

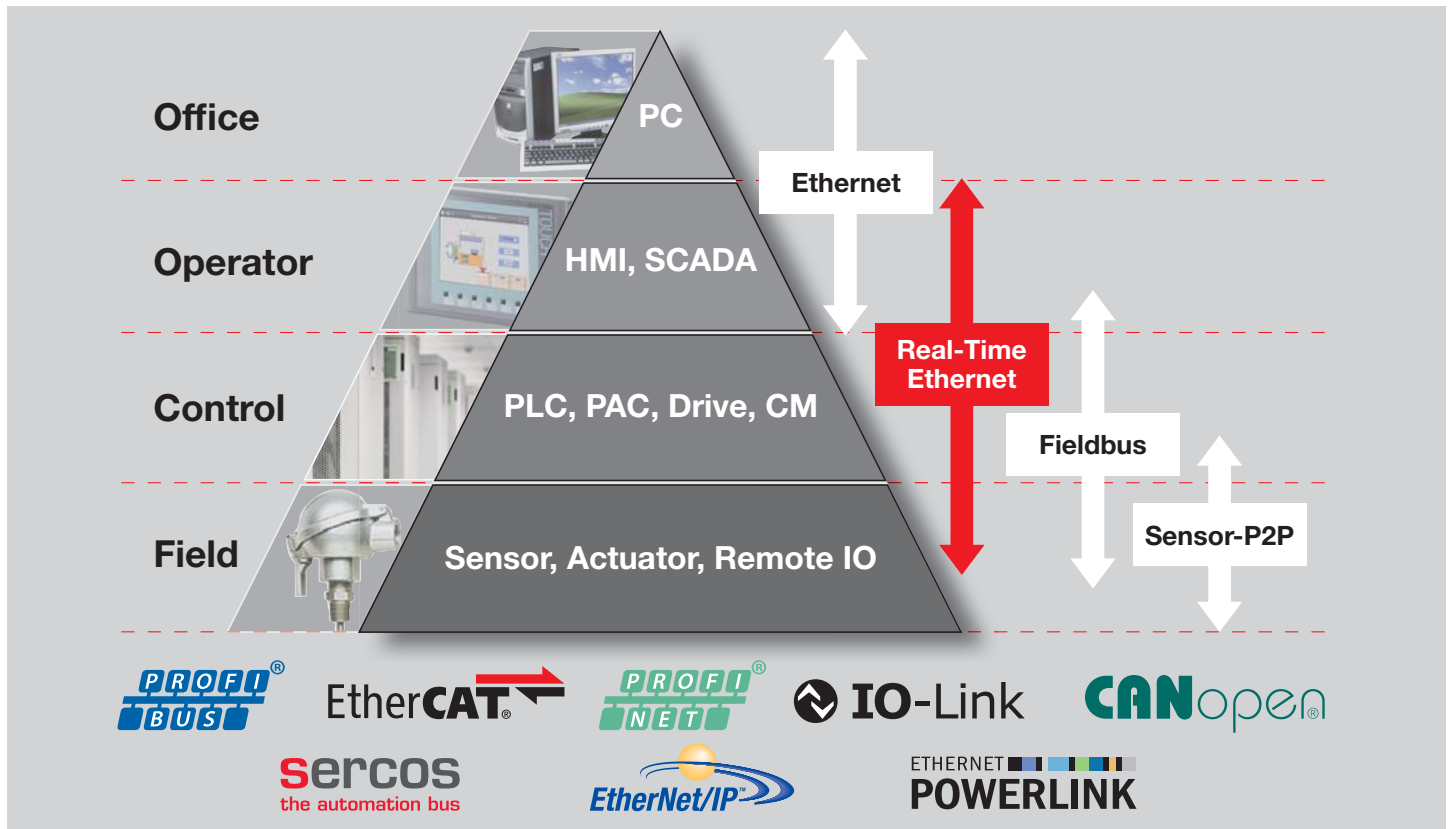
# Industrial Automation Solutions

## Industrial Communication

TI's Industrial Communication solutions speed the design cycle with the right devices, software, tools and support.



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 and industrial computers to human machine interface, industrial peripherals and factory communication, automation systems require cutting-edge technologies to meet stringent customer requirements for high reliability and harsh environment in mission-critical environments.



### TI = Industrial Automation

Texas Instruments 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.

- Strong portfolio with industrial feature set
  - Reliable and dedicated portfolio for Harsh Environment
  - Long product life supply policy

- Leading edge technology
- Flexibility and future proof
- Safety relevant solutions (IEC61508, SIL)
- Energy efficiency
- Dedicated system solutions
- Development tools
- Close partnership with the industrial eco-system

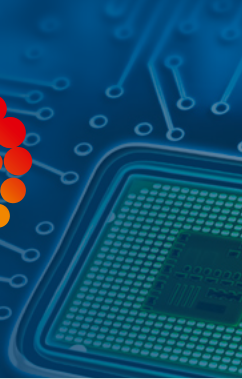


2H 2011

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Industrial automation applications have been implemented using a variety of external components making yesterday's solutions very complex, expensive and not flexible to evolve as standards also evolve.

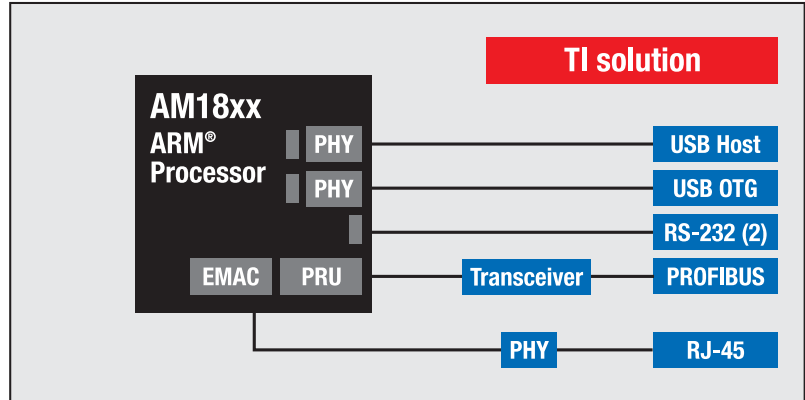
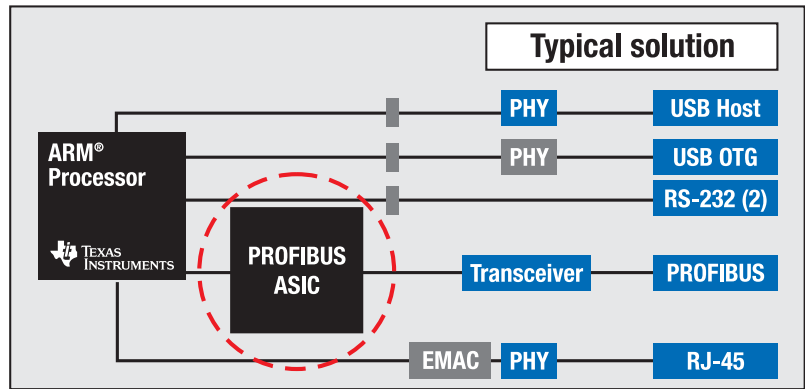
Texas Instruments has integrated several of these needed components into a fully programmable System-on-Chip (SoC). The AM18xx MPU provides an ARM9™ with up to 456 MHz with integrated peripherals such as USB and PHY, Ethernet MAC and a Programmable Real Time Unit.

**Today's Solution:**

- System-level cost reduction by >30%
- Flexibility to support several standards
- Easily adapt to changing standards

A typical solution available today has architecture similar to the illustration. In such solutions, a microprocessor implements the industrial application and a separate ASIC or FPGA performs the PROFIBUS protocol implementation, and an RS-485 transceiver provides the connection to the physical layer. The PROFIBUS device connects to the microprocessor over a parallel or serial interface. At the physical layer, an RS-485 transceiver with galvanic isolation is required.

Texas Instruments Inc. (TI) has integrated PROFIBUS functionality into its AM1810 Sitara™ ARM® Cortex™-A8 microprocessor (MPU). The solution connects directly to the RS-485 transceiver and therefore eliminates



Systems simplified to illustrate deltas.

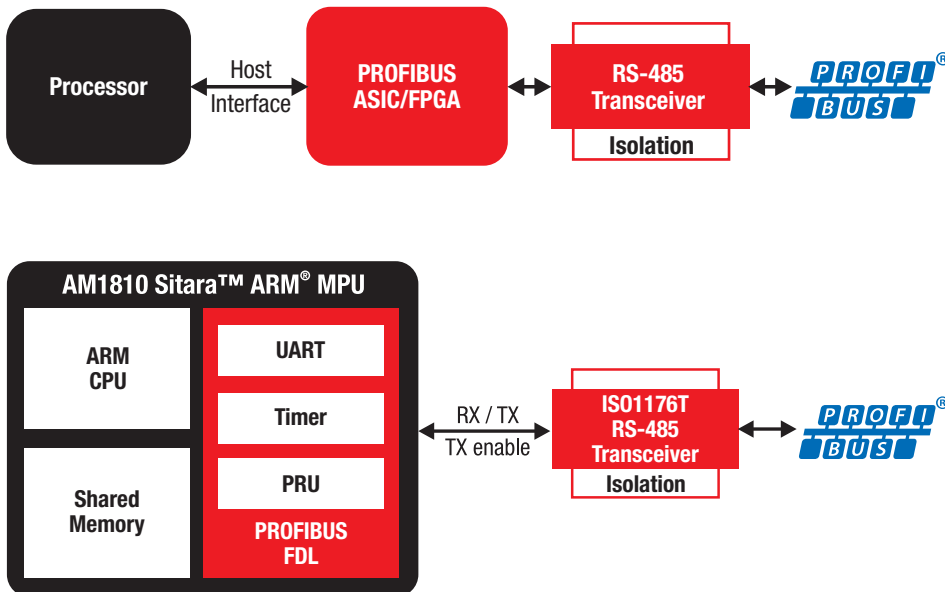
*Industrial communication solution*

the need of an external PROFIBUS ASIC or FPGA. Customers using the AM1810 Sitara ARM MPU in their industrial application can save cost and reduce design complexity as well as PCB space. Furthermore, the

industrial application benefits from the low-power architecture of the Sitara ARM MPU platform from TI.

The AM1810 Sitara ARM MPU PROFIBUS Slave solution has been certified by PROFIBUS International (PI) with a transmission rate of up to 12MBaud.

The PROFIBUS real-time frame handler (Fieldbus Data Link or FDL) is encapsulated in the Programmable Real-Time Unit Subsystem (PRUSS), which is part of the AM1810 Sitara ARM MPU on-chip peripherals. The PRUSS uses one Universal Asynchronous Receiver/Transmitter (UART) and a timer to generate PROFIBUS-compliant frames. The industrial application and the PROFIBUS DP-Protocol (Layer 7) are operated on the ARM. The solution can be completed with an RS-485 transceiver suitable for harsh environments, such as TI's ISO1176T or ISO1176.



AM1810 Sitara ARM MPU PROFIBUS solution

# Industrial Automation Solutions

## Industrial Communication portfolio at a glance

### High-Performance Analog Solutions

Description	Device	Key Benefits
5kVrms Isolated CAN Transceiver	ISO1050	
Low-Power Dual-Channel Digital Isolator	ISO7420E/FE	
Isolated RS-485 (PROFIBUS) Transceiver (ISO1176T with Integrated Transformer Driver)	ISO1176/1176T	
Industrial Ethernet PHY	TLK100	

### Embedded Processing Solutions

Description	Device	Key Benefits
Sitara™ ARM9™ and ARM® Cortex™-A8 Microprocessors (MPUs)	AM18x, AM35x, AM37x, AM389x	
Stellaris® ARM® Cortex™-M3-Based MCUs	LM3S9x	
MSP430™ 16-Bit Ultra-Low-Power Microcontroller, 256-KB Flash, 16KB RAM, LCD, USB	MSP430F663x	
TMS570 ARM Cortex™-R4F-Based Microcontroller for Safety-Critical Applications up to 160 MHz and 2 MB Flash	TMS570LS2x, TMS570LS1x	

### Power Solutions

Description	Device	Key Benefits
Isolated Flyback Regulator (See app. note SLYT323)	TPS61175	
Power Management Unit with Battery Charger	TPS65070	
Power Management Unit	TPS65023	
3.1- to 17-V Input, 1.5-A DC/DC Converter	TPS62110	
Power over Ethernet (PoE) Interface and Isolated DC/DC Controller	TPS23753A	

For more information including selection guides, datasheets and application notes please visit [www.ti.com](http://www.ti.com)

# TI Worldwide Technical Support

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### TI E2E™ Community Home Page

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Korea 080-551-2804  
Malaysia 1-800-80-3973  
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