Aertos 130IR

The Next Generation in Autonomous Stability for Confined Space and GPS-Denied Environments

RUGGED. AUTONOMOUS. AMERICAN.

The world's best workforces require the world's best tools. Tools designed to get the job done. Tools that can be used in any environment and that survive the rough-and-ready demands of the men and women who use them. Specialized tools that fill voids and solve problems, and make your work more successful, not more complicated.

No one wants second-rate tools on the jobsite. And while drones may seem unique and promising, they don't exactly thrive in challenging environments. Your demanding task deserves Rugged and Durable – not Fragile, or Vulnerable, or Risky.

You want a tough tool, not an expensive toy.

Your tools should work just as hard as you do and come back in one piece, and Aertos UAVs from Digital Aerolus change the game. Gone are the days of shattered plastic and flimsy frames. Aertos UAVs feature a tough carbon fiber body built for the toughest tasks, and a cutting-edge flight framework that keeps you in the air through the tightest, trickiest paths. It's a flying supercomputer with a breathtaking set of imagers and sensors, and it's the smartest tool in the shed.

We design and manufacture every Aertos UAV and controller right here in the USA. We understand your job - and we know what tools you need to do your job better.

Experience the Aertos difference – it's a rugged, smart, autonomous, American UAV for industrial inspections. It's a tool, not a toy.

THE NEXT GENERATION

Our original Aertos UAVs delivered many firsts: a unique groundbreaking FGF® flight framework that reacts to environmental factors and self-corrects the vehicle during flight; ultra-rugged construction designed for confined space operations without external sensors or GPS reference; and the first industrial UAV truly capable of replacing a human during dangerous or costly in-field inspections.

Building squarely on that success, the all-new Aertos 130IR now takes flight. With the latest AI technology wrapped in a rugged frame that meets the challenge of real-world confined spaces, it's a serious tool ready to tackle the harshest places and toughest jobs. No other UAV matches the 130IR's combination of stability, autonomy, advanced technology, omnidirectional sensors, and mapping and tracking capabilities -- all designed and built in America.

The engineers and scientists at Digital Aerolus spent years perfecting the 130IR's unique technology. This revolutionary tool for industrial inspections represents another milestone in our history of creating transformative technologies with far-reaching impacts across a variety of industries.

Digital Aerolus

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AUTONOMOUS STABILITY

Every Aertos UAV contains our patented Folded Geometry Framework (FGF®). This unique AI system equips Aertos UAVs to self-correct during flight, delivering unparalleled stability in confined spaces and GPS-denied environments.

The FGF® navigation code intelligently fuses information from all its internal and external sensors in real time based on the quality of the signal. If any external sensor fails, becomes ineffective, or is obscured, the 130IR remains stable. If the platform's flight is disturbed in any way, the UAV immediately knows the source of the disturbance, the impact the disruption will have on flight, and how to respond, correct, and stay airborne and stable.

In addition, the latest aerodynamic ducted fan designs significantly improve performance and flight times.

RUGGED CONSTRUCTION

Aertos commercial UAVs fly in harsh situations every day - and return for more. The Aertos 130IR's cutting-edge technology and rugged frame make it the ideal choice in treacherous environments. We built the 130IR for rough-and-tumble real world applications - it powers up quickly where other platforms can't, and remains stable in all conditions as it flies under bridges, through pipes, inside power plants, mines, and chimneys, and more. The Aertos design pushes the UAV performance envelope to a new level, and redefines how and where inspectors approach critical missions when the conditions are challenging.

The 130IR remains exceptionally stable in GPS-denied environments that are impossible for other drones to navigate. The artificial intelligence FGF® senses walls, wind, and ceilings, and reacts instantly to changes in the flight environment. The ducted blades and durable construction equip Aertos drones to complete missions in confined spaces, around obstacles, and in locations where the aircraft might be bumped or pushed, or must maneuver through tight spaces while contacting surfaces.

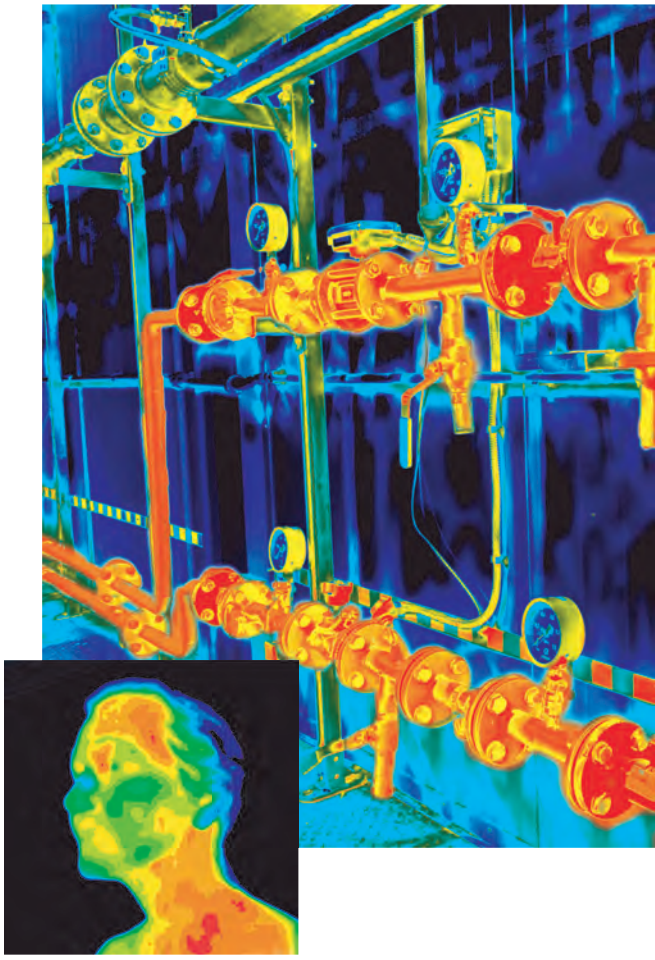
TRACKING & 3D MAPPING

We don't map to fly stably. We fly stably to map.

Conventional drones rely on sensors, LIDAR, GPS, or map building techniques just to remain stable. We engineered Aertos UAVs to be inherently stable without the external sensors or complicated maps required by typical drones.

We added nine state-of-the-art sensing elements that track the environment, measure distances, and produce point clouds and 3D maps useful for engineering or architectural applications. The Aertos FGF® integrates data from these omnidirectional scene sensors in real time to further improve the UAV's inherent stability and awareness of its space. Maintaining an ultra-stable platform for the onboard imagers is mission-critical, and Aertos UAVs fly predictably and continue to collect accurate, clear images even if a changing environment blocks the sensors, interrupts the data stream, or disrupts the maps.

Rock-solid stability and advanced tracking and mapping capabilities plus precise awareness of position combine to deliver unmatched utility when real pilots are doing real work in confined indoor spaces. Tracking and distance measuring enables the Aertos 130IR to navigate complicated paths like sewer pipes or mine shafts with incredible precision. Operators can point the 130IR to an indoor destination hundreds of meters distant and arrive within centimeters of accuracy. This highly precise environmental awareness greatly reduces the possibility of operator error or an unnecessary collision when flying in a confined space, and eliminates the possibility of losing the vehicle among the twists and turns of pipes or corridors.



INSPECTION IMAGING

Imagine a fighter pilot's cockpit view...

The 130IR's high-resolution Sony optical camera features a state-of-the-art CMOS sensor with wide ISO dynamic range, and a low-light capable low-distortion ZEISS® Tessar lens. It's durable and dustproof, and the controllable gimbal tilts 180 degrees to capture ultra-quality 15.3 mp RAW photos and 4K video wherever the Aertos can fly. And, we've added enhanced illuminators to give operators every opportunity for clean, high-quality photos, videos, and data.

The Aertos gimbal also supports a FLIR® Boson infrared imager. FLIR's best-in-class IR technology delivers accurate thermal images in the harshest environmental conditions with little or no image degradation.

To help pilots navigate easily via FPV, a high-resolution camera provides continuous flight path video.

The drone's onboard Nvidia processing array overlays data from these imagers and integrates data from all sensing elements to provide tracking, mapping, and an omnidirectional view of the world.

CONTROL, FLEXIBILITY AND SECURITY

The all-new Aertos 130IR controller is a serious, rugged tool. Designed by experienced UAV users, pilots and engineers for an unlimited future, the controller is essentially a handheld supercomputer with a Linux-powered Nvidia engine that contains more than 130 processing elements and delivers advanced image and data processing capabilities unparalleled in the industry. It's sleek and powerful, with a bright integrated video display. Users can add additional display devices as needed.

The controller's expandable architecture easily integrates OEM and partner applications, and its ergonomic design includes additional ports that allow developers and users to extend the hardware. Open-source Linux systems on both controller and aircraft support the development of custom user-specific applications, and coordinate and communicate with external databases and software. It's truly a robust, future-proof system.

And, the 130IR includes AES-128 encryption by default. It's engineered to be flexible and extendable and
to easily accommodate security upgrades.

MADE IN THE UNITED STATES

The Aertos 130IR system is designed and manufactured in America. No other UAV system matches the 130IR's rugged construction, advanced aerodynamics, suite of imagers and sensors, powerful mapping and tracking abilities, and enhanced stability and control - all in a powerful, extendable platform made with pride in Kansas, USA.

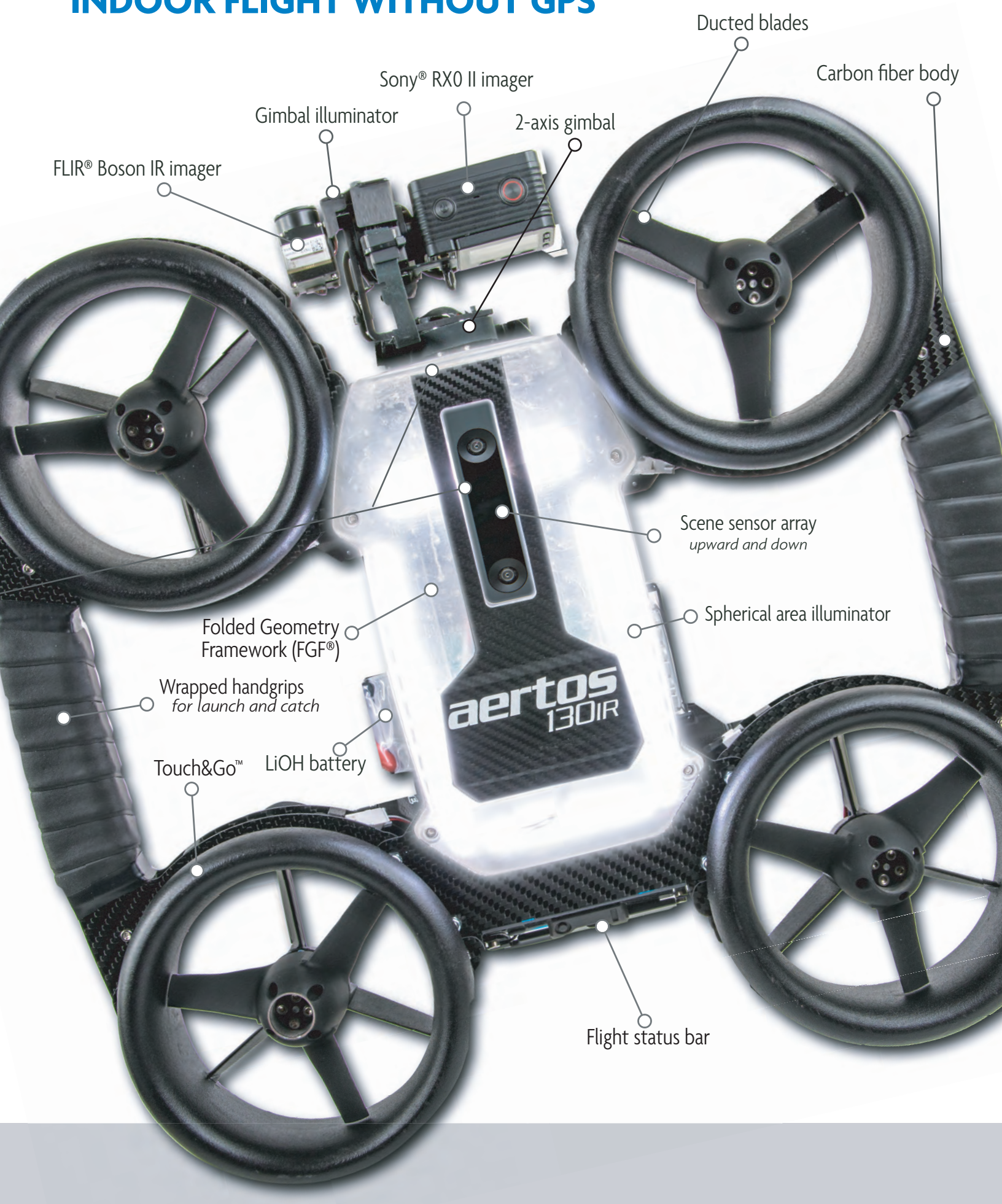
Omnidirectional Scene Sensors

The 130 IR's omnidirectional scene sensor array provides a data gathering capability unmatched by other UAVs.

This array of scene sensors and synthetic LIDAR equips the UAV with a view of its surroundings in all directions and delivers the capacity to precisely measure distances for enhanced tracking, digital odometry, 3D mapping, and much more.

Providing the UAV with environmental awareness and automating the vehicle's response to changing conditions greatly reduces the chances of pilot error, keeping the vehicle stable even on complicated flights inside pipes, corridors, or conduits.

INDOOR FLIGHT WITHOUT GPS



AIRCRAFT

Type	Aertos 130IR
Weight	5.95 lbs (2700g)
Max Angular Velocity	Pitch: 150º/s Yaw: 150º/s
Max Ascent Speed	17 ft/s (5 m/s)
Max Descent Speed	17 ft/s (5m/s)
Max Flight Time	Approx. 10 min (hovering at sea level with no wind)
Operating Temperature	-4º to 110º F (-20º to 43º C)
Diagonal Distance	21 inches (533.4 mm) edge to edge

IMAGERS AND SENSORS

Imagers	Sony® RX0II optical camera Sensor: 1" CMOS Video: Up to 4K @ 30p 100m Photo: 15.3 megapixels ISO: 125-12000 Format: RAW/JPEG
	FLIR® Boson 320 6.3mm IR camera upgradeable to Boson 640
Sensors	9-element omnidirectional scene sensor array high resolution depth sensing Synthetic LIDAR
FPV	Low latency FPV camera system Super Wide Dynamic Range

BATTERY

Type	LiOH 6S
Net Weight	1.43 lbs. (650g)
Maximum Capacity	4500 mAh
Configuration	6S1P/22.2V
Discharge Rate	25 C
Max Burst Discharge Rate	50 C
Dimensions	5.43 inches x 1.67 inches x 2.05 inches (138 mm length x 42.5 mm width x 52 mm height

CONTROLLER

Body	High impact composite Expandable ports Integrated video display
Processor	Nvidia Jetson Nano Linux OS

IN THE CASE

- Aertos 130IR UAS
  - Sony® RX0II imager
  - FLIR® Boson IR imager
  - Omnidirectional scene sensor array
- Aertos controller
- (3) LiOH batteries
- ISDT dual charger
- Pelican ATA flight case
- Replacement thruster
- Accessories

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