

QTFM Gen-2

The QuSpin Total-Field Magnetometer (QTFM) is a compact, high-sensitivity hybrid scalar + three-axis vector atomic magnetometer for geophysical applications. It is extremely accurate, stable, and can resolve minute field changes. A compact, low-power package makes it ideal for use in a wide range of applications from magnetic observatories to small, mobile platforms such as UAVs.

Release Notes: [link](#)

Technical Specifications (Preliminary)

Sensitivity: Scalar: $<20\text{pT}/\sqrt{\text{Hz}}$; Vector: $<0.1\text{ nT}/\sqrt{\text{Hz}}$ (optional add-on)

Data Rate: 1000 samples/sec (maximum)

Bandwidth: 500 Hz

Deadzone: Axial only, $< \pm 7^\circ$ cone about earth's field (typical $< 5^\circ$) ([link](#))

Heading Error: $<3\text{ nT}$ uncompensated

Dynamic Range: 1000 nT to 150,000 nT

Operating Temperature: -15 deg. C to 55 deg. C

Size: 36×17.8×11.6 mm (sensor head), 91×20×14.4 mm (electronics)

Weight: 15 g (sensor head + electronics)

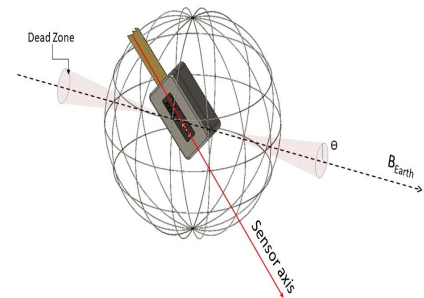
Power: 5V to 10V input, 2 W total (sensor + electronics), 3W during startup

Outputs: UART, USB

Max Gradient Field: 300 nT/cm

Calibration: None

Type: Pulsed laser pumped rubidium free induction decay ([link](#))



QTFM Gen-2 enters a dead zone (non-functional) when the sensor axis points inside $\theta = 7^\circ$ cone about the background field. QTFM recovers instantaneously once it is oriented away from the dead zone.

Features

- Optional add-on: Integrated, stable, low-noise three-axis vector outputs (synthetic¹)
- Flat spectral response (no frequency-dependent response roll-off)
- Built-in customizable digital filters (low-pass, high-pass, notch)
- Multiple sensors can be precisely synchronized for gradiometry
- Negligible dead zones
- No slew rate limitations (can tolerate extremely magnetically noisy environments)
- Built-in high-resolution frequency counter

¹Vector outputs are synthetically derived (calculated) from scalar measurements by applying bias fields in interleaved measurement cycles ([link](#))

