



Silicon Labs Launches Industry's First High-Speed Multi-Channel PLC Input Isolators

August 3, 2016 1:00 PM EDT

New Si838x Digital Isolators Outperform and Outlive Outmoded Optocouplers in Programmable Logic Controllers for Factory Automation

AUSTIN, Texas--(BUSINESS WIRE)-- [Silicon Labs](#) (NASDAQ: SLAB) has introduced the industry's first high-speed, multi-channel digital isolators designed to meet the demands of programmable logic controller (PLC) applications. The new Si838x PLC field input isolator family offers an unmatched combination of high-speed channels (up to 2 Mbps), exceptional channel integration (up to eight channels per device), bipolar input flexibility, high noise immunity and 2.5k VRMS safety isolation. The Si838x family provides a purpose-built solution for PLC applications including industrial I/O modules, computer numerical control (CNC) machines and servo motor control. The Si838x isolators are also ideal for process automation controllers (PACs) used in distributed process control systems.

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Silicon Labs' Si838x PLC field input isolators offer superior solution for programmable logic controllers. (Photo: Business Wire)

Get all the details about Silicon Labs' Si838x PLC field input isolators including product pricing and availability, development tools and data sheets at www.silabs.com/isolation.

Widely deployed in harsh factory floor environments, PLCs must be robust and compact. Many PLC designs scale up to 128 channels and have multiple high-speed inputs. While optocouplers have provided the default isolation solution for decades, they present major challenges to PLC designers. Lacking high-speed capabilities, optos are not fast enough for high-performance PLC applications such as servo motor control. Optos also lack high noise immunity, and their performance degrades over time and temperature, posing reliability risks in high-temperature industrial applications. The Si838x family addresses these challenges for the first time by providing a flexible, high-speed, multi-channel bipolar isolation solution in a compact QSOP package with much longer service life and higher reliability than opto-based solutions.

Silicon Labs' Si838x isolators are highly integrated single-chip devices providing eight channels of 24 V digital field interface. This high level of integration enables significant bill of materials (BOM) and board space savings in PLC designs. By "daisy chaining" 16 Si838x isolators in a system design, developers can create PLCs with up to 128 channels supported by a single serial peripheral interface (SPI) port on the system's embedded processor.

The controller interface can be eight parallel channels or a four-port SPI. Developers can configure the SPI for on-the-fly programming for custom de-bounce of noisy signals and for daisy chaining to support high-channel-density PLC designs. An optional de-bounce filter is either pre-programmed in a parallel configuration or programmable in a serial-out configuration.

Leveraging Silicon Labs' groundbreaking CMOS-based LED emulator technology, the Si838x isolators feature a flexible bipolar input capability that gives developers a choice of sinking or sourcing inputs. The LED emulator input circuit supports up to eight sinking or sourcing inputs in a single isolator device with no power supply required on the field side. The output interface to the controller supports low-power operation with 2.25 V operation capability.

The Si838x isolators provide a high-speed capability of 1 MHz (2 Mbps), which is essential for servo motor control applications. The isolators also offer best-in-class noise immunity on high-speed channels (50 kV/ μ s CMTI typical) to enhance system reliability.

"Silicon Labs' Si838x family addresses the unique challenges of PLC design by offering a compact, multi-channel, high-speed digital isolation solution," said Ross Sabolcik, vice president of power products at Silicon Labs. "PLC developers can now easily migrate their optocoupler-based designs to state-of-the-art digital isolation technology providing the benefits of higher performance, greater design flexibility, higher channel density and long-term reliability."

Si838x PLC Field Input Isolator Family Highlights

- Bipolar input capability offers flexible design options for sinking or sourcing PLC inputs
- Up to 8 channels in one package reduces board space for compact PLC designs
- High-speed 2 Mbps channels enable reliable servo motor control
- High noise immunity (50 kV/ μ s CMTI on high-speed channels) ensures reliable operation
- Parallel or SPI interface provides flexible design options
- Single SPI port supports 128 channels with 16 Si838x devices, saving control I/O pins
- User-programmable de-bounce capability using SPI
- 2.25-5.5 V VDD capability reduces power consumption for low-power controller interface
- Integrated 2.5k VRMS safety rated isolation

Pricing and Availability

Samples and production quantities of the Si838x PLC field input isolators are available now in a compact 20-QSOP package. Si838x family pricing in 10,000-unit quantities begins at \$1.91 (USD.) To simplify PLC application development, Silicon Labs offers the Si838xISO-KIT evaluation kit priced at \$29.00 (USD MSRP). To purchase product samples and development tools, visit www.silabs.com/isolation.

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Silicon Labs
Dale Weisman, +1-512-532-5871
dale.weisman@silabs.com

Source: Silicon Labs

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