

INTRODUCING

THE SENTINEL



AIRBORNE DRONES



THE SENTINEL. MISSION POSSIBLE.

Designed in-house, the compact, foldable design enables easy load and offload and rapid setup when on a trip or mission. It takes less than one minute to fully setup and deploy the unit from its custom hard-case backpack.

The Sentinel comes with a 50v power pack which allows for a flight time of 74 minutes, while its light weight and precision-balanced counterparts maintain the flight characteristics and wind tolerance of a small quad copter. It also has the ability to interchange between camera systems.

FORM MEETS FUNCTION.



LIGHT
WEIGHT



FOLDABLE



RAPID
DEPLOYMENT



35 KM
RANGE



74 MIN
FLIGHT TIME



MOBILE



FPV



POINT OF
INTEREST



WAY POINT
MAPPING



AUTONOMOUS
CONTROL

THE BEST IN INDUSTRY STANDARDS.

26" CARBON FIBRE PROPS

Lightest in weight and highest in strength. Rest assured that your system will fly the range at the speed you desire.

BATTERY DOCK

Designed specifically for flexibility, the Battery Dock is Suitable for variable battery sizes.

GPS ANTENNA

Extraordinary stability with unparalleled maneuverability with and without GPS, offering a stable flight and minimal magnetic interference.

HIGH EFFICIENCY MOTORS

Providing you with an unexpected flying experience thanks to its ultra-thin, light weight and high strength design.



ESC

Special core program for great throttle response, highly efficient heat dissipation and low power consumption.

HD CAMERA

True HD camera with 10 x optical zoom and 4K recording ensures the highest quality images and videos.

THERMAL CAMERA

All of the thermal imaging capability you need, pre-configured to give you optimal imagery in a wide variety of conditions.

3 AXIS GIMBAL

Fly the camera, not just the multirotor, with advanced features as Yaw lock and Yaw follow modes. All 3 axis' can be controlled via the RC transmitter and various types of modes selected on the fly-live.

LIGHTWEIGHT CARBON FIBRE FRAME

Designed and built in-house, the Sentinel's Carbon Fiber, precision machined aluminum & engineering plastic makes it a light weight and high strength frame that will keep the system safely in the air.



MAXIMUM LIFT. ENHANCED STABILITY. LONGER FLIGHT TIME.

All standard systems have an achievable flight time of 74 minutes, a range of 24.7 km and payload up to 2 kg. Equipped with 26" props and highly efficient motors, the SENTINEL offers you maximum lift, better stability and extended flight time.

Along with the 3 Flight Control Modes (Atti, GPS and Manual), the OSD display includes altitude, direction, height, distance, battery life and orientation.

Our first-of-its-kind Dual Antenna tracking station allows you to have a clear image even when you have pushed your UAV to its limits.

As UAV operators require their UAV for more than just inspection and detection, the Optical camera delivers world-class footage for most industry standard media – perfect for film-makers.

The SENTINEL is also available with our Datalink Configuration, enabling a range of 35 km with encrypted live video feed for the entire duration of flight.

DATALINK. FAST. SECURE. SIMULTANEOUS DATA COMMUNICATION.

Datalink provides the bandwidth and range needed for complex data applications and ensures fast, secure, simultaneous Ethernet and Serial based data communication. Robust digital modulation technology ensures an innovative solution for secure data transfer and extended range requirements.

The miniature, lightweight and robust design ensures Datalink is an ideal candidate for sensitive applications such as unmanned systems. The high speed and long range capabilities of the Datalink allow for high quality wireless multicast video and telemetry communications.



CAMERAS AND CAPABILITIES.

The standard system comes equipped with a 10 x Optical Zoom and 4K Recording Camera, but with its flexibility and high payload capabilities, the Sentinel can be equipped with a wide variety of imaging payloads:

HD: 10 x Optical Zoom Camera with 4K recording

HD Thermal: 10 x Optical Zoom Camera with 4K recording
+ Thermal Imaging Camera (fitted beside one another)

Systems equipped with two cameras enable the user to interchange between both cameras whilst in-flight.

LiDAR: Real-time 360° 3D imagery sensor

Medium Format: 80MP fixed lens high-resolution camera

Pro Film: 24mm fixed lens camera with external RAW 4K recording

The ability to view your situation in real time in 1080p, coupled with a thermal camera that can zoom digitally, allows you to detect targets and then zoom in on them with the 10 x Optical Camera to confirm their identity. This means you can detect any person or object on the ground without them being aware of the UAV in the air.



THERMAL IMAGING CAMERA.

With the same powerful thermal imaging core used in the most popular cameras in the world, FLIR Vue makes thermal imaging available to commercial UAS operators at a ground-breaking low price, so it's perfect for applications such as:



SEARCH
& RESCUE



FIRE
FIGHTING



PRECISION
AGRICULTURE



ROOF, POWER LINE,
SUBSTATION & CELL
TOWER INSPECTIONS



SECURITY



SURVEYING



LIDAR SENSOR.

The Velodyne VLP-16 Real-Time 3D LiDAR Sensor provides state-of-the-art 3D imaging in real time by using 16 laser/detector pairs mounted in a compact housing which rapidly spins to scan the surrounding environment.

The lasers fire thousands of times per second, providing a rich, 3D point cloud in real time.

Advanced digital signal processing and waveform analysis provide high accuracy, extended distance sensing, and calibrated reflectivity data.



Unique features include:

- 360° Horizontal Field of View
- Rotational speed of 5-20 rotations per second (adjustable)
- 30° Vertical Field of View
- Returns of up to 100 meters

Forestry management and planning: LiDAR is unique in its ability to measure the vertical structure of forest canopies, mapping both the ground beneath the forest, and predicting canopy bulk density and base height.

Flood modelling: Only high-resolution input data from LiDAR has brought this level of detail to the industry allowing for much more accurate flood prediction models to be created.

Pollution modelling: Using short wavelengths of light in the visible spectrum, LiDAR has a unique ability to detect particles in both water and air. In addition to identifying airborne pollutants, is the ability to assist in the detection of noise and light pollution.

Mapping and cartography: The 3D aspect, high resolution and accuracy, of LiDAR makes it especially suitable for mapping terrain models, including complex mountain topography.

Urban planning: LiDAR data is an ideal new technology for obtaining Digital Surface Models (DSMs) of the earth's surface, creating large area models in a very short space of time.

Coastline management: Lack of definable features and access to cliffs, etc, make surveying the shallow areas around the coast quite difficult and time consuming. Using a multi-beam survey, large areas can be flown in a short space of time. In these cases an airborne LiDAR survey is crucial.

Transport planning: Significant improvements in the accuracy potential of LiDAR data is supporting engineering planning and change detection of road networks which requires high spatial resolution and high scale engineering mapping accuracy.

Oil and gas exploration: Differential Absorption LiDAR (DIAL) can be used to detect trace amounts of gases in the atmosphere above hydrocarbon deposits.

Quarries and minerals: (Volumetrics and Exploration): With Its high accuracy, it means LiDAR can be used in quick surveys to give precise volumetric measurements within a few centimetres, especially since the constant changing of a quarry or mine environment requires regular laser scanning.

Archaeology: LiDAR can also provide archaeologists with the ability to create high-resolution digital elevation models (DEMs) of archaeological sites that can reveal micro-topography that are otherwise hidden by vegetation, or not distinguishable through traditional geospatial methods, or difficult to reach through field surveys.

Cellular network planning: With the ability to collect large areas of high-resolution data in a relatively short space of time, LiDAR provides the perfect data for cellular network planning.

MEDIUM FORMAT CAMERA.

The Phase One iXA aerial camera is an integrated medium format camera system that was designed from the ground up exclusively for aerial photogrammetry.

Developed with leading experts and engineers in the field, the iXA is built to meet the exacting needs of aerial photogrammetry and streamline the entire capture and processing workflow.

The iXA 80 megapixel aerial camera is designed to easily incorporate into existing or new systems, making it the perfect solution for integrators or end users looking for a rugged, high-quality industrial-grade aerial camera system. The medium format solution offers exceptional image quality and features that rival large format cameras at a fraction of the price.



The Phase One iXA is a rugged, dedicated aerial camera system, not assembled from off-the-shelf parts and is especially built to withstand the tough demands and abuse of airborne systems. Its light weight and small size make it perfectly suited for UAV use.

- Constructed of 6061 aluminum alloy
- Workhorse built with fewer moving parts to reduce unnecessary wear
- Removable parts securely connected to prevent movement or vibration
- Self-locking LEMO connectors
- Mirror-free system
- Secure lens holder secures lens at infinity focus
- Compact, small footprint

PRO FILM IMAGING CAMERA.

Introducing the Blackmagic Micro Cinema Camera, a miniaturized Super 16mm, professional digital film camera that is designed to be operated remotely and capture action anywhere.

The Micro Cinema Camera is a true digital film camera that features built in RAW and ProRes recording. The Super 16 sensor is full 1080 HD resolution and has an incredible 13 stops of dynamic range and global shutter up to 30 frames per second.

Most DSLR and action cameras use a rolling shutter that exposes different parts of the image in fractions of a second, causing video to appear skewed or wobbly when the camera moves or vibrates. The Blackmagic Micro Cinema Camera's global shutter acts more like a still camera, exposing the entire image at the same time so you get distortion and ripple free video! With an ISO up to 1600, the Blackmagic Micro Cinema Camera also gives you great quality, even in locations with low lighting.



The built in recorder captures true 12-bit log digital film quality images without the artifacts you get on heavily compressed 8-bit H.264 files used on small consumer action and DSLR cameras. Files can be saved in either Cinema DNG RAW or ProRes. Cinema DNG RAW files are 12-bit log and give you all of the data from the camera's sensor, so you have the latitude to change things like white balance and exposure long after the camera stops rolling. If you need smaller file sizes and longer recording times, you can use ProRes to get broadcast quality images.

FIRST CLASS FLIGHT.



Aircraft telemetry and status

The Airborne app provides you a detailed overview of the aircraft status including location, battery and GPS information.



Automate with waypoints

Fly autonomously along pre-defined flight paths and independently gather required data.



Auto take-off and landing

Start, take-off and land with the flick of a switch.



Photogrammetry and mapping

Easily pre-define flight grids. After launch, the software takes control, navigating and taking pictures.



Heading lock

Enables the Sentinel to remember which direction is "forward" to ensure correct aircraft heading during flight.



Virtual fence and safe zones

The Sentinel can be flown within predefined boundaries, limiting flight radius and maximum height.



Aircraft configuration

The Airborne app enables you to adjust functions such as: payload settings, cruise-speed, max-height and flight distance.

IN CONTROL.



Manual control

Manually adjust the flight direction, height, cruise-speed and have full control on all payload features from the ground.



GPS assisted flights

Switch between various flight-modes, such as GPS/Altitude hold, return flight and landing.



Aircraft telemetry & status

The RF controller is provided with a built-in LCD status monitor, which provides the most important aircraft status information.



Payload or camera control

Remotely adjust the payload tilt and panning angle, and have full control on all payload features.



Dual operation

Focus on flight as well as vision. In the dual operation mode, the system is configured with a second control unit to facilitate focus on both the flight and camera configuration. This allows the users to perform safe and steady flights whilst delivering quality optimal data or imagery.

REAL TIME. ALL THE TIME.



The SENTINEL provides a crystal clear live-view image and the entire system is controlled via a single Base Station.



Live view

The live HD downlink provides real-time access to the SENTINEL's video feed via HD or SD monitor. This feature enables the operator on the ground to see what the camera is recording in the sky.



HD quality

The SENTINEL comes standard with a 10 x Optical Zoom + 4K Recording Camera, for high-end broadcast purposes such as security operations or filming.



Encrypted transmission

- Up to 12 Mbps Wireless Link Rate.
- Small footprint and very lightweight.
- 2 Serial Com Ports and 1 Ethernet Port.
- Supports PTP, PMP, P2P, E2E Network Topologies - Master, Remote, Repeater and MESH modes. Adjustable transmission power (up to 1W) with Full VLAN Support.

A DRONE FOR EVERY INDUSTRY.

INSPECTION & DETECTION

- Our systems carry cameras that produce high resolution images as well as thermal images, and are equipped with transmitters which enable the sharing of live footage.
- They are easy to deploy and can fly to within a couple of meters of the lines.
- Drone inspections can improve the quality and safety and increase the frequency of inspections as well as reducing inspection costs - all in one go.
- Larger areas can be inspected in different ways, in less time and at lower cost.
- Additionally, the more frequent regular inspections facilitate faster problem recognition, resulting in fewer negative externalities.

WILDLIFE & GAME MONITORING

- Cover large areas and provide both GPS location as well as visual information.
- Low noise footprint does not scare the animals.
 - UAS can be equipped with multiple camera types or sensors to provide accurate and complete information, thereby lowering stock control time and costs, including collecting data from active transponders embedded in livestock.
 - Survey great spaces from a privileged perspective, even during night hours, and compare their evolution through time.

SURVEILLANCE & SECURITY

A total solution for Surveillance, Security, Traffic monitoring, SWAT and Anti-poaching.

- Our systems facilitate easier, faster and cheaper data collection and provide overviews which normally require several cameras.
- Enter narrow and confined spaces with minimal noise.
- Night vision cameras and heat sensors provide imagery that human eyes cannot detect, dramatically increasing the applicability, improving the quality and decreasing the costs of surveillance.

SURVEYING & MAPPING

- Our systems can be equipped with many different cameras or sensors.
- Since these systems are less expensive than helicopters, private and public organizations will be able to perform more regular measurements at the same cost. In addition, the information can be gathered much faster thanks to programming using waypoint software to fly a route, multiple times, at regular intervals.
- Since all data is stored as a hard copy, it can be easily inputted in geo-mapping software to facilitate swift implementation.
- Aerial imagery performs precise mapping, serves as a replacement for 3D measurement tools and substitutes the sensing tools all at once. UAVs are therefore more versatile and efficient than traditional tools.

DELIVERY & TRANSPORT

- The deployment of delivery drones provides major relief for inner cities, taking traffic off the roads.
- The potential of UAV-based logistics is also evident in rural locations with poor infrastructure or challenging geographic conditions, not only in emergency applications, because low-volume remote locations represent a costly part of standard networks. Furthermore, they typically require a non-standard infrastructure tailored to regional specifics (e.g., mountainous settings or island delivery). UAVs therefore replace existing (and complex) processes involving cars, boats, and postal workers.
- Deploying delivery drones in last mile deliveries and collection reduces waiting times.

PRO FILM MAKING

- The use of UAVs in movies is changing the way that films are made. They are a safer, cheaper, faster, and more adaptable solution than traditional methods for capturing the perfect aerial shot.
- Our systems are equipped with three-axis stabilization that accounts for wind or any sudden turns, so the captured shots turn out with a quality comparable to traditional aerial filming methods.

STANDARD SYSTEM

STANDARD SYSTEM WITH DATALINK

TECHNICAL SPECIFICATIONS

ADDITIONAL PAYLOADS	3-axis stabilized high resolution feed for any custom payload	3-axis stabilized high resolution feed for any custom payload
RADIO FREQUENCIES	433 mhz (Telemetry), 868 mhz (Remote Transmitter)	433 mhz (Telemetry), 868 mhz (Remote Transmitter), 2.4 GHz (Video Link)
REMOTE TRANSMITTER	Comes with self-healing technology to ensure that you always have stable communication	Comes with self-healing technology to ensure that you always have stable communication
VIDEO LINK	560PAW Resolution	Comes with an optional encrypted transmission to protect against hacking, snooping, and interception, while simultaneously streaming video
SECURITY		Secure network pairing, AES 256 bit encryption

FLIGHT PERFORMANCE

MAX FLIGHT TIME	± 74 min (with 2kg payload)	± 74 min (with 2kg payload)
MAX RANGE	24.7 km (based on a 5m/s speed)	35 km (based on a 5m/s speed)
MAX FORWARD SPEED	15 m/s	17 m/s
MAX CLIMB / DESCENT RATE	Climb: 5 m/s, Descent: 2.5 m/s	Climb: 5 m/s, Descent: 2.5 m/s
MAX ALTITUDE (ASL)	± 4000 m	± 4500 m
MAX RANGE (RADIO)	15 km	45 km
MAX WIND SPEED	± 10 m/s	± 10 m/s
MIN / MAX TEMPERATURE	-5 °C / +50 °C	-5 °C / +50 °C

WEIGHT

RTF INCL. / EXCL. LIPO	3.5kg / 8.5kg	3.5kg / 8.5kg
MAX PAYLOAD	2kg	2kg
MAX AUW	2kg	2kg

DIMENSIONS

DIMENSIONS OPEN / FOLDED (MM)	Open: 835L x 835W x 350H, Folded: 540L x 300W x 340H	Open: 835L x 835W x 350H, Folded: 540L x 300W x 340H
DIAGONAL LENGTH	1180mm	1180mm

INNOVATION MEETS PERFORMANCE.

Airborne Drones was established in 2013 and today we design and manufacture our own commercial drone systems in Cape Town.

Our highly qualified, knowledgeable engineers pay close attention to every minute detail- whether it's a standard system or a bespoke build for a customer.

Airborne Drones. State-of-the-art systems and forward thinking technology take flight.

E: orders@airbornedrones.co

T: +27 (0)87 550 4319

www.airbornedrones.co

