SENSYS®
Magnetometers & Survey Solutions

UAV / drone magnetometer survey kit

MAGDRONE R1

Applications

- Survey & Surveillance
- Mine exploration / tracking / monitoring at flexible heights
- UXO detection on unreachable, flooded or mined areas

Features

- Self-folding sensor arm
- Attachable to any UAV with 1+ kg payload
- adjustable recording rate
- live data output
- USB interface
- Data processing tool

The MagDrone R1 is an ultra portable survey kit to be attachable to any UAV / drone with a 1+kg payload only.

The kit features a self-folding carbon fiber sensor arm to keep the distance to the ground as low as possible without risking the equipment. The built-in 3-axis Fluxgate can output serial live data with up to 1,000 Hz. The MagDrone R1 is optimized for small and mid size survey UAVs equipped with UgCS Skyhub or similar.

The survey kit can be used for general purpose surveys, science related magnetic cartographies, mine exploration or sensitive applications like UXO detection.

The MagDrone DataTool helps to identify flown tracks, cut, filter and compensate the raw data, generates a preview and exports into various formats to further process the recorded values i. e. using the MAGNETO® software, GIS tools or in Matlab.

R1: ALL UNIQUE SELLING POINTS AT HAND

Your benefits with our solution

- ✓ **Universal usage**
  - UXO Search
  - Exploration
- ✓ **Lowest payload**
  ✓ With only 595g, the R1 gets on
  ✓ board any professional UAV easily.
- ✓ **Minimal ground distance**
  The self-folding mechanism allows closest distances to magnetic objects, but gain distance to drone emitted noise sources.
- ✓ **Designed for UgCS Skyhub**
  Plug&Play compatible
- ✓ **Live data visualization**
  You can't go wrong – the R1 will be operated via the UgCS interface.
- ✓ **Noise cancellation**
  Due to a high sampling rate, UAV motor noise is accepted, detected and can be filtered out during raw data export.
- ✓ **Powerful DataTool**
  The free MagDrone DataTool lets you delete tracks, compensate, filter, ... and allows various exports!

Most frequent questions

- ➢ **What can it detect?**
  The magnetometers detect everything ferrous (iron) – but i.e. not Aluminum or Gold as they are conductive only.
- ➢ **How deep can it sense?**
  It depends. The R1 sees a harvester machine from 40 m distance; but a hand grenade from only a few centimeters.
- ➢ **Ideal flight height?**
  For compact objects: as close as possible – 50 cm above ground. Can be dozen of meters for soil structures.
- ➢ **Does it work over water?**
  Yes. Water doesn't affect sensor operation or damping the magnetic field strength (to be detected).
- ➢ **Sensitivity of the sensors**
  The sensitivity of the default sensor (FGM3D/75) is 0.1 V/µT, the resolution is better than 150 pT.
- ➢ **Interference from UAV**
  Constant noise (motors) is ok and is filtered out, but don't use a camera gimbal with the R1.

R1: TECHNICAL

General Technical Data

Power Supply	24...48 V DC (XT30)
Operating Temperature	-20°C to + 50°C
Weight	595 g
Overall power consumption	2,5W

FGM3D/75 Fluxgate

Number of sensors	1
Specified measurement range	±75,000 nT (other ranges on request)
Number of sensor axis	3
Noise level @1Hz [pT/ (Hz)]	10 pT < sensor >= 30 pT

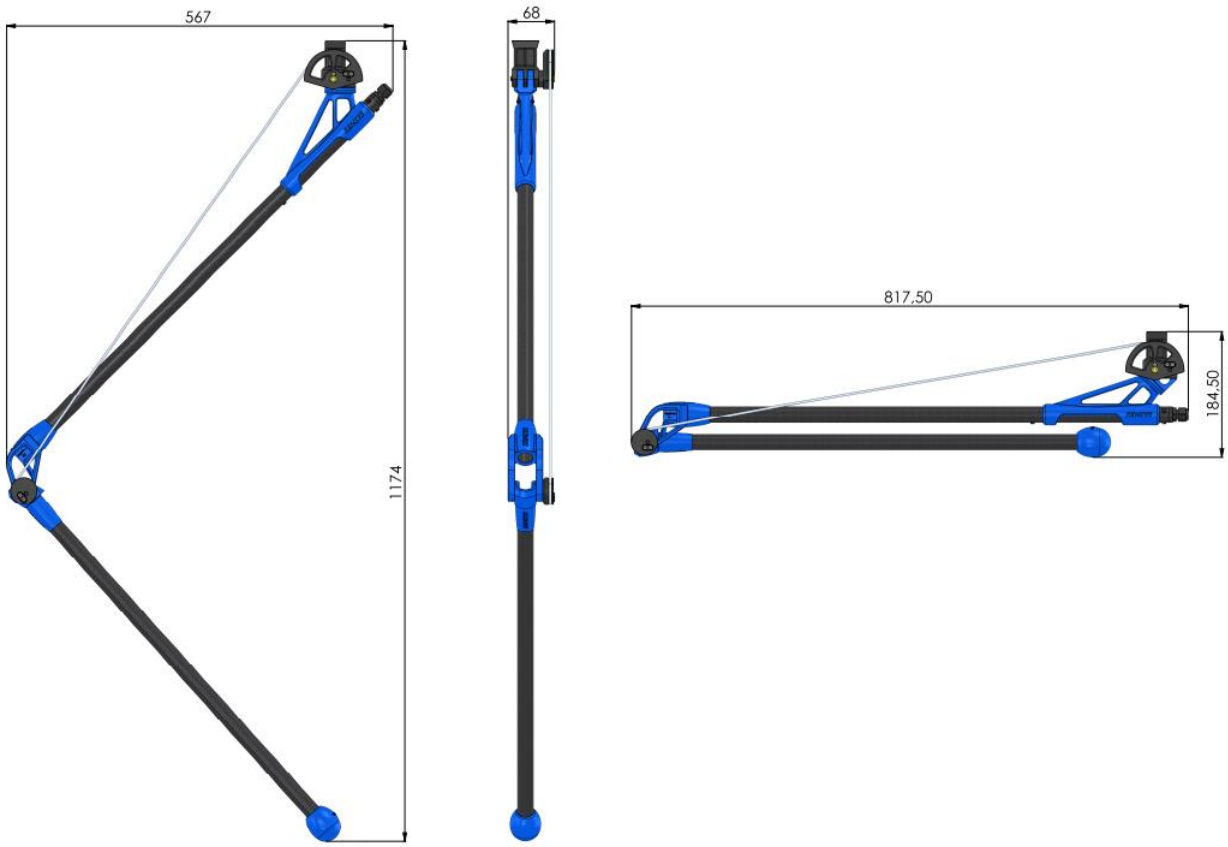
Data Transfer

Hardware interface	USB 2.0
User Interface	UgCS Skyhub/Custom Payload Manager or other serial port terminals
Sampling rate	200 - 1,000 Hz

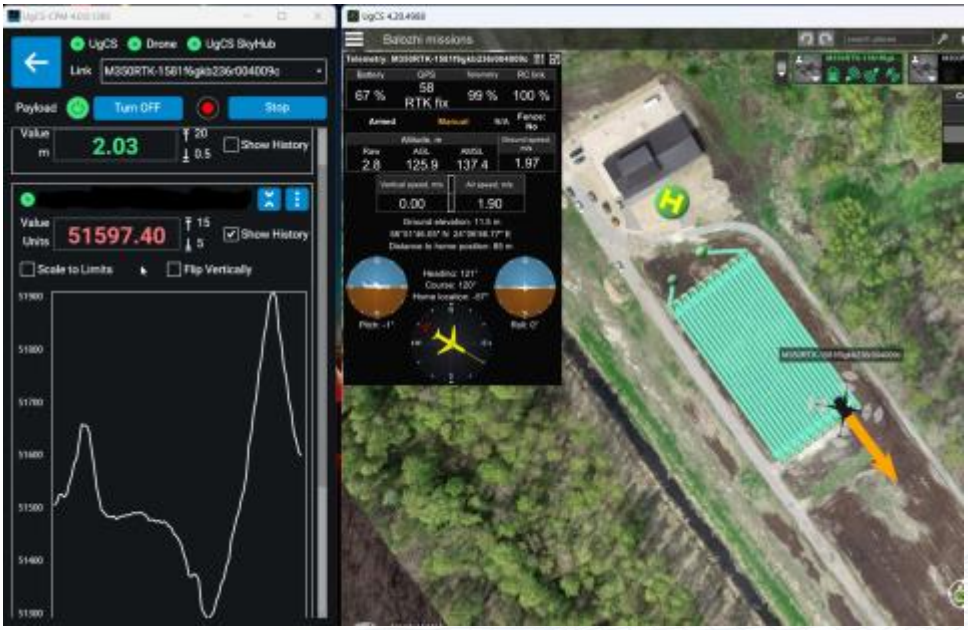
Data Processing

Raw data filtering, track & flight direction detection, noise compensation, MagBase referencing, export, preview	MagDrone DataTool (included)
Data interpretation, visualization, object calculation, etc.	MAGNETO® Software

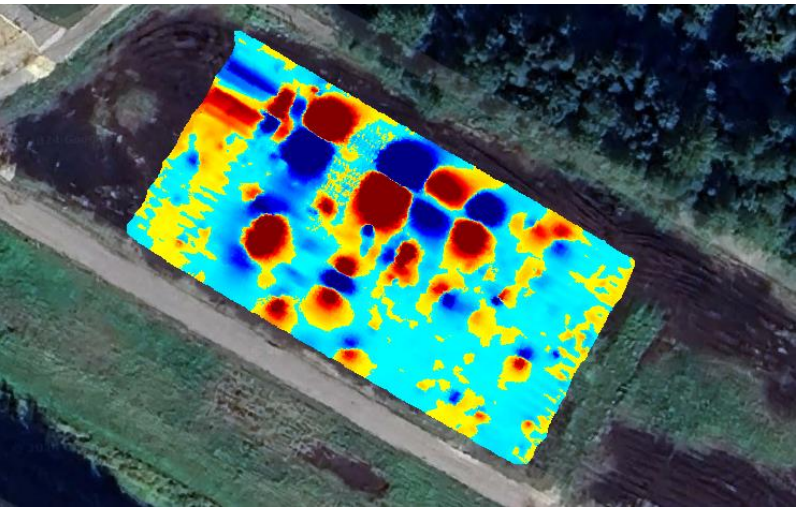
R1: DIMENSIONS



R1: Live data visualization



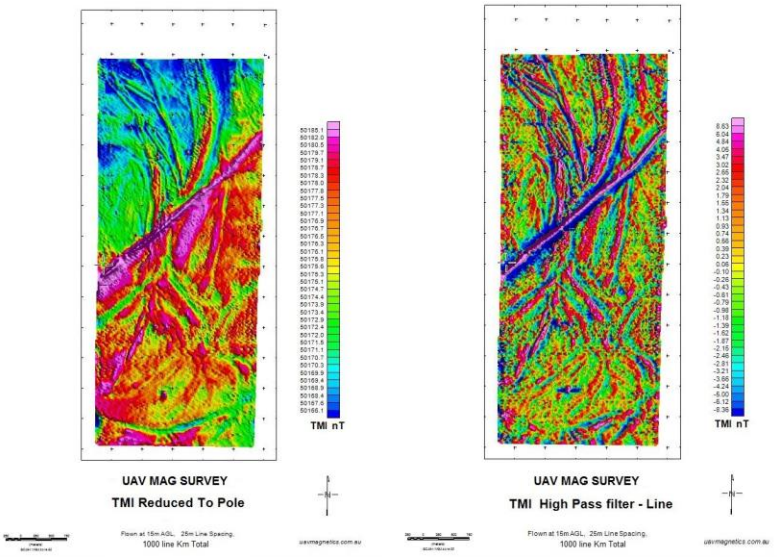
R1: IN OPERATION



MagDrone R1 – SPH Utility Test Range Latvia

We tested the MagDrone R1 in cooperation with our partner SPH Engineering at their test range in Balozi, Latvia.

The results were very impressive. Due to the closer distance to the objects which leads to higher amplitudes and lower noise from the drone, smaller objects can be detected as well.



1,000 km coal mine survey

The Australian based Rada Engineering achieved 1,000 line kilometers with the FGM3D/75 fluxgate for coal mine research in Down Under.

“I think this is exceptional data, and proves that a correctly calibrated and magnetically clean fluxgate system can produce good data that can compete with cesium and MFAM sensors.”, Anton Rada stated.

R1: STANDARD PACKAGE AND OPTIONS

Standard package

MagDrone R1 Survey kit 1x FGM3D/75 — **Ask for prices**

- Foldable CFRP sensor tube
- USB 2.0 connector for serial data output
- XT30 power connector
- USB memory clip with MagDrone DataTool
- Manual / Certificate
- Accessories bags
- Transport hard case

Options

MAGNETO® Software — **Ask for prices**

- For data interpretation, visualization, object calculation, etc.

UgCS Skyhub 3 — **Ask for prices**

- For data recording, true terrain following, GNSS output etc.