



Magpie

Total Field Magnetometer

COMPACT
PRECISE
RELIABLE

PROVEN QTFM GEN-2 PLATFORM

Magpie Total Field Magnetometer

Magpie is a ready-to-fly total-field magnetometer module built around QuSpin's ultra-sensitive QTFM Gen-2 sensor. Integrated GPS, 9-axis IMU, onboard logging, wireless link, and an optional vector add-on give you survey-grade magnetic data in minutes, with minimal setup.

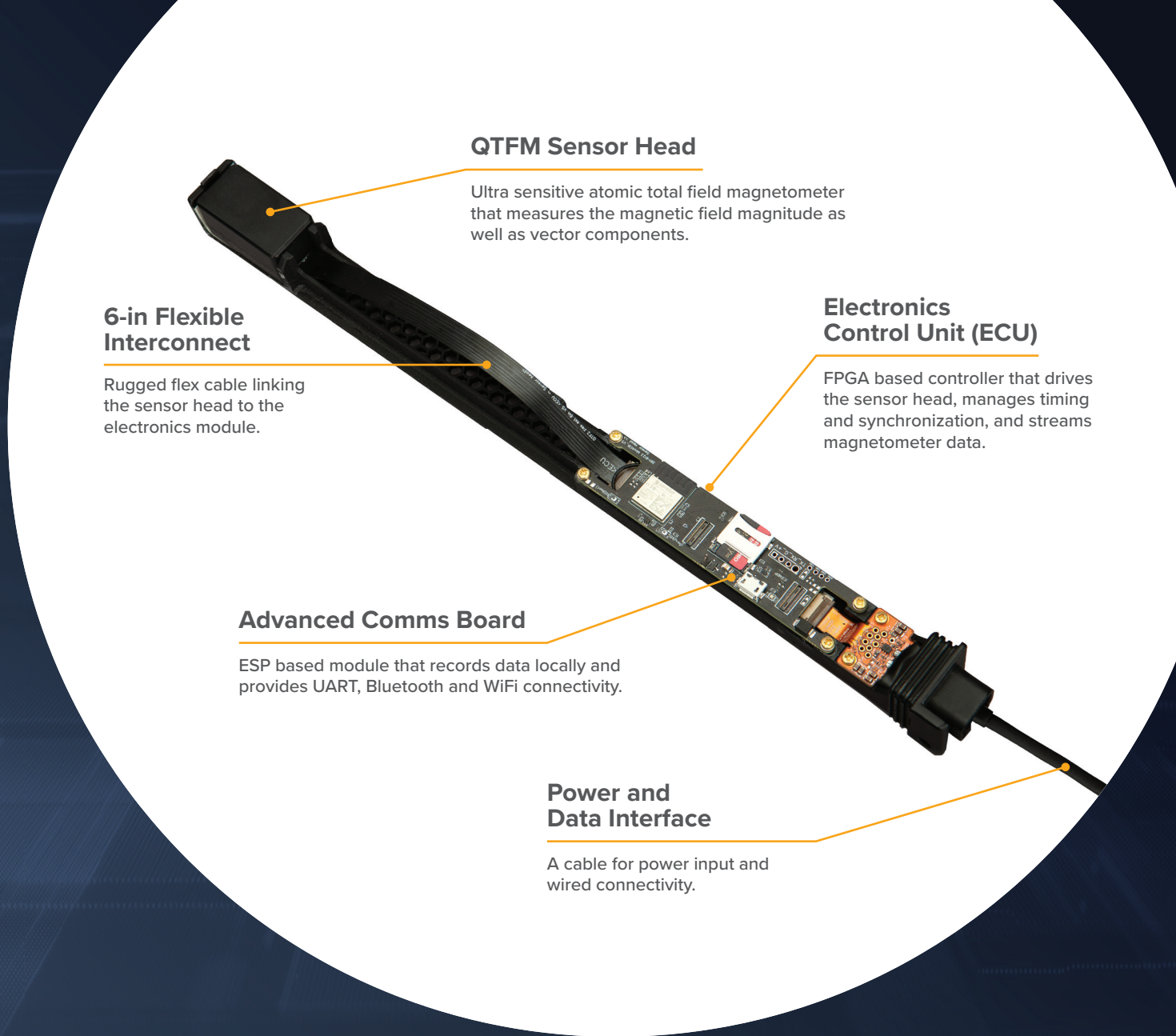
QTFM GEN-2
GPS
IMU
LOGGER
WIRELESS
OPTIONAL VECTOR



- Easy to use with minimal setup
- Lightweight and portable
- Clear reliable data you can trust

Ideal for high sensitivity UAV and handheld magnetic surveys for geological mapping, archaeology, magnetic navigation, scientific research, and other remote sensing applications.





QTFM Sensor Head

Ultra sensitive atomic total field magnetometer that measures the magnetic field magnitude as well as vector components.

6-in Flexible Interconnect

Rugged flex cable linking the sensor head to the electronics module.

Electronics Control Unit (ECU)

FPGA based controller that drives the sensor head, manages timing and synchronization, and streams magnetometer data.

Advanced Comms Board

ESP based module that records data locally and provides UART, Bluetooth and WiFi connectivity.

Power and Data Interface

A cable for power input and wired connectivity.

Field-Ready Magnetic Surveying:

- Compact, low power, and simple to deploy
- All in one total field magnetometer data, optional vector add on
- Compact ~100g module with low power operation
- Simple setup, power on and start logging in minutes
- Integrated GPS and IMU for synchronized, geo-tagged measurements
- Real time monitoring and data access via Bluetooth and WiFi
- Unmatched performance with QuSpin QTFM atomic magnetometer technology



SPECIFICATIONS

Magpie Total Field Magnetometer

Physical & Electrical

Dimensions	290mm x 25mm x 25mm
Weight	105 g (119 g with Vector Add-On)
Operating Voltage	+9 - 15 VDC (non-magnetic 3S LiPo recommended)
Average Power Consumption	4 W @ 11 V
Peak Power Consumption	5.5 W @ 11 V
Construction	Carbon fiber casing
Indicators	Logger LED, Sensor LED

QTFM Gen-2 Sensor Head

Measurement	Scalar (total field) + three axis vector magnetic field
Sensitivity	Scalar: < 0.003 nT / $\sqrt{\text{Hz}}$ Vector: < 0.1 nT/ $\sqrt{\text{Hz}}$
Dynamic Range	1000 – 150,000 nT typ.
Heading Error	< 3nT uncompensated
Dead Zone	< $\pm 7^\circ$ cone (Triaxial only)
Max Gradient Field	300 nT/cm
Output Data Rate	Scalar: ≤ 1000 Hz Triaxial: ≤ 250 Hz
Zero-Crossing	Selectable: 50 (Noisy) , 100 (Average), 200 (Quiet) , Auto optimize
Operating Temperature	-15 °C to +55 °C
Vector Add-on	Triaxial bias coil assembly for Bx/By/Bz measurements

Integrated Modules

Wireless Controller	ESP32-PICO-MINI-02
GNSS	u-blox NEO-M9N
IMU Sensor	Antenna: AN_GPS_A001 MMCX
Logger Storage	9 -axis accel/gyro/mag/temp: TDK InvenSense ICM-20948

Compliance & Export

Export Classification	ECCN 6a006.a.2 (QTFM-A) / 6A996.a (QTFM-B variant < 20 pT / $\sqrt{\text{Hz}}$)
Restricted Regions	QTFM-A requires DOC license for China, India, Russia and several others (8-12 weeks approval typ.) QTFM-B shipped freely to almost all countries without license.



QuSpin delivers quantum magnetometers with uncompromised sensitivity, real-world usability, and scientific credibility—trusted by researchers, defense teams, and pioneers pushing the limits of what can be measured.



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