

In This Issue

[Sensor Evaluation Kits](#)

[Current Calculation](#)

Quick Links

[Sensor Selector Guide](#)

[Isolator Selector Guide](#)

[Online Store](#)

[Contact Us](#)

In the News

NVE's expansion was highlighted in a feature article in the August 13 *Minneapolis/St. Paul Business Journal*:

“ We want to expand capacity before we need it. ”

[<More>](#)

Fun Facts

How's this for low power?



IsoLoop Isolators use only one-third of a nanojoule of switching energy, so they can switch over 100 million times using less than the nutritional energy in one cracker crumb (0.00001 Calories).

Speaking of crumbs, two bits are known as a "crumb," and nearly 40 [two-channel IsoLoop Isolator](#) configurations are available in packages as small as MSOPs.

[<More Fun Facts>](#)

Voicemail Playlist



In honor of Labor Day, "I've Been Working on the Railroad" is our telephone system [background music](#).

And because of their ruggedness, reliability, and long life NVE sensors and isolators are popular in transportation systems.

Labor Day

MADE IN THE U.S.A. NVE will be closed Monday, September 6 for Labor Day.

Labor-Saving Kits

Sensor evaluation kits save labor by providing what you need to prototype a GMR sensor system. Kits include sensors, magnets, and test circuit boards, so you don't have to waste time researching sensors, finding magnets, or designing boards.



Several kits are available:

Analog Sensor Evaluation Kit

Features several types of NVE's AA and AB Series sensors, a magnet assortment, and circuit boards for testing.

Current Sensor Evaluation Kit

Analog sensors suitable for current sensing and a circuit board with several current-sensing options.

GMR Switch Evaluation Kits

Several GMR Switches along with magnets and circuit boards.

GT Sensor Evaluation Kit

Analog and digital GT Sensors, plus the DD001-12 stand-alone signal-processing IC. A variety of PCBs allow parts to be tested in different housings.

We have a labor-saving [online store](#) where you can order labor-saving sensor evaluation kits today for delivery tomorrow. Just [click here](#):

Buy Online
\$9.95 shipping

Labor Day Application Corner

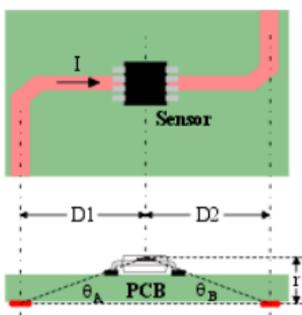
Labor Saving Tools for Calculating Current-Induced Magnetic Fields

By [Jay "Kit" Brown](#)
Vice President, Sensors

One of our most popular applications is detecting overcurrent without a direct connection using a [AA- or AAH-Series GMR magnetometers](#) over or near a circuit-board trace.

If you're like most people, you'd rather not dig up the Biot-Savart law and Maxwell's differential equations to figure out the magnetic field produced by the ac or dc current in a circuit board trace.

That's why we have a FREE labor-saving Excel spreadsheet to do those calculations for the following configuration:



The axis of magnetic sensitivity is along the package with the current-carrying trace on the opposite side of circuit board from the sensor:

The spreadsheet calculates the magnetic field at the sensor element based on the current in conductor and the geometry of the circuit board.

Suppose, for example, we want to detect 10 A overcurrent. With a SOIC-packaged sensor on a 1.6 mm thick PCB with 3 oz plated copper, $r = 2.94$ mm. If $D1 = D2 = 10$ mm, the spreadsheet shows the critical field strength at the sensor is 6.54 oersted. A circuit can easily be designed with an AA002-2 sensor and a comparator to switch at 6.54 oersted or 10 A.

The field depends sensitivity variations, board thickness, and soldering precision, but accuracy is generally sufficient for overcurrent protection.

For more information on current measurement designs, including a detailed circuit for this example, see [Application Bulletin No. SA-1 \(.pdf\)](#).

[<Download the Current Field Calculator \(.xls\)>](#)

[<Buy the AG003-01 Current Sensor Evaluation Kit>](#)