

Freescale and Indesign join forces to develop a secure industrial point-of-sale platform

Comprehensive reference design based on open-source software and Freescale 8- and 32-bit microcontrollers

AUSTIN, Texas – Jan. 31, 2007 – Freescale Semiconductor and Indesign, LLC, a Freescale Design Alliance Partner, have joined forces to develop a secure point-of-sale (POS) reference design for industrial control applications. Based on Freescale microcontroller (MCU) technology and open-source software, the POS reference design is designed to provide a fully functional, cost-effective solution that addresses the design challenges of secure connectivity, human/machine interface and open-source software development.

The POS reference design demonstrates how the control, security and connectivity capabilities of Freescale's 32-bit MCF5329 ColdFire® MCU and 8-bit MCS908QG8 MCU work together to help the designer create a secure industrial point-of-sale solution. Offered with an open-source embedded uLinux software solution, the POS reference design targets industrial system designs that require flexible connectivity options, secure communication and a straightforward human interface with a fast development cycle and cost-effective approach.

“Successful industrial point-of-sale solutions require elegant, cost-effective integration of complex technologies, from hardware encryption to industry-standard connectivity to intuitive user interfaces,” said Mike McCourt, vice president and general manager of Freescale's Microcontroller Division. “Freescale offers the advanced microcontrollers and Indesign has the engineering design excellence to deliver a POS reference design that meets the exacting requirements of the industrial market.”

Indesign provides comprehensive engineering design services for embedded electronic products and systems. These services include electrical circuit design, software/firmware design, mechanical design, testing/validation services, project management and a host of other services dedicated to the development of electronic products and solutions. Indesign developed the hardware and mechanical platform for the industrial POS reference design. Freescale partnered with Indesign to leverage the company's expertise in hardware design to help ensure that the industrial POS system meets the specific security and operational requirements of typical industrial POS applications

“The POS reference design serves as an excellent starting point for developing a custom solution for many industrial point-of-sale applications,” said Jerry Gotway, president and CEO of Indesign. “Some developers will have the expertise to customize the POS reference design on their own. For those that need help, Indesign engineers already have experience working with Freescale on this design and can easily modify the design to meet most any requirements.”

Dual microcontroller solution

The foundation of the jointly developed industrial POS reference design is a combination of two Freescale MCUs optimized for industrial control. The ColdFire MCF5329 MCU serves as the host processor in the industrial POS system and is the first in a series of ColdFire devices to feature an on-chip LCD controller in addition to several connectivity peripherals including USB host and USB on-the-go. The 8-bit 9S08QG8 MCU stores data used by the MCF5329 to enable a secure POS system. It also features an enhanced 8-channel, 10-bit analog-to-digital converter (ADC), which is used to provide audio support for the industrial POS system.

Open source software

Software designers constantly face the challenge of developing robust, cost-effective software solutions. Increasingly, designers are turning to open-source development tools to address the demand for lower cost software solutions. Recognizing this trend, Freescale has focused the software implementation of the industrial POS reference design on open-source software solutions, including the uCLinux operating system (OS).

The Freescale Linux Board Support Package (BSP) for the MCF5329 serves as the primary open source development tool for the industrial POS reference design. The BSP contains the uCLinux OS, which is used to process information from different input mechanisms, refresh the graphical user interface (GUI) on the LCD screen, maintain communication between Freescale MCUs and communicate with a transaction database via Ethernet. The GUI is developed using NanoX, an open-source GUI configuration tool that is available in the Freescale Linux BSP for the MCF5329. The uCLinux environment also supports access to the remote server containing the MySQL transaction database. The Freescale Linux BSP for the MCF5329, associated drivers and related software applications are available as a reference to assist with open-source software development on ColdFire devices.

Key features of the industrial POS reference design

- An 800x600 SVGA LCD panel driven by the MCF5329 MCU
- Support for four data input mechanisms including:
 - Smart card reader enabled by the MCF5329 USB modules
 - Bar code scanner enabled by the MCF5329 USB modules
 - Magnetic card reader enabled by the MCF5329 USB modules
 - Key pad enabled by GPIO signals on the MCF5329
- Secure, networked transactions via integrated Ethernet and hardware encryption on the MCF5329
- Audio support driven by the MC9S08QG8 on-chip timer signals
- Volume control via the integrated ADC on the MC9S08QG8
- Secure access to external memory enabled by the internal flash on the

MC9S08QG8

- Open-source software solutions including:
 - The Freescale Linux Board Support Package (BSP) for the MCF5329 which contains the uCLinux OS
 - Intuitive GUI enabled by the NanoX GUI Configuration Tool available in the Freescale Linux BSP for the MCF5329
 - MySQL Server Database used to store and access sales transactions
- Bootloader developed using CodeWarrior® Development Studio for ColdFire® architectures

Information and availability

Information on the industrial POS reference design including documentation, design resources and source code is available at <http://www.freescale.com/files/pr/rdmcf5329pos.html>.

Prototypes of the industrial POS system also are available. To arrange a prototype demonstration, please contact local Freescale sales representatives.

About Indesign

Indesign, LLC, provides engineering design services for embedded electronic products and systems. These services include electrical circuit design, software/firmware design, mechanical design, testing/validation services, project management and a host of other services dedicated to the development of electronic products and solutions.

About Freescale Semiconductor

Freescale Semiconductor, Inc. is a global leader in the design and manufacture of embedded semiconductors for the automotive, consumer, industrial, networking and wireless markets. The privately held company is based in Austin, Texas, and has design, research and development, manufacturing or sales operations in more than 30 countries. Freescale is one of the world's largest semiconductor companies with sales of \$6.2 billion (USD) for the most recently reported four quarters. www.freescale.com