Technical Article

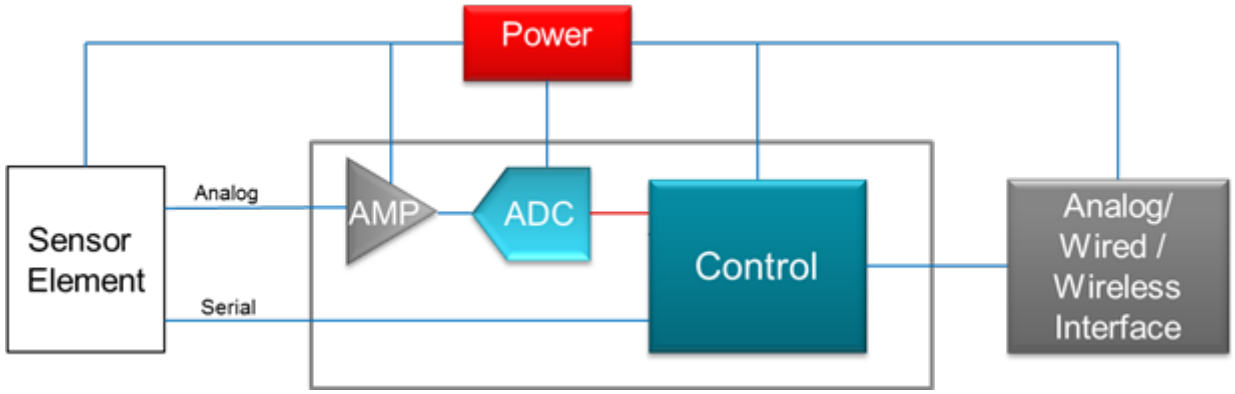
MSP MCUs: the Right Solution for Industrial Automation Systems

William Cooper

The latest trends in industrial automation have presented many challenges with respect to microcontroller (MCU) development:

- Achieve more performance on a reduced power budget
- Collect more precise sensor data to make better decisions
- Operate in increasingly harsh environments
- Fit the entire design in a space constrained location

These challenges are commonly seen in factory automation and control environments where the MCU can be used to process sensor data, store the date or take immediate action, and communicate that information via wired or wireless communication protocols ranging from the digital HART® protocol on a 4-20mA current loop, to *Bluetooth*® Smart 2.4GHz solutions.



The MSP MCU portfolio offers differentiated options to meet any and all of these needs. Here are some of the latest TI Design Reference Designs to help you get your system off the ground:

Wired Communications:

- HART® Field Transmitter - Full HART and 4-20mA field transmitter solution interfaced to a Resistance Temperature Detector (RTD) using the MSP430FR5969 MCU
- IO-Link Field Transmitter - Hall-sensing proximity sensor and temperature sensing multi-variable field transmitter using the MSP430FR5738 MCU

Electricity and Flow Measurements:

- Electricity Measurement - A high accuracy 2 phases embedded metering application using MSP430i2040 MCU.
- Inductive Flow Measurement - Water Meter Reference Design for two LC Sensors, using the Extended Scan Interface (ESI) on the MSP430FR6989 MCU
- Ultrasonic Flow Measurement - Ultrasonic flow meter (water, gas or heat meter) with LCD built using a Time-to-Digital converter and the MSP430FR6989 MCU

Equipment Monitoring:

- Wireless Vibration Monitor - Monitor the health of motors and machines to accurately predict and schedule maintenance (or replacement) using the MSP430FR5969 MCU and the CC2650 multi-protocol wireless MCU

System State Restoration:

- Compute through power loss – Detect power loss and save system state without the need for large capacitors or a backup battery by leveraging the speed and endurance of FRAM

Looking for another application? Head over to our new applications page to see related MCUs, reference designs and evaluation kits.

Factory automation

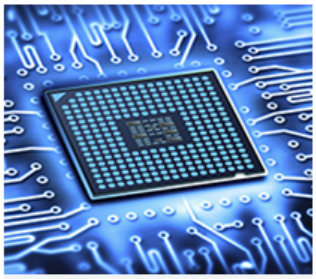
- Industrial sensing and communications
- Energy harvesting / alternative energy / renewable energy

Building automation

- Access control and security
- Energy harvesting / alternative energy / renewable energy
- Fire and smoke detectors
- Glass break detectors
- Electronic locks
- Occupancy, motion detectors
- Thermostats

Smart Grid

- Smart grid & Infrastructure
- Water, heat and gas flow meter
- Electric meter



More low power applications

- Blood glucose meter
- Blood pressure meter
- Pulse oximeter
- Heart rate monitor
- Activity tracker
- Smart medical patch
- Personal electronics (consumers)

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265