

MagArrow Data Sheet

The MagArrow is a high performance magnetometer specifically designed for deployment on Unmanned Aerial Vehicles (UAV). At the heart of the system is Geometrics latest MFAM laser pumped atomic magnetometer with 1000Hz sample rate. The sensor is completely self contained with internal GNSS and IMU for precise measurement timing and measurement compensation respectively. The low power MFAM sensor allows the system to run for up to 2 hours on a single 1800mAh battery. Batteries can be hot swapped in a couple of minutes ensuring the UAV can remain airborne, alternatively the MagArrow can be powered from an external power source for extended operations.



MagArrow in flight. Image Courtesy of Geometrics Inc.

Features

- Weighing around 1kg the MagArrow enables users to keep airborne for longer.
- Fully self contained
- 400Hz bandwidth
- Exceptional run time from small widely available battery
- Operations can be carried out anywhere in the world
- Intuitive ASCII XYZ data format
- Simple web-browser based interface.

The instrument offers a web-browser based interface permitting users to use any wifi enabled device to set-up the instrument and download data.



Product Dimensions

Physical	Dimensions (L x W x H)	Weight
(instrument only)	100cm x 15cm x 5cm	1kg

Technical Specifications

Operating Principle:	Laser pumped caesium vapour (Cs133 non-radioactive) total field scalar magnetometer
Operating Range:	20,000nT to 100,000nT
Operating Zones:	Configurable for operating anywhere in the world without dead zones.
Dead Zone:	60° Polar only
Noise/Sensitivity:	0.005nT/?Hzrms
Max Sample Rate:	1000Hz
Bandwidth:	400Hz
Heading Error:	±5nT over entire 360° equatorial and polar spins
Output:	WiFi data downloaded over 2.4GHz WiFi access point.

GNSS:	Adafruit GPS with 1m accuracy and 10?s timing
Connections:	Port for USB flash drive and MicroSD
Data Storage:	32 Gbyte Micro SD card. Not field accessible.
Data format:	ASCII XYZ
IMU:	Bosh BMI160 Accel/Gyro - 200Hz sample rate Honeywell HML5983 Compass - 100Hz sample rate
Power:	Non-Magnetic 1800mAh Lithium polymer battery
Battery Connection:	2 x XT60 connectors for 206 type batteries.
Operating Temperature:	-10°C to +40°C
Altitude:	up to 3,000m, typically limited by UAV
Humidity:	Non-condensing

Videos

<https://youtu.be/4ukgd8Dgkos>
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<https://youtu.be/JqBKpvsgCCE>
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