Technical Article

Sense, Measure and More with MSP430™ MCUs at Embedded World 2017

MSP430™ microcontrollers (MCUs) are at the heart of many embedded applications being discussed at embedded world 2017 in Nuremberg, Germany this week. This is especially true for sensing and measurement applications including smoke detectors, thermostats, and metering devices as well as capacitive touch-enabled products such as smart electronic locks and keypads, remote controls, security panels, and human machine interfaces (HMIs) in the factory, building or home.

If you are attending the embedded world this week, be sure to stop by the Texas Instruments booth located in Hall 3A / 3A-420. We are showcasing a lot of different products including several from our value line sensing MCUs such as the MSP430FR4133 MCU and MSP430FR2311 MCU LaunchPad™ development kits. We will be demonstrating how these cost-optimized MSP430 MCUs can be used in applications such as basic thermostats (as shown below) and smoke detectors.

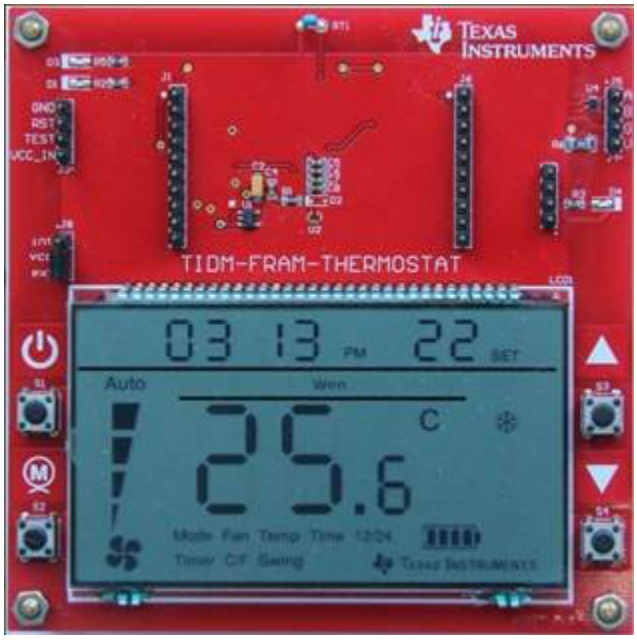

Figure 1. Example of thermostat implementation with FRAM MCUs reference design

Also on display will be several demos based on the new high-performance MSP430FR5994 device. This is the first MSP430 MCU to include our unique energy-efficient low energy accelerator (LEA), which is a highly optimized peripheral for complex algorithm processing. These demos will include a reference design showing the LEA module's filtering and signal processing, a demo of our wireless boot loader application report which is great for updating firmware over the air in hard to reach locations in factories, grid infrastructure and buildings, and a very cool, high accuracy ultrasonic measurement system also based around the MSP430FR5994 LaunchPad kit.

Figure 2. Filtering and signal processing reference design

And last but not least, we will have several of our MSP430 MCUs with CapTIvate™ touch technology demos on display including a new reference design for a *Bluetooth*®-enabled smart eLock or access panel. Our high performance capacitive touch solution helps to solve many of the challenges faced when adding capacitive sensing to your design, such as conducted noise immunity, moisture rejection and the ability to work with a wide range of overlay material and thickness. CapTIvate technology can even enable grip detection to turn on or provide safety controls in handheld equipment, slick metal-touch capacitive buttons for appliances and human HMIs, very small (3mm x 5mm) capacitive sensors and capacitive sensing through thick glass enclosures. Offering unrivaled noise immunity and ultra-low power operation, CapTIvate technology can give your next generation project the best user experience possible.

Figure 3. CapTIvate technology access control panel

Be sure to stop by to check out all the TI demos this week in Nuremberg.

Additional resources:

- Learn more about ultra-low-power MSP430 FRAM MCUs.
- Need a value line sensing MCU? Check out the MSP430FR211x family.
- Read more about CapTIvate technology:
  - "Rain on this touch panel parade won't matter"
  - "Need a hand with messy jobs? TI's CapTIvate technology can help."

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