



# Embedded World preview

The Embedded World exhibition and conference takes place in Nuremberg next week. This four-page special looks at the range of hardware software technologies on view

## Workbench 5.41 boosts code generation for Cortex-M0

IAR Systems will be introducing a version of its IAR Embedded Workbench for ARM which it claims will achieve up to 13% better optimised code generation for Cortex-M0 MCUs, at Embedded World.

“We were the first to offer a development kit for Cortex-M0, and we now believe we are releasing the best compiler for Cortex-M0,” said Mats Ullström, product director at IAR Systems.

Geoff Lees, general manager for MCUs at NXP Semiconductors, said, “This new release has been tuned to generate compact code with faster execution speed.”

IAR Embedded Workbench version 5.41 also supports code genera-

tion and debugging of ARM Cortex-R4F core with the vector floating point (VFP) coprocessor extension.

Devices with a VFP unit will benefit from the compiler's VFP support, making floating point operations written in C/C++ run in fewer clock cycles, and further improving the performance of the compiled code.

Other new features include the ability to set start and stop trace triggers. Also, the instruction trace triggers can be started and stopped based on conditions such as specific code locations and data access.

This feature is supported both by J-Trace for ARM and J-Trace for Cortex-M3 trace probes. In addition, the J-Trace for Cortex-M3 supports the use of the serial wire output (SWO) port trace.

[www.iar.com/ewarm](http://www.iar.com/ewarm)

## Wireless M-Bus gateways for smart metering

Digi International has introduced ConnectPort X, a wireless M-Bus gateway family for smart metering in Europe. Versions are available cellular, Ethernet and Wireless M-Bus connectivity.

“The Wireless M-Bus standard is becoming widely accepted in Europe as a basis for new advanced metering infrastructure [AMI] applications,” said Frederic Luu, v-p of sales and marketing at Digi. “The gateway allows energy service providers to access Wireless M-Bus meters over cellular or Ethernet connections.”

The products integrate with the iDigi Energy wireless machine-to-machine bundle, which has the hosted



software and services necessary to integrate smart grid devices into business applications.

Python-based local customisable open scripting allows customers to use the in-home processing capability of the gateway to offer services to the end user. The gateways also include protocol support for UDP/TCP, DHCP and SNMPv1.

[www.digi.com](http://www.digi.com)

## Processor pushes power even lower

Silicon Labs' 25MHz C8051F91x/0x microcontrollers sport active-mode current consumption of 4µA, or 160mA/MHz, at full speed and 1.8 or 3.3V operation.

They also support a sleep mode with a current draw as low as 10nA while maintaining full RAM retention. The current draw is 300 nA with active real-time clock and brownout detection.

This level of power consumption allows the microcontrollers to target smart meters, RFID tags, personal

medical devices, sensor interfaces, energy harvesting, home-security systems, and smoke and fire detector designs.

The F91x/0x devices can fully wake up from sleep in less than 2µs.

The devices support 8 and 16kbyte flash-memory options as well as a 12-bit ADC that includes an autonomous power-saving burst mode with a 16-bit automatic averaging accumulator that allows sampling without waking up the processor core.

An integrated dc/dc converter supports operation to as low as 0.9V to enable operation with AA or AAA batteries, and all of the on-chip peripherals and flash are fully operational down to 0.9V.

The dc/dc converter can supply as much as 65mW of output power to drive system components, such as LEDs, RF transceivers, and sensors.

[www.silabs.com](http://www.silabs.com)

## Low-pin-count flash MCUs use less active power

Renesas Technology has cut the active power consumption of its low-pin-count flash MCUs.

The first products in the R8C/Mx series will be the R8C/M11A, with a 14-pin package, and the R8C/M12A, with a 20-pin package.

The active current consumption is only 150µA per 1MHz – a reduction of approximately 60% from the 350µA per 1MHz of comparable earlier Renesas Technology products.

The standby current is less than 1µA – approximately half that of earlier Renesas Technology products.

The MCUs have on-chip timers and comparators, which are useful in battery-powered design applications requiring sensor detection and control functionality.

The R8C/Mx has up to six A/D converters with 2.15µs conversion time and two result registers. Two quick comparators at 100ns have compare output functions and can easily be connected to the 16-bit timers. This makes it possible to handle in-hardware processing previously done by the CPU using software, for example, using a comparator for direct control of a timer based on sensor input.

Bypassing the CPU in this way increases flexibility and improves real-time performance.

Three 16-bit on-chip timers support three-phase pulse output, simplifying motor control.

Sample shipments are scheduled to begin next month.

[www.renesas.com](http://www.renesas.com)

