

eZ430-RF2500-SEH

solar energy harvesting development kit



Product Bulletin

Remote or hard-to-access environments demand integrated and miniaturized wireless sensors. Until now, designers typically powered wireless devices with storage components such as coin cell or AA batteries. However, these storage technologies don't supply the right mix of charging, storage, discharge and physical size to provide permanent power for wireless devices.

The combination of TI's ultra-low-power MSP430 MCU and RF technology with Cymbet's EnerChip batteries allows energy harvesters to achieve more efficient storage, processing and transmission from ambient light.

The solar energy harvester module includes a high-efficiency solar panel (2 1/4 x 2 1/4-inch) optimized for operating indoors under low-intensity lights, which provides enough power to run a low-power wireless sensor application with no additional batteries. Inputs are also available for additional external energy harvesters such as thermal, piezoelectric or another solar panel.

The system also manages and stores additional energy in a pair of thin-film

rechargeable EnerChips, capable of delivering enough power for more than 400 transmissions from a single charge. The EnerChips act as an energy buffer, storing energy while the application is idle and has light available to harvest. The batteries are environmentally friendly and can be recharged thousands of times. They also have a very low self discharge – vital for no-power energy harvesting systems.

The eZ430-RF2500 runs the energy harvesting application. It is a complete USB-based MSP430 wireless development tool, providing all of the hardware and software necessary to use the MSP430F2274 microcontroller and CC2500 2.4-GHz wireless transceiver. It includes a USB debugging

Key features

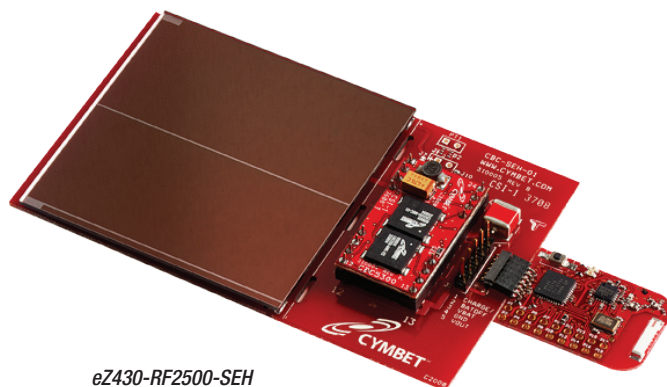
- Efficient solar energy harvesting module for the eZ430-RF2500
- Battery-less operation
- Works in low ambient light
- 400+ transmissions in dark lighting conditions
- Adaptable to any RF network or sensor input
- Inputs available for external harvesters, including thermal and piezo
- USB debugging and programming interface with an application backchannel to the PC
- 18 available analog and communications input/output pins
- Highly integrated, ultra-low-power MSP430 MCU with 16-MHz performance
- Two general-purpose digital I/O pins connected to green and red LEDs for visual feedback
- Interruptible push button for user feedback

interface that allows for real-time, in-system debugging and programming for the MSP430 and is also the interface for transferring data to a PC from a wireless system.

Integrated temperature and RF signal strength indicators can monitor the environment, while any external sensor can be integrated to collect additional data.

For more information

To learn more about the eZ430-RF2500-SEH and TI's other products, contact your local TI field sales office or see www.ti.com/ez430.



eZ430-RF2500-SEH

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