



TWR-MPC8309 Industrial Networking Development Platform

PowerQUICC processor with industrial connectivity and protocol offload engine

Target Applications

- Programmable logic controllers
- Process automation controllers
- Gateways, bridges and hubs
- Intelligent I/O and drives
- Operator interface terminals
- Test and measurement
- Robotics

Overview

The MPC8309 PowerQUICC II Pro processor is a sub-\$8 (USD MSRP) solution that is ideal for factory automation and entry-level networking applications. Utilizing the TWR-MPC8309 module in the Freescale Tower System rapid prototyping platform provides a cost-effective approach to evaluate and demonstrate the MPC8309 processor in a variety of industrial applications.

The versatile MPC8309 processor delivers up to 835 DMIPS of processing power at less than 1.6W and features 233 MHz QUICC Engine technology for protocol offloading. Freescale's QUICC Engine technology can support a wide range of Ethernet- and fieldbus-based industrial networking protocols, virtually eliminating the need for an expensive FPGA/ASIC, thereby reducing design complexity and system bill of material (BOM) cost while leaving the CPU available for application processing.

A wide range of industrial protocols and SIL3 real-time operating systems have been ported to the TWR-MPC8309 development platform to enable quick evaluation of complete MPC8309 industrial solutions. The cost-effective TWR-MPC8309-KIT Tower System kit with optional Tower peripheral modules supports a wide range of industrial applications, including factory automation, building automation and protocol bridging—helping to reduce product design time and accelerating time to market.

The TWR-MPC8309 processor module supports multiple usage scenarios including a stand-alone industrial development board, a system-on-module (SoM) utilizing a single right angle PCIe connector to interface to the main board or as a rapid-prototyping Tower System development platform. Two peripheral modules have been developed specifically for use with the TWR-MPC8309 processor module. The MPC830x-TLCD module directly attaches to the TWR-MPC8309 module to add a 3.2" QVGA color LCD touch screen and 12-key capacitive touch pad, providing

a fully contained development platform and eliminating the need for a host PC. The TWR-INDCTRL module provides a superset of TWR-SER features, including a third 10/100 Ethernet, four CAN, two SPI, one I²C and four motor control ports. The TWR-INDCTRL module is compatible with LEGO[®] MINDSTORMS[®] motor and sensors for rapid development of robotics demonstrations.

Freescale's cost-effective MPC8309 PowerQUICC II Pro processor delivers a superb price/performance blend as well as the flexibility and scalability to run a variety of industrial applications.

TWR-MPC8309-KIT



Figure 1. The TWR-MPC8309-KIT made up of the TWR-MPC8309, TWR-INDCTRL and TWR-ELEV modules. Mounted on the TWR-MPC8309-KIT is the optional MPC830x-TLCD module.

Ready-to-Use Design

The TWR-MPC8309, TWR-INDCTRL and MPC830x-TLCD modules can be ordered directly from **freescale.com** or an authorized Freescale distributor. The modules include a fully tested board, BSP software, documentation and complete board database.

Key Features

- MPC8309 PowerQUICC II Pro processor
 - 835 DMIPS, sub-1.6W operation
 - 417 MHz e300c processor, built on Power Architecture® technology
 - 233 MHz QUICC Engine technology
 - 16 KB L1 instruction cache and 16 KB L1 data cache
 - DDR2 controller (32/16-bit with ECC support)
 - 3x 10/100 Base-T Ethernet
 - 4x CAN 2.0B
 - PCI 2.3, USB 2.0, SD/SDIO, I²C, SPI, DUART
- Configurations
 - Stand-alone RDB development board
 - SoM over primary elevator connector
 - Rapid prototyping with Tower System peripheral modules
- Memory
 - 128 MB DDR2 memory
 - 32 MB NOR flash memory
- Connectivity and features
 - Freescale silicon, including a 32-bit MCU, digital accelerometer and audio CODEC
 - Dual RJ45 Ethernet ports
 - Dual RS485 fieldbus ports
 - IEEE® 1588 with VCXO fine granularity clock tuning
 - RS232 port

Get to Know the TWR-MPC8309

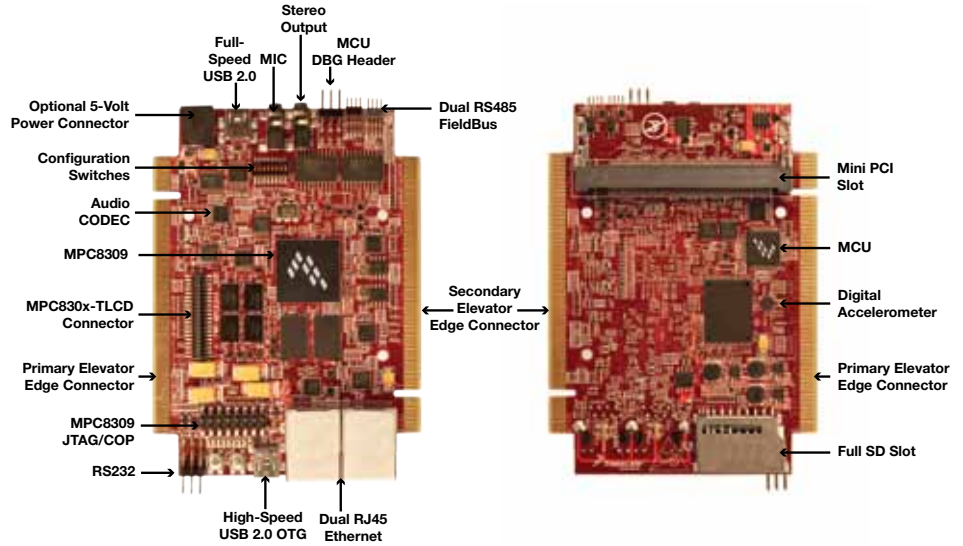


Figure 2. TWR-MPC8309 processor module showing connectivity support

- High-Speed USB 2.0 OTG port
 - Host: Expansion through external hub (e.g. 3G/4G, ZigBee®, Wi-Fi®, NAS, keyboard, mouse)
 - Device to external USB host system (board power source)
- Stereo audio and microphone jack for audio interface
- Full-size SD/SDIO expansion port (e.g. storage, Wi-Fi, Bluetooth®, GPS, camera)
- Mini PCI expansion port (e.g. 802.11n Wi-Fi)
- Debug interfaces
 - Full-Speed USB 2.0 (board power source, console)
 - JTAG/COP debug header
- Package/expansion
 - Connector supporting MPC830x-TLCD: 3.2" QVGA LCD touch screen with 12-key capacitive touch pad
 - Access to MPC8309 and MCU signals over primary elevator connector
- TWR-MPC8309-KIT, including TWR-MPC8309, TWR-INDCTRL and TWR-ELEV modules
- Linux® and MQX™ BSP software included
- Reference design (schematics, layout and BOM available)
- Printed quick start guide and DVD with software and documentation

- Certification: FCC class B and CE

Package Options

Part Number	Price (\$USD Suggested Resale)
TWR-MPC8309	\$199
TWR-INDCTRL	\$129
MPC830x-TLCD	\$99
TWR-MPC8309-KIT*	\$349

*TWR-MPC8309-KIT = TWR-MPC8309 + TWR-INDCTRL + TWR-ELEV

To learn more, please visit freescale.com/MPC830x-TLCD, freescale.com/TWR-MPC8309 or freescale.com/Tower

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