sealed Anodized Aluminium, IP67 Waterproof, EMI Shielding</td>
</tr>
<tr>
<td>Temperature</td>
<td>-40° to 65°C - Up to 25000 ft</td>
</tr>
<tr>
<td>I/O Ports</td>
<td></td>
</tr>
<tr>
<td>LOS Data-link</td>
<td></td>
</tr>
<tr>
<td>BLOS Communication</td>
<td></td>
</tr>
<tr>
<td>Certifications</td>
<td></td>
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<tr>
<td>Power Input</td>
<td></td>
</tr>
<tr>
<td>Device Compatibility</td>
<td></td>
</tr>
<tr>
<td>Advanced Control</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Standard Veronte autopilot system requires both an onboard and control station unit; both units must have the same radio installed.

See page 5 for configurations and accessories.
**Applications**

- First Integration
- Real HIL
- Testing
- Fine Tuning
- Training
- Any Vehicle

**Main Features**

- Airborne Autopilot
- Veronte Pipe SW
- GCS Electronics
- HIL Simulation
- Embedded Data-link
- Wiring & Accessories

This is the ideal autopilot kit choice for UAS/RPAS professionals seeking an advanced integration environment to configure and fine-tune the Veronte Autopilot into their UAS/RPAS.

The kit includes the Hardware-in-the-Loop (HIL) Simulator, whereby your UAS/RPAS will fly in a simulated virtual environment provided by X-Plane, allowing for adjustments, e.g. control PID gains on the fly.

**VERONTE AUTOPILOT KIT**

**VERONTE HIL SIMULATOR**

- Safe Environment
- Operation and Testing
- Training and Development
- Real Actuator Movement
- Full Hardware-In-The-Loop (HIL) Simulation
- Real Autopilot Hardware and Software

**Veronte Hardware-in-the-Loop (HIL) Simulator Package** is a powerful tool for Veronte Autopilot integration, development and operator training. The HIL permits extensive operation of the system in a safe environment prior to conducting real flight operations.

The HIL simulator module enables communication between the autopilot and HIL simulator running on a PC.

**HIL Setup** – The same hardware and software is used to operate the real platform and can be used for performing hardware-in-the-loop simulation. Operator interface is the same as in a real flight.

**Real Actuator Movement** – During simulation, the actuators and control surfaces on the Veronte HIL Simulator 3D model and the real platform move. The whole system can be tested for detecting configuration and platform failures.

**Advanced Configuration** – HIL simulation software permits you to test everything configured on the autopilot prior to real operation.

**Compatible with Any Platform** – Veronte Autopilot is compatible with a wide range of platforms, permitting operation of almost any unmanned vehicle available.

**KiT CONTENT**: 1x HIL Simulator License | **Control Station Equipment**: 1x Veronte Autopilot BCS + LOS & BLOS radio, 1x GPS antenna, 1x RF antenna, 2x Antenna extension 9.84 in/25 cm, 1x Autopilot mating connector for BCS, 1x Power source (Europlug), Veronte Pipe Software, 10h Extended real time support | **Onboard Equipment**: 1x Veronte Autopilot + LOS & BLOS radio, 1x GPS antenna, 1x RF antenna, 2x Antenna extension 9.84 in/25 cm, 1x Autopilot mating connector

See page 5 for configurations and accessories.
**Veronte MCS Station** is Embention’s portable dual display control station. A ready-to-use system designed for high performance operations. Included is an embedded battery, and high brightness screens with antiglare treatment for outdoor use. The MCS is a highly responsive choice for the most demanding needs. Color: Black.

**Veronte PCS Control Station** includes all the necessary components to perform a wide range of operations. The embedded Veronte Autopilot enables navigation and communications between the onboard autopilot and control station computer. The expansion bay allows operators to add additional devices to the system. Veronte AP plus mast is designed to be installed in a Tracker, but can be used alone.

### MAIN FEATURES
- Antiglare Screen
- WiFi Connection
- High Brightness
- Dual Screen
- Rugged
- Multi-Touch

### MAIN FEATURES
- Geo Positioning
- IP66 Protection
- Embedded Data-link
- >3m Altitude
- WiFi & Ethernet
- Expansion Bay

### Specifications & Highlights

<table>
<thead>
<tr>
<th>VERONTE MCS</th>
<th>VERONTE PCS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>21 kg</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>Closed: 560x356x229 mm</td>
</tr>
<tr>
<td><strong>Robust Design</strong></td>
<td>IP7</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-40° to 65°C</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>Input: DC 24V</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>WiFi &amp; Bluetooth</td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
<td>Polypropylene</td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td>Wheeled</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>15.4” Multi-touch, Capacitive</td>
</tr>
<tr>
<td><strong>Embedded PC</strong></td>
<td>Intel Core i5 4th Generation, 8 GB RAM, 128 SDD, Windows 10 Pro</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>3 x USB 3.0</td>
</tr>
<tr>
<td><strong>Mast</strong></td>
<td>–</td>
</tr>
<tr>
<td><strong>Expansion Bay IO</strong></td>
<td>–</td>
</tr>
<tr>
<td><strong>Data-link Options</strong></td>
<td>–</td>
</tr>
<tr>
<td><strong>GNSS</strong></td>
<td>–</td>
</tr>
<tr>
<td><strong>Core</strong></td>
<td>–</td>
</tr>
</tbody>
</table>

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**For questions on Veronte product capabilities or custom integration, contact Northwest UAV.**

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For questions on Veronte product capabilities or custom integration, contact Northwest UAV.
**VERONTE GIMBAL**

**VERONTE GIMBAL**

- Full HD Visible Camera (720p/30fps)
- RGB and IR Camera, x10 Optical Zoom
- Gyro Stabilization
- Artificial Vision
- Video Streaming

*Veronte Gimbal* is a small, lightweight and compact, dual visible, thermal camera with onboard video processing. Capable of detecting, recognizing and identifying vehicles and people day or night. *Veronte Gimbal* when used in conjunction with a *Veronte Autopilot* extends the camera’s performance and capabilities: Geo-location, Fly-by-Camera, Target Follow or Moving Object Detection.

*Veronte Gimbal SC*: Full HD visible camera, x10 optical zoom.

*Veronte Gimbal*: Full HD visible camera, x10 optical zoom, FLIR thermal camera (320x256 resolution).

Custom options available.

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**VERONTE GIMBAL PRO**

**VERONTE GIMBAL PRO**

- Full HD Visible Camera (1080p/60fps)
- RGB and IR Camera, x30 Optical Zoom
- Gyro Stabilization
- Artificial Vision
- Video Streaming

*Veronte Gimbal Pro* is an outstanding visible spectrum and IR camera for the most demanding applications. Gyro stabilized with two degrees of freedom, the Gimbal builds upon a full HD visible spectrum camera with a very powerful optical zoom, a highly sensitive infrared camera and an advanced video processing board. Gimbal Pro makes it possible to detect, recognize and identify vehicles and people from several kilometers away.

*Veronte Gimbal Pro SC*: Full HD visible camera, x30 optical zoom.

*Veronte Gimbal Pro*: Full HD visible camera, x30 optical zoom, FLIR thermal camera (640x512 resolution).

Custom options available.

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**VERONTE TRACKER**

**VERONTE TRACKER**

- Pan and Tilt Precise Positioning
- Interchangeable/Detachable Tripod
- Lightweight and Easy to Carry
- Embedded Precision Encoders
- Compatible with Patch and Parabolic Antenna

**Long Range Communications**

*Veronte Tracker* is a high-performance tracking antenna specifically designed for the most demanding applications. Embedded control actuators and installed encoders permit the operator to automatically point the antenna with precision.

This design makes the tracker perfect for long range operations.

**Flexible Configurations**

Installation of different types of antenna for video and data-link communication is possible. Patch and parabolic grid antennas can be used for best performance.

**Veronte Autopilot Integration**

The tracking antenna is fully compatible with *Veronte Autopilot* for moving target trails. It makes the device perfect for long range video and telemetry communications. Plug and play system, connect *Veronte Tracker* to the control station and activate the tracking module to get the best performance. Assisted manual control is available from the joystick or from *Veronte Pipe*.

**SUPPORTED OPERATIONS**

- Cross-platform Software (Windows, Linux, Mac OS)
- Intuitive, Easy-to-Use and Dependable
- Customizable to Your Needs
- Configure the *Veronte System*
- Create and Edit Missions
- Monitor Flight Information
- Action Package: Automatically Configure Actions
- Compatible with All *Veronte Systems*

*Veronte Pipe* is the intuitive software designed for operating the *Veronte Autopilot*. Users achieve a combination of an easy-to-use application for real-time response and safe operations.

*Veronte powered systems have two main elements, air and ground segments:*

**Veronte Air** includes any necessary element to communicate with ground component take flight measures, control the aircraft and control the payload.

**Veronte Ground** redirects stick and PC data to the air component, and manages bi-directional communication between *Veronte Pipe* and *Veronte Air*.

Supported operations include: Telemetry, telecommand, mission design, mission analysis, configuration/edit RPAS settings and multiple users simultaneously.

*Veronte Pipe* has been developed using software standard IEEE STD 830-1998, recommended practice for Software Requirements Specifications (SRS) and STANAG 4671, subpart I, “About UAV Control Stations” documentation and adapted to the *Veronte system*.

*Veronte Pipe* is included in all *Veronte Autopilot* options.

See page 5 for configurations and accessories.
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Veronte Autopilot
LOS + BLOS Radio Options
- External Radio (RS232)
- 4G + 2.4 GHz Radio
- 4G + 900 MHz Radio
- 4G + 400 MHz & 900 MHz Radio

Options
- Mounting Kit
- IP67 Aluminum Protection Removed

NOTE: Standard Veronte autopilot system requires both an onboard and control station unit; both units must have the same radio installed.

Veronte Redundant Autopilot 4x

Configuration
Redundant 4x Veronte Autopilot

LOS + BLOS Radio Options
- External Radio (RS232)
- 3x 4G + 2.4 GHz Radio
- 3x 4G + 900 MHz Radio
- 3x 4G + 400 MHz & 900 MHz Radio

NOTE: Standard Veronte autopilot system requires both an onboard and control station unit; both units must have the same radio installed.

Veronte Autopilot Kit
LOS + BLOS Radio Options
- 4G + 2.4 GHz Radio
- 4G + 900 MHz Radio

HIL Simulator Kit
Professional HIL Kit for X-Plane Simulator

Available Accessories
- Veronte HIL Simulation cable
- 4x Veronte HIL Simulation cable

SOFTWARE
Veronte Pipe Software

Veronte MCS Station

LOS + BLOS Radio Options
- External Radio (RS232)
- 4G + 2.4 GHz Radio
- 4G + 900 MHz Radio
- 4G + 400 MHz & 900 MHz Radio

Veronte PCS Station

LOS + BLOS Radio Options
- External Radio (RS232)
- 4G + 2.4 GHz Radio
- 4G + 900 MHz Radio
- 4G + 400 MHz & 900 MHz Radio

Veronte BCS Autopilot for Control Station

Configuration
Veronte Autopilot CS

LOS + BLOS Radio Options
- External Radio (RS232)
- 4G + 2.4 GHz Radio
- 4G + 900 MHz Radio
- 4G + 400 MHz & 900 MHz Radio

Options
- Mounting Kit
- IP67 Aluminum Protection Removed

NOTE: Standard Veronte autopilot system requires both an onboard and control station unit; both units must have the same radio installed.

TRACKER ANTENNA
Veronte Tracker Antenna with detachable tripod

PAYLOAD
Veronte Gimbal Pro
Veronte Gimbal Pro SC
Veronte Gimbal
Veronte Gimbal SC

For questions on Veronte product prices, capabilities, custom integration, training & support contact Northwest UAV 503.434-6845 | customerservice@nwuav.com