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### Fun Formulas



## Company News

### NVE Makes List of Fastest-Growing Companies



NVE ranked third in the technology industry and 13th in America on the *Fortune Small Business* 2009 list of America's 100 fastest-growing small public companies. The list is in the July/August issue on newsstands now.

A quote from the article: "To thrive in these conditions, you must be extraordinary. You have to offer a smart solution that solves a genuine problem for customers."

Thanks to all our customers for making our extraordinary growth possible.

[<NVE Awards and Accolades>](#)

### New Isolator Patent



A patent titled "Inverted magnetic isolator" was awarded to NVE in July.

Award-winning, patented IsoLoop isolators have unprecedented small size, high speed, low pulse width distortion, best-in-class EMC, and unlimited life with no degradation.

NVE has a number of patents on isolators and other spintronic technology dating back to 1995.

[<Links to NVE Patents>](#)

## Featured Distributor



Braemac North America was appointed an IsoLoop Isolator distributor in 2007 covering North and South America.

Braemac stocks isolators and provides factory-trained in-house technical support. Braemac North America is headquartered in the heart of Silicon Valley in Fremont, Calif., and also has several other offices in North America with more coming soon.

[<Link to Braemac>](#)

[<Isolator Distributor Network>](#)

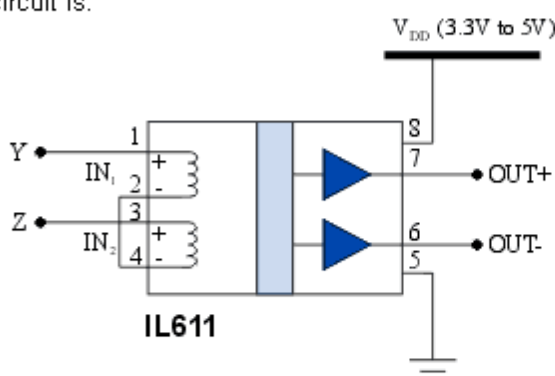
## From the Application Desk

*Real-world questions from the NVE Application Desk*

### Q. How can I provide isolated differential outputs from differential inputs?

A. IL600-Series Isolators are ideal for isolating differential signals because you have access to the input coils and you do not need input power to drive the signal across the barrier.

A basic circuit is:



Differential I/O Using the IL611

### Circuit Operation

When the voltage at node Y is greater than the voltage at node Z, current flows into coil 1 via the IN1+ terminal and out of the IN1- terminal, resulting in a logic high at the OUT+ node. Current flows out of IN1-, into IN2- and finally out of IN2+ to return to the Z terminal. The flow of current from IN2- to IN2+ creates a logic low on the OUT- node.

Conversely, when the voltage at node Z is higher than the voltage at node Y, current will flow into coil 2 via IN2+ and out of the IN2- terminal. This will result in a logic high at the OUT- terminal. Current continues to flow out of the IN2- node into IN1- and out of IN1+ to return to the Y node, resulting in a logic low on OUT+.

### Input Current Limiting

Current-limiting resistors can be selected to ensure input coil currents are at least  $\pm 5$  mA and no more than  $\pm 10$  mA. Because the input signals are differential, bypass (boost) capacitors across the resistors are not needed.

### IL600-Series Isolators

The award-winning IL600-Series Isolators provide unique passive inputs for flexibility and are available with either CMOS or open-drain outputs. Key features are:

- Very Wide Input Voltage Range
- Open Drain or CMOS Outputs
- Up to a 100 Mbps Data Rate
- MSOP, SOIC, and PDIP Packages

[<More About IL600-Series Isolators>](#)

Got a question? The NVE applications desk is here to help:  
 Isolator Applications: (952) 829-9186; [iso-apps@nve.com](mailto:iso-apps@nve.com)  
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