

CopterSonde 3.1

WxUAS Boundary Layer Vertical Profiler
Technical Data Sheet

Purpose-built UAS for Boundary Observations

Use the CopterSonde to profile the atmospheric boundary layer with lower cost per data set, more frequent data sets, and greater flexibility than any previous technology. Rest assured that the CopterSonde will get useful data every time, anytime, anywhere.

The CopterSonde 3.1 is based on patented technology for measuring wind speed, wind direction, pressure, temperature, and humidity. The design of the drone and its sensors is the result of eight years of ongoing research and development at the University of Oklahoma, and InterMet's 25-year history designing and building radiosondes, the current standard for atmospheric profiling.

Best in Class Measurements

The CopterSonde 3.1 is a complete, turn-key design that measures all atmospheric variables observed by radiosondes (air temperature, humidity, barometric pressure, wind speed, and wind direction). The quality of the measurements has been quantified in multiple peer-reviewed publications with special focus on the patented Front Shell design and Wind Vane Flight Mode.

The Front Shell provides uncontaminated, consistent aspiration to the temperature and humidity sensors, ensuring they are measuring the atmosphere instead of the heat that all drones create. The automatic Wind Vane Flight Mode uses highly researched algorithms and the drone's unique flight characteristics to calculate wind vectors, allowing for accurate wind measurement in a smaller drone with a smaller logistical footprint than competing designs.

Any Pilot Can Fly

The CopterSonde 3.1 doesn't require specialized piloting skills, anyone can learn to operate the drone with bespoke training from InterMet. All advanced behaviors of the drone, including the patented Wind Vane Flight Mode, are fully automated.

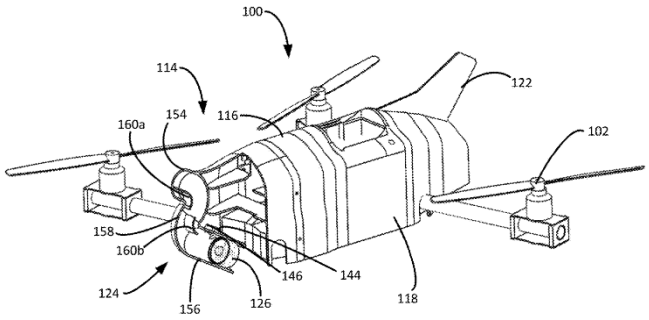
Data, Now!

The system automatically generates human readable and data-base suitable formats of meteorological data. These messages are available to the operator immediately after the flight is complete, and can be shared with other systems quickly, before the atmosphere changes.

Support

InterMet has been providing comprehensive support to our customers for over 25 years. If you have questions about the product, our team is always at your service.

The CopterSonde 3.1 is built with support in mind. It is designed to be maintained, and training is available that includes operation of the drone and maintenance procedures to keep your CopterSonde in the air.



Original Patented Sensor Design from US12084181B2

InterMet
International Met Systems
4767 Broadmoor SE, Ste 7
Grand Rapids, MI 49512
phone: 616-971-1005
email: info@intermetsystems.com

CopterSonde3.1 is built at InterMet Systems, Grand Rapids MI USA
Specifications Subject to Change without Notice
Document 246023-12

Platform Technical Specifications

Drone Dimensions	
Gross takeoff weight	2.25 kg
Footprint with propellers	61x66 cm
Height with landing legs	24 cm

Communications	
Frequencies Transmitted	2.4 GHz
Transmission Distance	up to 5 km
ADSB-in Equipped	Yes
Remote ID Compliance	Yes

Meteorological Specifications

Thermodynamic	
Measured Properties	Pressure, Temperature, Humidity
Accuracy	T: ± 0.3 °C RH: ± 5 % p: ± 1.5 mbar
Raw Data Rate	2+ Hz

Kinematic	
Measured Properties	Drone Telemetry
Calculated Properties	Horizontal wind speed and direction
Accuracy of Vertical Profile	Wind Speed: ± 0.6 m/s Wind Direction: ± 15°
Raw Data Rate	2+ Hz Available in Data, Individual sensors vary

Data Formats	
Altitude Message	(geometric) 5 m height levels Human readable
Time Interval Message	1 Hz data Human readable
WMO NetCDF Format	WMO FM303-2024 Database format (NetCDF)
Raw Data	Human readable

Transport Cases	
Drone	82x63x43 cm
Batteries	50x40x14 cm

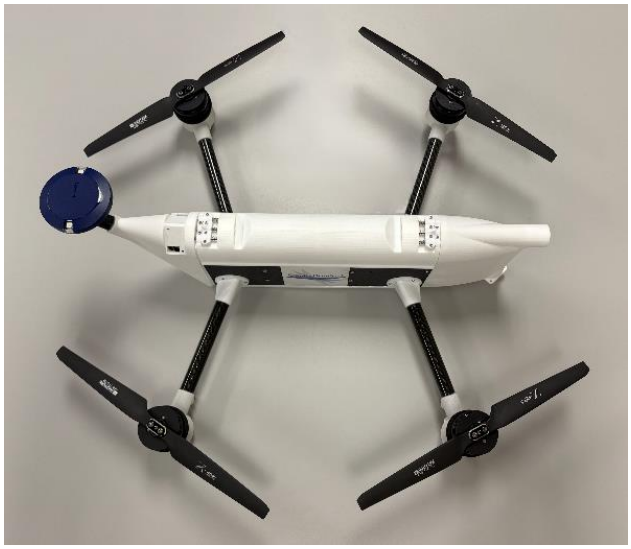
Service	
Training	On site available
Maintenance	Included in training Factory service available via RMA

What's Included

8 Batteries and charger
Tools for maintenance
Data and flight software
Automatic vertical profile mission generation
Automatic high wind failsafe
Smart battery capacity failsafe

Operating Conditions

Mean Wind Speed	19 m / s (37 knots)
Max Wind Gust	22 m / s (43 knots)
Maximum Flight Ceiling MSL	3 km (10000 ft)
Maximum Flight Altitude AGL	1.5 km (5000 ft)
Maximum Flight Endurance	20 minutes
Recommended Operating Temp.	-20 to 40 °C
Average Ascent Rate	3.5 m / s
Average Descent Rate	5 m / s



CopterSonde 3.1 is built at InterMet Systems, Grand Rapids, MI USA
Specifications Subject to Change without Notice
Document 246023-12

InterMet
International Met Systems
4767 Broadmoor SE, Ste 7
Grand Rapids, MI 49512
phone: 616-971-1005
email: info@intermetsystems.com