

## **NEC Electronics America Demonstrates Smart Energy and Home Automation Solutions at DistribuTECH 2009**

**Power Line, ZigBee, ASIC and Microcontroller Technologies for Smart Home Applications to be Showcased in Corporate Systems Engineering Booth #2307, Hall A**

**SANTA CLARA, Calif., February 3, 2009** – NEC Electronics America, Inc. today announced that it will highlight several of its power line communication (PLC), ZigBee®, ASIC and microcontroller (MCU) "smart energy" solutions at DistribuTECH 2009, February 3–5, at the San Diego Convention Center in California. A demonstration of ZigBee-to-PLC using the company's new PLC-ZigBee reference design board will be featured in Corporate Systems Engineering's (CSE) booth #2307 in Hall A. The PLC-ZigBee boards will feature NEC Electronics' MCUs as well as its PLM-1 narrowband PLC modem application-specific standard product (ASSP), a cost-effective and highly configurable modem integrated circuit (IC) developed in conjunction with Ariane Controls, a leading PLC technology developer. Additional demonstrations in the booth will feature complete system solutions with NEC Electronics' MCUs for smart home automation and building management, including a touch-screen control panel, a thermostat with an LCD, and an HVAC motor control solution.

PLC technology eliminates the high cost required to install network cable by allowing devices to communicate with each another after being plugged into standard electrical outlets. Several major utility companies have recently announced they are working with the ZigBee Alliance and the HomePlug® Powerline Alliance to develop interoperable Plug and Play solutions for advanced metering infrastructures (AMIs) and home area networks (HANs).

"With energy demands and costs steadily increasing, utility companies and consumers alike are looking for smart energy alternatives to minimize and control electrical consumption," said Kazu Yamada, vice president, custom SoC solutions strategic business unit, NEC Electronics America. "With its MCU, ASIC, PLC and ZigBee solutions, NEC Electronics is powering tomorrow's smart energy applications making it possible for customers to conserve energy, reduce energy costs and preserve the environment."

### **NEC Electronics' PLM-1 PLC Modem ASSP**

NEC Electronics' single-chip digital PLM-1 modem ASSP (part number uPD65942Y47) contains a half-duplex transmitter/receiver for PLC, operates in noisy electrical environments, and supports a range of programmable baud rates and carrier frequencies. The PLM-1 solution is available as an ASSP or as intellectual property (IP) that can be used as a building block for ASIC design using NEC Electronics' process technologies. More information about NEC Electronics' PLM-1 PLC modem ASSP can be found at <http://www.am.necel.com/plm1>.

### **New PLC-ZigBee Reference Design and Evaluation Kit for Smart Energy Applications**

The PLC-ZigBee reference design and evaluation kit is a single board that features NEC Electronics' PLM-1 narrowband PLC modem device and wireless ZigBee communications module both powered by an NEC Electronics low-power, high-performance 16-bit 78K0R MCU. Capable of operating in PLC- or ZigBee-only modes, the board also can function as a router of hybrid transactions between PLC and ZigBee domains. In addition to wired and wireless interfaces, the board also uses an NEC Electronics 8-bit USB MCU for operation with the host computer, on-board flash programming and debugging of user code without the need for additional hardware. More information about NEC Electronics' ZigBee solutions can be found at <http://www.am.necel.com/micro/technology/zigbee/index.html>.

### **Microcontroller Solutions for the Smart Home**

Designers developing complete PLC solutions can complement the PLM-1 modem ASSP with several NEC Electronics MCUs for different applications. For simple appliance-control applications, a designer could

combine the PLM-1 modem IC with one of many low-cost 8-bit 78K0 MCUs for appliance control functions. For applications such as network bridging or PLC-ZigBee communication, a designer could choose from an extensive lineup of 16-bit 78K0R MCUs with greater integrated memory and a ZigBee software protocol stack. Finally, for complex applications such as smart meters that manage signals between multiple appliances and the utility company, a designer could select one of NEC Electronics' high-performance 32-bit V850™ MCUs. More information about the complete MCU offerings from NEC Electronics America can be found at <http://www.am.necel.com/micro>.

(On a worldwide basis, NEC Electronics was the number one supplier of 32-bit MCUs in 2007 according to the Gartner Dataquest March 2008 rankings report. This industry-leading 32-bit MCU line provides cost-effective solutions for systems that require high-performance, single-chip operation and high integration.)

**About NEC Electronics America, Inc.**

NEC Electronics America, Inc., headquartered in Santa Clara, California, is a wholly owned subsidiary of NEC Electronics Corporation (TSE: 6723), a leading provider of semiconductor products encompassing advanced technology solutions for the broadband and communications markets; system solutions for the mobile, PC, automotive and digital consumer markets; and multi-market solutions for a wide range of consumer applications. NEC Electronics America offers local manufacturing in Roseville, California, and the global manufacturing capabilities of its parent company. In the Americas, NEC Electronics America markets and sells industrial-type active-matrix LCD modules from NEC LCD Technologies, Ltd., a global leader in innovative display technologies. More information about the products offered by NEC Electronics America can be found at <http://www.am.necel.com>.

Information about Corporate Systems Engineering (CSE) can be found at <http://www.corporatesystems.com>.

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