



UAS Aeromagnetic Survey System

Three-hour endurance VTOL fixed-wing UAS
Miniature rubidium optical pump magnetometer

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CW-15M is the industry's first VTOL fixed-wing UAV based miniature Rubidium Optical Pump Aeromagnetic Survey System, it combines VTOL fixed-wing UAV and Atomic Rubidium Magnetometer / Vector Fluxgate Magnetometer / Aeromagnetic technology, deliver the most convenient and efficient high-resolution / sensitivity magnetic data acquisition measurement, which can be widely applied in mining exploration, utility location, archaeology and regional geology etc.

CW-15 series UAV platform from China JOUAV

- Hybrid configuration of fixed wing and quadrotor, vertical takeoff and landing, no runway required;
- Hierarchical layout of forward motor and payload module, minimize motor magnetic effect to magnetometer;
- Featuring long endurance (up to 3 hours) and control range ($\geq 30\text{km}$);
- RTK and PPK for high accuracy positioning;
- Fully autonomously flight controlled through professional autopilot system from JOUAV;
- Easy to operate by 1~2 technicians in one team, quick assembly / disassembly within 5 mins;
- One UAV platform for multiple application with simply change the payload module.

Specifications of CW-15 UAV platform

Wingspan:	3.6m	Flight Endurance (Hover):	15min
Fuselage:	1.7m	Flight Endurance (Fixed wing):	2 - 3h
Max payload:	2.5kg	Cruise Speed:	16 ~ 30 m/s (TAS)
MOTOW:	16kg	Ceiling Altitude:	5000m
Case Dimensions:	1.37m X 0.5m X 0.6m	Max Crosswind:	12m/s
Power:	LiPo battery	Radio data link frequency:	902 - 928MHz
Operational Temperature:	-20 - 50°C	Radio data link range:	≥30km

Aeromagnetic Survey Sensor from Canada Geodrones

- Miniature rubidium optical pump magnetometer, high sensitivity and resolution;
- Software calibrated fluxgate magnetometer correction technology;
- 18-parameter compensation algorithm, specially designed for fixed-wing UAV platform;
- Real-time or post-flight aeromagnetic correction as options;
- 700g of total system weight, portable and integratable friendly.

Specifications of rubidium
optical pump magnetometer



Miniature rubidium optical pump magnetometer

Field Sensitivity	<1pT/√Hz in 0.1-100 Hz band
Deadzone	single equatorial plane, ± 7 deg
Heading error	below 3nT (uncompensated)
Dynamic Range	1000nT to 100000nT
Slew rate	10000nT/s
Max gradient	1000nT/cm
Operating temperature range	-30 - 60°C
Max data rate	400 samples/s sensor output directly, 10 samples/s for surveying system
Calibration	None required
Sensor dimension	19mm x 19 mm x 47mm
Sensor weight	30g
Control unit dimension	100mm x 40mm x 25mm
Control unit weight	170g

Specifications of
fluxgate magnetometer



Fluxgate magnetometer

Fluxgate axis	3 (Right hand XYZ coordinate)
Measuring range	± 100μT
Frequency domain noise	≤10pTrms/√Hz at 1Hz
Preparing time	15 mins
Offset error	In the zero field ±100nT
Scale error	DC, ±0.5%
Temperature offset error	1nT/°C
Orthogonality error	Inter-axial error less than 1°
Sensor dimension	80mm x 55mm x 35mm
Sensor weight	70g