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Recent and Upcoming Papers on NVE Magnetometers

“Commercial Chip-based Tunneling Magnetoresistance Sensor for Green-synthesized Magnetic Nanoparticles Assay” (an [ALT025-10E](#) TMR sensor detects magnetic nanoparticles in a biosensor system.)
Journal Pre-proof, *Sensors International*, July 28, 2024.
[Try the ALT025 breakout board »](#)

“Exploring Biomagnetism for Inclusive Vital Sign Monitoring: Modeling and Implementation.” (an [AA004](#) sensor is used to detect heartrate and respiration in a smartwatch.)
To be presented at the *International Conference on Mobile Computing and Networking*, Oct. 2024.
[Try the AA004 breakout board »](#)

[More Independent Papers About NVE Sensors »](#)

Ultraminiature TMR Magnetometers

NVE has expanded its industry-leading line of ALT-Series Tunneling Magnetoresistance (TMR) analog magnetometers with the new [ALT002-14E](#).

Ultraminiature

The new version is the second TMR magnetometer in our unique 1.1 x 1.1 mm DFN4 package.

High Sensitivity for Low-Field Applications

Designed for low-field applications, the ALT002-14E has a remarkable sensitivity of 200 mV/V/mT providing a typical output of 250 millivolts at 0.25 mT with a five-volt supply and no amplification.

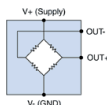
Simple Interface

These ultraminiature sensors have just four connections, two for the output and two for power.

The output can be connected directly to ADC or microcontroller analog inputs, or [simple amplifiers](#) if necessary.



NVE's DFN4 sensors fit on the head of a pin.



Best-in-Class Specifications

- High sensitivity (up to 500 mV/V/mT)
- Large signals (200 mV/V typical full-scale)
- Flexible 0 to 10 V supply (no minimum)
- 20 kilohm device resistance for low power
- High linearity (0.2% typ.)
- Ultra-low output temperature coefficient ($\pm 0.1\%/^{\circ}\text{C}$)
- Up to 300 kHz bandwidth
- -40 to 125°C operating range
- 2.5 x 2.5 mm DFN6 and 1.1 x 1.1 mm DFN4 packages

Applications

- Proximity sensing
- Wearables
- Motion, speed, and position control
- Noncontact current sensing
- Ferromagnetic material detection
- Geomagnetic navigation
- Mechatronics and robotics

Breakout Boards

The 0.8 x 0.4 inch (21 x 10 mm) ALT-Series [breakout boards](#) have pre-soldered sensors, standard 0.1" (2.54 mm) headers, and 1 mm pitch card-edge connectors.



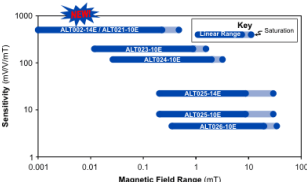
Seven Versions

There are now seven [ALT-Series](#) TMR magnetometer versions, including two in the 1.1 x 1.1 mm package:

Part No. <small>(click for more information)</small>	Breakout Board	Sensitivity (mV/V/mT)	Linear Range (mT)	Package
(NEW!) ALT002-14E	ALT002-14E-EVB01	200	0 to 0.25	1.1 x 1.1 mm
ALT026-10E	ALT026-10E-EVB01	4.5	0 to 20	2.5 x 2.5 mm
ALT025-10E	ALT025-10E-EVB01	8	0 to 10	1.1 x 1.1 mm
ALT025-14E	ALT025-14E-EVB01	22.5	0 to 2	1.1 x 1.1 mm
(NEW!) ALT024-10E	ALT024-10E-EVB01	120	0 to 2	2.5 x 2.5 mm
ALT023-10E	ALT023-10E-EVB01	200	0 to 1	2.5 x 2.5 mm
ALT021-10E	ALT021-10E-EVB01	500	0 to 0.25	1.1 x 1.1 mm

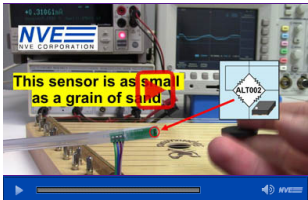
Wide Sensing Range

The expanded ALT-Series covers a wide range of magnetic fields:



Demonstration Video

This video shows a new ALT002 magnetometer detecting string vibration of a lap harp:



In Stock

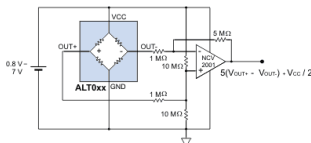
All [ALT-Series](#) part types are in stock for immediate delivery.

[Buy Online](#)
\$9.95 shipping

[Download the ALT-Series Datasheet »](#)

Differential Amplifier for ALT-Series Sensors

The circuit below uses a single-supply op amp. The NCV2001 op amp has a wide bandwidth and can run on as low as a 0.8-volt supply, allowing operation on a 1.5-volt battery:



A nanopower op amp such as an MCP6441 can be used for low-power applications. In addition to low power, the MCP6441 has a low gain-bandwidth product, which could eliminate the need for low-pass filtering in some applications.