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Earth Day April 22

With Earth Day in April, this is a good time to note NVE's leadership in [RoHS-compliance](#). Virtually all NVE sensors and isolators are available in lead-free, RoHS-compliant packages. An "E" suffix indicates a RoHS-compliant part number.

Many tin-lead parts are also available for customers who need them.



Awards & Accolades

NVE moved up 16 places in the recent *Pioneer Press* ranking of **Top 100 Companies**. [<More Accolades>](#)

Upcoming Holiday



The Ether Bunny
(C₂H₆-O-C₂H₆)

NVE will be closed for business Friday, April 10. Orders will be processed the following Monday.

Product News

TMR Angle Sensors

It's not a typo. It's TMR, not GMR. AAT001-10E angle sensors are NVE's first commercial sensor to use Tunneling Magnetoresistance (TMR), which produces an even more "giant" signal than Giant Magnetoresistance.

The new device has four TMR elements configured as an angle sensor with full quadrature sine and cosine outputs. The part is packaged in a 2.5 mm x 2.5 mm x 0.8 mm TDFN6 surface mount package.

What Is Tunneling Magnetoresistance?

Also known as Spin-Dependent Tunneling (SDT), Magnetic Tunnel Junction (MTJ), or Tunneling Magnetic Junction (TMJ), Tunneling Magnetoresistance is a spintronic quantum effect that produces a dramatic resistance change in a normally insulating layer, depending on the magnetic field and thus the predominant electron spin in a free layer.

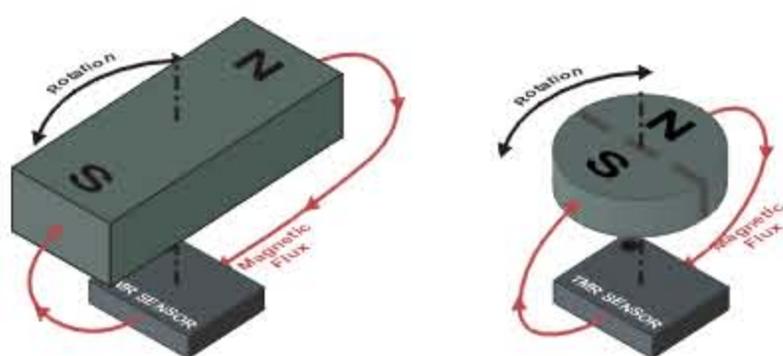
Why Are They Better?

TMR produces a very large signal with no amplification for exceptional precision, wide airgap tolerance, and low power consumption due to high element resistance. The AAT001-10E is ideal for:

- Rotary Encoders
- Automotive Rotary Sensors
- Motor Shaft Position Sensors
- Knob Position Sensors

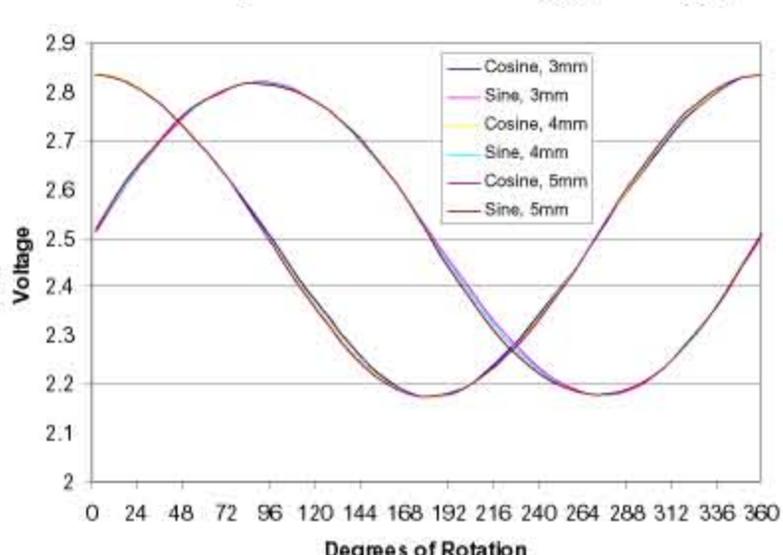
How Do I Use Them?

Typically an external magnet provides a saturating magnetic field (30 to 200 Oe) in the plane of the sensor, as illustrated below for a bar magnet and a split-pole magnet:



The following chart shows the sensor's large signal and wide airgap tolerance. This typical sensor output versus the angle of applied field used a 12 mm diameter, 4 mm thick split-pole ferrite magnet, a 5 V supply, and three different airgaps:

AAT001 Output with Variations in Airgap; 5V Supply



Where Do I Get Them?

[AAT001-10E TMR Angle Sensors](#) and [recommended split-pole magnets](#) are in stock for immediate delivery, with no minimum order.

Buy Online
\$9.95 shipping

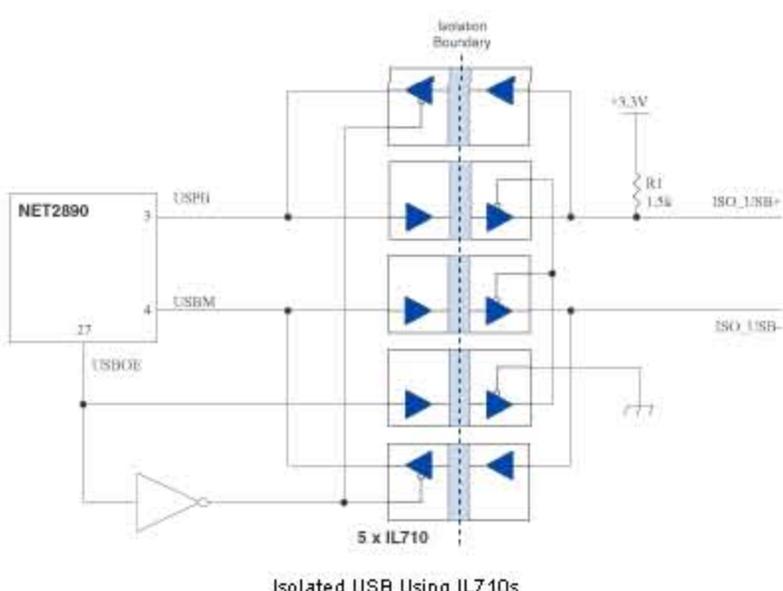
[<Download AAT001-10E Datasheet>](#)

Application Corner

Isolated USB Interface

By [Sandy Templeton](#)

Director, Isolator Product Development and Applications



In this illustrative circuit, power is supplied by USB bus power on one side of the isolation barrier and the USB node's external supply on the other side of the barrier.

The isolators provide 2.5 kVrms isolation (1 minute) and 30 kV/μs typical common-mode transient immunity.

IL700-Series Isolators are specified at just 3 ns worst-case pulse width distortion. IL500 isolators can be used if pulse width distortion is not as critical.

Both IL500 and IL700-Series Isolators are available in 8-pin PDIP, SOIC, or unique MSOP packages.

IsoLoop Isolators are also ideal for [isolating other serial interfaces](#) including CAN Bus, I²C, and I²S.

The NVE Website has a number of other isolator [illustrative applications](#). New applications are always being added.

April 1 Application Corner

Introduced in January, NVE's new current sensors can not only detect current, they can detect whether objects are current. Just connect it to the object and use the complementary "CURRENT" and "NOT CURRENT" digital outputs.



AAV003-10E Current Sensor

In a real-world field test at NVE, the new sensor detected a bowl of tuna salad well past its prime and an old bottle of orange juice in company refrigerators. Definitely NOT CURRENT.

Also sensed as NOT CURRENT in NVE's testing were a Thomas Register set; USA Today; a Ford Crown Victoria; a Peter, Paul, & Mary 8-track tape; and optocouplers.

Everyone who had read this newsletter was found to be CURRENT.