ARM-based MPUs Help Accelerate Industrial Designs

Developers looking to ease and accelerate their industrial automation designs can now benefit from the industry's first ARM® Cortex-A8 system solution with multiple integrated industrial communication protocols, offered by Texas Instruments. The Sitara AM335x ARM Cortex-A8 microprocessors, launched last month, deliver power dissipation levels below 7 mW, along with two industrial automation hardware development tools, complete software and analog signal chain complement to provide a total industrial automation system solution. Using this solution, developers can get to market faster with industrial automation designs, including input/output (I/O) devices, human machine interfaces (HMIs) and programmable logic controllers (PLCs).

On-chip industrial peripherals and communication protocols offer 30 percent BOM reduction

Perfect for industrial automation designs, the AM335x ARM Cortex-A8 microprocessors include a programmable real-time unit (PRU) on-chip interface to enable real-time industrial communications capability (master and slave) to support popular protocols, such as EtherCAT, Ethernet/IP, PROFIBUS, PROFINET®, POWERLINK and SERCOS III. This unique PRU + ARM architecture in the AM335x ARM microprocessors eliminates the need for an external ASIC or FPGA to reduce system complexity and save on bill of materials (BOM) costs by more than 30 percent. The AM335x ARM microprocessors also include other key, on-chip industrial peripherals — CAN, ADC, USB + PHY and two-port Gigabit Ethernet with IEEE1588 — to enable fast network connectivity and rapid data throughput, as well as connection to sensors, actuators and motor control.

One scalable platform for many different end equipments

Designers can take advantage of the pin-to-pin and software compatibility of the AM335x ARM Cortex-A8 microprocessors and design several end equipments with the devices that best fit their industrial automation need, such as:

Drives and I/O-level devices: Specifically targeted to enable sensors, actuators, motor drives, communications modules and gateways needing industrial slave communications, the AM3356 and AM3357 ARM microprocessors offer a low-performance 275 MHz solution. These two devices do not require an external memory or an operating system making the system solution simple and compact.

Industrial PLC applications: Offering high performance of up to 720 MHz, the AM3356 and AM3357 ARM microprocessors are well suited for high-performance PLC applications that need to control various I/O devices in an automation system such as electric motors, pneumatic or hydraulic cylinders, magnetic relays solenoids

and more.

HMI products: Ideal for designing HMI products, the AM3354, AM3358 and AM3359 ARM microprocessors offer an on-chip 3D graphics accelerator, which combined with the integrated touch screen controller, enables rich and intuitive graphical user touch screen interfaces. For HMI applications not requiring integrated industrial communications, the AM3354 and AM3352 and ARM microprocessors offer lower cost options.

Get to market quickly with two industrial development tools and complete software

Accompanying the AM335x ARM microprocessors are two industrial hardware development tools to enable customers to easily incorporate industrial communication standards in their industrial automation designs:

AM3359 Industrial development kit (IDK) from TI is an extensive development tool enabling customers to evaluate all popular industrial communications and motor control applications. The AM3359 IDK has many different evaluation features such as 512 MB of DDR2 memory, dual motor drivers, digital I/O, a C2000™ Piccolo microcontroller with integrated analog to digital converters, a Stellaris® ARM Cortex-M3 microcontroller, USB, Ethernet, SPI, I2C and much more. The AM3359 IDK is $895 and available for order today.

AM3359 Industrial communications engine (ICE) from TI is a pocket-sized, cost-optimized and form-factor optimized hardware tool for I/O devices and sensors needing to add industrial communications quickly and easily. The AM3359 ICE is $99 and available for order today.

Designers can also utilize the AM335x evaluation module for $995 to begin development. Further easing development is a software development kit (SDK) with free, production-ready, certified software for industrial automation, supporting Linux, Android and Windows Embedded Compact 7 for high-end applications. For low-end applications, the SDK contains the ultra-compact, real-time SYS/BIOS operating system. The SDK also includes support for popular industrial communications protocols, industrial automation design demos, applications notes and videos.

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