

UAV Aeromagnetic Survey System

The advanced Geodrones Aeromagnetic Survey System utilizes Rubidium Optical Pump Magnetometer, Vector Fluxgate Magnetometer and Aeromagnetic compensation technology, providing high-resolution and high-sensitivity magnetic data acquisition basing on drones platform.

Common Applications for Geodrones Aeromagnetic Survey system

- Mining exploration(iron, gold, copper, tin, diamonds (kimberlites)
- Unexploded ordnance (UXO) detection
- Utility location
- Archaeology
- Regional geology



- DJI M300 RTK As Platform
 - ✓ 9.3 miles max transmission range
 - ✓ 55 minute max flight time
 - ✓ 6 directional Sensing and Positioning
 - ✓ Redesigned primary flight display (PFD)
 - ✓ IP45 water and dust protection
 - ✓ -4°F to 122°F Operating temperature
 - ✓ Hot-swappable battery
 - ✓ UAV Health Management System (HMS)
- Compensation for Optical Pump Magnetometer
 - ✓ The 18 parameters compensation algorithm for optical pump total field magnetometer can remove the permanent, induced, and eddy current interference magnetic field of the aircraft platform.
- Correction and Compensation for Fluxgate magnetometer
 - ✓ The 12 parameters correction and compensation algorithm of fluxgate magnetometer can remove the effect of hard-iron effect, proportional coefficient, orthogonality error and soft iron effect.

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Main Parts and Specification

GD-MAG-RBOPT-EXP Compensated Miniature Rubidium Optical Pump Magnetometer

Field Sensitivity : ≈ 20 pT rms/Hz (export control free)
Deadzone: single equatorial plane, ± 7 deg Heading error below 3 nT (uncompensated)
Dynamic Range 1000 nT to 100000 nT
Dimensions 19x19x47 mm (sensor), 100mmx40mmx25mm (control unit)
Weight 30g (sensor)
Slew rate 10000 nT/s
Max gradient 100 nT/cm
Max data rate: 10 samples/s for surveying system
Atomic species Rubidium

GD-MAG-FLUX-B5V-CALIED - Software Calibrated Fluxgate Magnetometer 3 Axis Low noise Fluxgate Magnetometer

Bartington Mag13 3 axis Fluxgate axis (Right hand XYZ coordinate) measuring range ± 100 nT
Frequency domain noise:
 ≈ 10 pT rms/Hz
Preparing time 15 mins
Static Digital noise: 0.02 nT rms/Hz
Flight dynamic noise: 1 nT
Offset error In the zero field ± 100 nT Scale error DC, $\pm 0.5\%$ Temperature
offset error 1 nT/Hz
orthogonality error Inter-axial error less than 1°

GD-DAQ-RP3B-24AD -Aeromagnetic Compensation Data Acquisition System and Wireless telemetry Data Acquisition Module with Compensation Function for Fluxgate magnetometer

24 bit high speed ADC data converter for Fluxgate magnetometer
Ublox GPS receiver and antenna
1W 30dbm 900Mhz wireless telemetry
4 Usb interface for USB key, telemetry High Precision GPS data collection and laser altimeter

GD-IMU-W9DOF - GD-IMU-W9DOF and Barometer(Inside DAQ)

Inclinometer 9-axis accelerometer gyroscope attitude angle measurement module/external or inside DAQ
Resolution Acceleration: 6.1×10^{-5} g, Angular velocity: 7.6×10^{-3} ° / s. Stability Acceleration: 0.01g, angular speed $0.05^\circ / s$
Attitude measurement Stability 0.01°
Angle accuracy 0.1° (dynamic), 0.05° (static) Weight 14g
Size 51.3mmx36mmx15mm

Laser altimeter

Weight: 77g (excluding cables)
Range: 130m@90% reflectivity & 100Klux, 50m@10% reflectivity & 100Klux, 180m@90% reflectivity, 70m@10% reflectivity
Resolution: 1 cm
Update rate: 1Hz-1000Hz
Accuracy: ± 10 cm (< 10 m), 1% (> 10 m)
Power supply voltage: DC 5V (≥ 180 mA)
Power supply current: ≤ 180 mA
Laser power: CLASS 1 (IEC 60825)
Dimensions: 44mm*43mm*32mm
Operating temperature: $-25 \sim 60^\circ\text{C}$
level of protection: IV IP67
Beam divergence: 0.5°

GD-GND-SW-COMP-EST - GD-GND-SW-COMP-EST

Ground Station Windows PC Software copy fluxgate calibration 12 parameter estimation.
With Waypoint Design by DEM, real-time data display, data downloading and plot, diurnal correction. digital wireless telemetry connected with remote peer
One license USB key

Installation Kit for DJI M300 RTK

Carbon fiber tube, hardware, 3D printed box and DJI M300 Payload SDK Development Kit 2.0

