Introducing ZottaOS-Hard PA

A Real-Time Power-Aware Kernel with Minimal Overhead for Ultra-Low Power Microcontrollers

For most designers, low power and power efficient application is synonymous to setting the operating mode of the microcontroller in a sleep state. Although this may seem to be a good idea, it is possible to achieve even better energy savings when a real-time operating system is designed to take energy into account.

ZottaOS-Hard PA Specifications

- Supports periodic and event-driven threads;
- Hard real-time scheduling with Earliest Deadline First or Deadline Monotonic multithreaded scheduling;
- Common execution stack for all threads to minimize RAM usage;
- Lock-free (non-blocking) management of scheduling queues minimizing time periods in which interrupts are disabled;
- Maximum interrupt latency of 29 machine cycles;
- Interruptible context switching;
- Support for queued concurrent FIFO between tasks;
- Support for concurrent LIFO update of arbitrary sized datum between tasks;
- Flash memory usage: between 4kB and 6kB;
- RAM usage:
    - 84B + 34B per thread;
    - (26B + 3 × buffer Size) per I/O;
- Easy to use API;
- Low-power management by **dynamically scaling the core voltage and adjusting the processor frequency**. Compared to entering sleep mode when the processor becomes inactive, the additional energy saving are:

Processor Utilization [%]	Energy Saving Ratio [%]
10 – 25	35 – 28
25 – 50	28 – 22
50 – 75	22 – 15
75 – 95	15 – 5

- Available for MSP430F5xx and CC430F6xx this coming May.

More information available on **www.zottaos.com**

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