



## **Embedded and Algorithm Experience with Texas Instruments MSP430**

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Pentad Design has engaged in multiple projects over the last two years using Texas Instruments MSP430 Microcontroller:

1. Electrochemical Blood Analyzer: Hand held, point of care, battery powered device (TI MSP430 F449). Fastest test results in the industry. Unit wakes up upon cartridge insertion, takes cal reading, blood reading A/D conversions, software filtering, User Interface, LCD controller. Power management (extremely low power operation). Maintains software real-time clock for date checking cartridges. Reads sensor parameters from a two-wire serial EEPROM, write results in sensor EEPROM. Implemented field software code updater device (plug into sensor port, and unit loads and re-flashes new software in the field).

2. Fast Forward Cradle Cell Phone Accessory for Cingular Wireless: By placing their cell phone in the Fast Forward cradle, users can forward all local incoming wireless calls to their local landline, without using their cell phone minutes. The low cost, small footprint TI MSP 430 F11XX microcontroller was selected for use in this very high volume (6K/Day) product. Due to the variability of phone manufacturers, different software sets were created for each brand of phones and family of phones.

3. Muscle Stimulator Device: Designed as a home use, prescription therapeutic device. This family of 2 and 4 channel muscle stimulator devices are enclosed in a small hand held, portable enclosure. All share a common design, PC board and are differentiated by stuffing options during assembly. Utilizing an MSP430 F137 microprocessor, the Muscle Stimulator controls up to 50 volts peak to peak and up to 5 Watts of power. In essence, this device is a 4-channel digital power supply accomplished with an MSP430.

4. Current confidential projects involve using MSP430's in a wireless sensor networks; a water conservation solution; a secure electronic funds card; and a wearable respiratory care device.