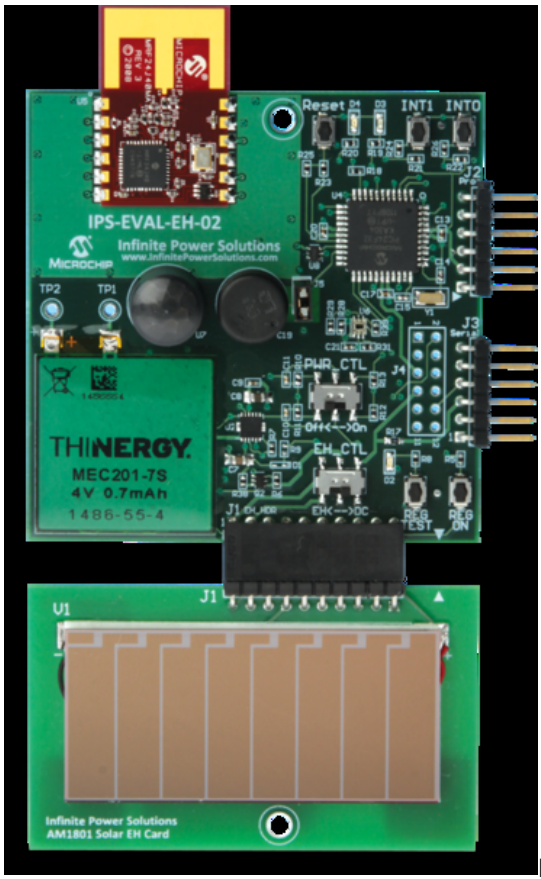
Self-Powered Wireless Environmental Sensor Eval Kit



Infinite Power Solutions (IPS) announced the availability of the IPS-EVAL-EH-02 Wireless Environmental Sensor Energy Harvesting Evaluation Kit [1]. The new evaluation kit is a complete wireless sensor reference design that includes a microcontroller and radio module from Microchip Technology and multiple indoor environmental sensors. System power is provided by a paper-thin yet curiously powerful THINERGY® Micro-Energy Cell (MEC), an eco-friendly, all-solid-state battery solution that is continuously recharged using ambient energy harvesting, allowing decades of autonomous, maintenance-free operation. THINERGY MECs enable low cost, hassle-free, permanent power solutions for a variety of low power, small form factor, industrial and consumer wireless sensor applications. This evaluation kit will help designers develop self-powered wireless sensors for smart home and building automation systems.

The IPS-EVAL-EH-02 evaluation kit enables design engineers to develop and evaluate self-sustaining “green” sensor solutions, displacing the use of conventional batteries and supercapacitors that require frequent replacement, especially when exposed to elevated temperature conditions. The kit includes a variety of integrated environmental sensors, such as a Passive Infra-Red (PIR) occupancy sensor, a humidity sensor, an ambient light sensor and a temperature sensor. The sensor system and data transfer is managed by the Microchip PIC24 microcontroller. A MiWi™ IEEE 802.15.4 compliant radio module, also from Microchip, is used to communicate with the Zena™ 2.4 GHz Wireless Adaptor included in the evaluation kit. This allows users to develop their own environmental sensor systems and easily interface them with PC-based applications. The kit also features the MAX17710 [2] device from Maxim Integrated Products, the industry’s first complete power-management integrated circuit (PMIC) solution dedicated to micro-energy harvesting and battery protection.

The power supply design features a 4V THINERGY [3] solid-state, rechargeable, micro-energy cell combined with ambient energy harvesting to create an autonomous, self-powered system. The integrated THINERGY MEC201-7S is a near loss-less energy storage cell the size of a postage stamp, yet fully capable of powering the entire sensor system. Self-discharge is so low and insignificant that energy can be reliably stored for many years on a single charge. Recharge is provided from an included solar panel and users can attach their own energy harvesters as well. Because they don't wear out like conventional batteries, THINERGY MECs can be permanently installed in the sensor system and will last the lifetime of the application. Thanks to their high power capability, 100,000 recharge cycles and near zero leakage current, MECs are well-suited for energy harvesting based wireless sensors. With an expected lifetime of up to 20 years, THINERGY MECs require no maintenance or periodic replacement compared to other batteries and supercapacitors. By eliminating replacement labor costs, THINERGY MECs allow for the lowest total cost of ownership. Moreover, THINERGY MECs contain no heavy metals and are organic-free and inherently safe. As a result, THINERGY MECs are changing how the power source for micro-electronic systems is being designed, both now and in the future.

The IPS-EVAL-EH-02 Wireless Environmental Sensor Energy Harvesting Evaluation Kit is available for purchase now from a variety of IPS authorized distributors [4].

Infinite Power Solutions www.InfinitePowerSolutions.com [5]

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