Sendyne Introduces First Isolation Monitor for EVs and HEVs Capable of Detecting Potential Electrical Hazards During Dynamic Operation

Unique Device Increases Safety for High Voltage Unearthed Systems

New York, NY (PRWEB) April 27, 2017 -- Sendyne has introduced the SIM100, a new type of automotive rated isolation monitoring safety device that is capable of detecting potential electrical hazards during the dynamic operation of high voltage unearthed systems, such as electric and hybrid vehicles. The SIM100 module is the first device of its kind capable of unambiguously detecting the electrical isolation state of a high voltage system while the system is active and operating, and experiencing large voltage variations. State-of-the-Art technology today is limited to detecting only resistive leakages and only when the system voltage does not vary significantly. In another first, the SIM100 detects both resistive leakages and capacitively stored energy that could be harmful to human operators.

High voltage battery systems, such as the ones used in electric vehicles, are typically electrically isolated from the chassis, to protect human operators. However, this isolation may deteriorate either gradually or suddenly, exposing those who come in contact with chassis to potential hazardous shocks. In addition, capacitances from the power system to the chassis may inadvertently change, accumulating hazardous charges. If either condition is detected, the operator should be notified in order to immediately service the vehicle. In case of an accident, the emergency first respondents will also rely on this information so they may approach the vehicle safely.

Sendyne’s SIM100 is unique in that it can detect these types of potential hazards while the system is operating and voltages are fluctuating as much as 100 V. Commercial devices so far are only able to detect resistive leakages when there are no dynamic fluctuations in the electrical system. For industrial and commercial systems that have to be in operation most of the time, this limitation can be dangerous.

Sendyne was able to achieve this performance by utilizing its proprietary, patent pending modeling and embedded scientific computing technology. The Sendyne SIM100 IC, the brains of the module, models the supervised unearthed system, and through stochastic optimization methods, determines the condition of all types of electrical paths from the high voltage system to the chassis. The SIM100 can detect the values of each resistance or capacitance, as well as the location of the potential hazard, whether on the positive or the negative path. In addition, the SIM100 calculates and provides uncertainty values for each estimate.

Communications are achieved with the host ECU via an isolated CAN 2.0B interface (500 kbit/s). The module has a wide input voltage of 5 V to 53 V, thereby accommodating most vehicle systems. It provides a wide temperature range of −40 °C to +105 °C. The module was designed to ISO 6469-3:2011-12 / FMVSS 305.

The SIM100 module was pre-introduced to select customers and is now commercially available. An evaluation kit, with cables, CAN to USB dongle and software is also available. Sendyne’s SIM100 IC is also obtainable, with minimum quantity orders.

“It’s a new type of electronic device that takes advantage of the modern stochastic process theory in order to solve a safety problem with very few known parameters. We are very pleased with the results. We were able to achieve them utilizing modeling and computing tools which we have developed for a wide area of IoT analytics applications,” said John Milios, Sendyne’s CEO.
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About Sendyne
Sendyne delivers key technologies for battery system management. These include: The SFP family of ICs and modules for precise current, voltage and temperature measurements with built-in Coulomb counting; dtSolve™, a small footprint, high speed model solver for embedded predictive control; and CellMod— high accuracy, physics-based battery cell and pack models.

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