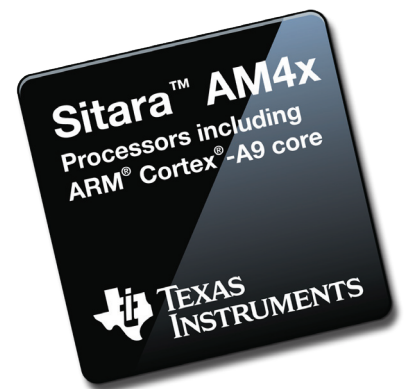# Sitara™ AM4x processor with ARM® Cortex®-A9 core

In today's industrial automation market, new technology brings many opportunities for industrial system developers to successfully address ever-evolving challenges. With applications ranging from programmable logic controllers (PLCs) and industrial computers to human machine interface (HMI), industrial peripherals and factory communication, automation systems require cutting-edge technologies to meet stringent customer requirements for high reliability in mission-critical environments.

Texas Instruments Incorporated (TI) has a strategic commitment to the factory

automation industry, ranging from an extensive, reliable solution portfolio to a long product life supply as well as a strong local-based support. Industrial automation applications have been implemented using a variety of external components making yesterday's solutions very complex, expensive and resistant to evolution even though industry standards are changing.

Powering the next generation of industrial automation

Texas Instruments is committed to making development easier for customers with its scalable ARM® processor portfolio that ranges from low-power microcontrollers (MCUs) to

powerful multicore processors. With the introduction of the Sitara™ AM4x processors, we are excited to expand our portfolio beyond the currently available ARM® Cortex®-A8 to include Cortex-A9 cores.
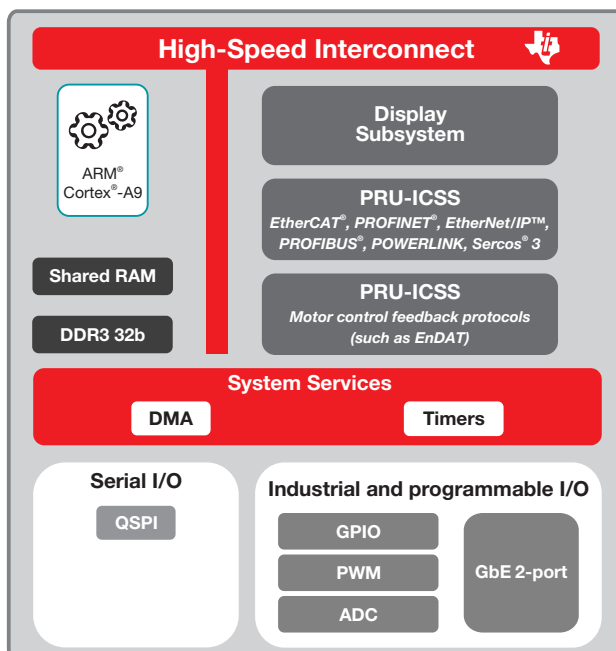
The Sitara AM4x processors from Texas Instruments, including an ARM Cortex-A9 core, are the high-performance successors to the popular Sitara AM335x ARM Cortex-A8 platform that help industrial system developers successfully address ever-evolving challenges by providing a single-chip controller. The Sitara AM4x processors run at 1GHz and feature a new generation of Programmable Real Time Unit (PRU) Subsystems that enables simultaneous industrial Ethernet protocols and motor feed-back protocols, such as EnDAT. This platform is thus optimized for industrial drive applications, offering integrated industrial Ethernet communications, motor control peripherals, sigma-delta

AM4x block diagram

High-Speed Interconnect

ARM® Cortex®-A9

Display Subsystem

PRU-ICSS
EtherCAT®, PROFINET®, EtherNet/IP™, PROFIBUS®, POWERLINK, Sercos® 3

PRU-ICSS
Motor control feedback protocols (such as EnDAT)

Shared RAM

DDR3 32b

System Services
DMA   Timers

Serial I/O
QSPI

Industrial and programmable I/O
GPIO
PWM
ADC
GbE 2-port

Sitara™ Processor Family
Spanning Cortex®-A8 to dual-core Cortex-A15

	AM335x	AM4x	AM5x
Core	Cortex-A8 up to 1GHz	Cortex-A9 up to 1GHz	Dual Cortex-A15 up to 1.5GHz
DMIPs	Up to 2,000	Up to 2,500	Up to 10,500
Multimedia	3D	●	●
Memory	LPDDR1/DDR2/DDR3	LPDDR1/DDR2/DDR3	DDR3 with ECC
OS	Linux™/Android™/ StarterWare/RTOS	Linux/Android/ StarterWare/RTOS	Linux/Android/ StarterWare/RTOS
Key features	PRU-ICSS, Cryptography, Touchscreen Controller	2× PRU-ICSS, Display Subsystem, QSPI, GPIO, PWM, GbE 2-port	2× PRU-ICSS, Multimedia Acceleration, Display Subsystem, QSPI, PCIe, GPIO, PWM, GbE 2-port

modulator for current sensing, position feedback protocols and various fieldbus communication options on a single chip.

Sitara AM4x processors are specifically designed to address the latest challenges in connected drives used in industrial automation. For increased automation, more and more drives are connected using real-time industrial communications such as EtherCAT®, PROFINET® and EtherNet/IP™ to PLC and HMI systems. There is also an increasing trend towards newer standards such as EnDAT2.2 for precise position feedback and high-performance position control and developers are looking for all these new features to

have a smaller footprint and lower power consumption.

Robust software eases development

As TI continues to invest in its powerful Industrial Software Development Kit (SDK), customers continue to reap the benefits. By adding PROFINET RT and EtherNet/IP to the currently supported PROFIBUS® and EtherCAT protocols, TI shows its commitment to supporting multiple protocols on a single device with an integrated on-chip PRU, making industrial automation easy and affordable for original equipment manufacturers (OEMs). The Industrial SDK supports all Sitara processors using A-series cores (including AM335x

and AM5x processors) and by extending this software to the AM4x product line, OEMs will have the same access to production-ready software to accelerate time to market of their industrial automation designs, including programmable logic controllers (PLCs) and I/O devices such as sensors and drives. Advancement of this industrial SDK furthers TI's unmatched commitment to simplifying product development.

Getting to market faster with system solutions

TI offers the ability to complete an entire industrial system design with TI analog ICs, including industrial Ethernet and isolated CAN transceivers, motor drivers, temperature sensors and power management devices, plus wireless connectivity and microcontroller options to complement the AM4x processors. With easy-to-use development platforms and ecosystem software support, Texas Instruments offers the entire industrial automation solution.

Additional information

For more information including selection guides, datasheets and application notes, please visit **www.ti.com/automation**.

IMPORTANT NOTICE

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