RF Energy Harvesting Kit Enables Battery-Free, Perpetually Powered Wireless Apps

Microchip Technology Inc. and Powercast Corporation announced the Lifetime Power Energy Harvesting Development Kit for Wireless Sensors featuring PIC microcontrollers with eXtreme Low Power (XLP) Technology. This kit, composed of a 3-Watt Powercaster transmitter as the power source, two P2110 Powerharvester receiver evaluation boards, two custom-designed wireless sensor boards, the XLP 16-bit Development Board pre-loaded with jointly developed application software, an IEEE 802.15.4 transceiver and other accessories, makes it easy to demonstrate and develop smart-energy, wireless-sensor applications that are reliably and perpetually powered by radio waves—eliminating the need for a battery. The included transmitter can wirelessly power sensor devices from more than 40 feet away.

The main challenges for the designers of wireless sensor applications fall into the categories of power, location and wireless communication. Combining Powercast's RF transmitter and receiver energy-harvesting system, which broadcasts and converts RF energy into DC power, with Microchip's XLP PIC microcontrollers, which provide the industry's lowest power consumption in active and sleep modes, solves all three of these design challenges.

Power

Powercast's RF energy harvesting system provides predictable and reliable power, using broadcasted RF energy for wire- and battery-free operation, or to wirelessly charge battery-based systems. In the Lifetime Power kit, the Powercaster transmitter broadcasts RF energy to the Powerharvester receiver, which can be embedded into an OEM's micro-power device. The receiver then converts the RF energy and presents it as a regulated power supply to Microchip's PIC24F microcontroller. The recently announced Powercast transmitter included in the kit is approved by the FCC (Part 15) and Industry Canada.

Location

Using broadcasted RF energy as the application's sole power source allows for

untethered and battery-free operation in hazardous or inaccessible locations, which would otherwise require labor-intensive or potentially dangerous battery maintenance. Additionally, broadcasted RF energy is controllable (can be scheduled, continuous or on-demand) and works in locations where other potentially intermittent energy-harvesting sources (e.g., solar, vibration and heat) make them unreliable.

Wireless Communication

Microchip's configurable MiWi and MiWi P2P stacks are efficient and save power by enabling only the most essential wireless communication features. In addition to these proprietary Microchip protocols, the kit's included MRF24J40 IEEE 802.15.4 transceiver also supports Microchip's ZigBee stacks. From a functional standpoint, Microchip's RF transceiver allows for continual readings of sensor data, portability and much easier installation than wired communication provides.

In addition to solving these three major challenges, the Lifetime Power kit provides modular development with Microchip's included XLP 16-bit Development Board. This flexible platform allows customization for developing applications, and enables faster evaluation, prototyping and time to market.

Availability and Pricing

The Lifetime Power Energy Harvesting Development Kit for Wireless Sensors is available today for $1250 from Powercast's distributors, including microchipDIRECT [1].

Microchip Technology
480-792-7200, www.microchip.com [2]

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