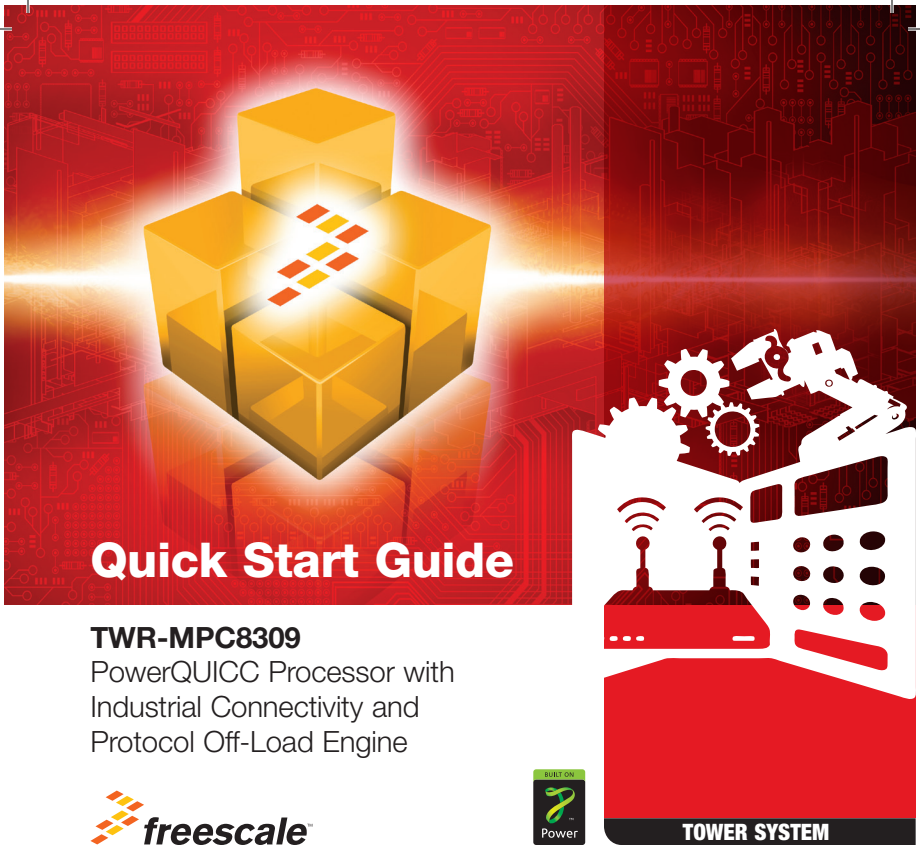

TWR-MPC8309

PowerQUICC Processor with Industrial Connectivity and Protocol Off-Load Engine

freescale

BUILT ON Power

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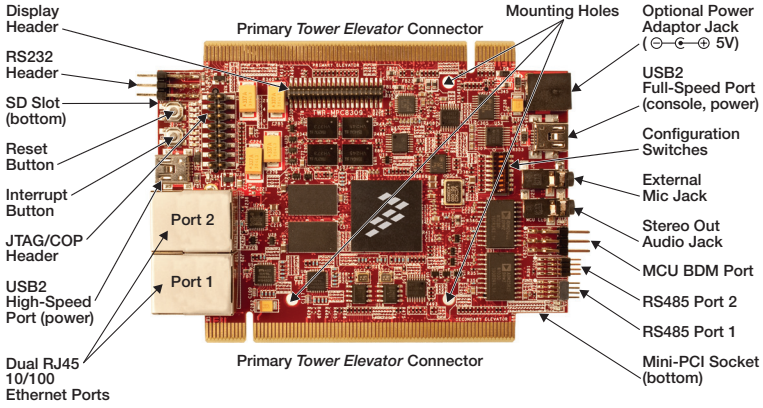
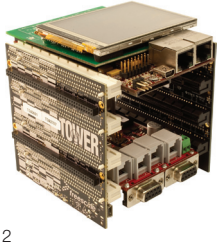
Get to Know the TWR-MPC8309





TWR-MPC8309
Freescale Tower System

The TWR-MPC8309 module is part of the Freescale Tower System portfolio, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Elevate your design to the next level with this industrial power house by building your Tower System today.

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TWR-MPC8309

The TWR-MPC8309 processor module can be operated as a stand-alone single board computer (SBC), a primary elevator connected system-on-module (SoM) or a Tower System rapid prototyping development platform. Freescale's MQX™ software support enables applications to quickly migrate from Freescale microcontrollers up to the high-performance MPC8309 processor featuring industrial connectivity and a protocol off-load engine which eliminates the need for an external industrial protocol FPGA/ASIC in the system.

Pre-Loaded Software

- U-Boot bootloader
- Freescale Linux® OS with real-time patches
- Freescale MQX real-time OS
- MPC8309 MCU control interface API
- Diagnostic routines to validate board functionality

Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the TWR-MPC8309 module and run the included demonstration software. For more detailed information, please see the user manual found on the included DVD or at **freescale.com/TWR-MPC8309**.

1 Connect a Display (optional)

Purchase the MPC830x-TLCD display module to remove the need for a host computer. The display is driven with a 16-bit big-endian parallel interface.

2 Powering TWR-MPC8309

Connect the USB2 Full-Speed port to host computer USB port(s) using the provided USB cable to power the board, which also establishes a console connection to the host. Alternatively, power can be supplied over the USB2 High-Speed port or the TWR-ELEV connection. Finally, a power adaptor (not included) can supply power over the 5-volt (⊖—c—⊕) jack.

3 Configuring a Terminal Application for the Console

On-board circuitry has been provided to support a host computer console window over the USB2 Full-Speed port. Upon power-up, the host computer should recognize new hardware named TWR-MPC8309_VirtualCOM, which should be configured with the TWR-MPC8309_VirtualCOM.INF driver included on the DVD or available at **freescale.com/TWR-MPC8309**. Once the virtual COM port is configured, display the console using any terminal emulation application attached to the COM port with the following serial protocol settings: **Bits per Second: 115200, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None**. See the user manual for more details.

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4 View Informational Demo

Upon power-up, the board automatically boots the Freescale Linux OS running an informational demo showing a JPEG slideshow on a connected display or text files in the host computer console window. See the user manual for details on how to modify the demo contents.

5 Entering the Boot Configuration and Diagnostic Menus

The booting behavior can be changed by entering the boot configuration menus. With a host computer connected to the USB2 Full-Speed port (see step 3), hold down any key on the host computer while the board is booting. Select the desired boot configuration using the menus in the console window. Diagnostic routines have been included to verify the functionality of the board and can be run using the “diag” command in U-Boot. See the user manual for details.

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6 Connecting Cables

Dual Ethernet and RS485 ports enable point-to-point networking demos on a single TWR-MPC8309 module. Any Ethernet cable can be connected between the Ethernet ports and the ports will auto-configure for proper communication. Auto-configure also enables a direct connection from either Ethernet port to a host computer Ethernet port. An RS485 loopback cable has been included which can be connected between the two RS485 headers. Line up pin 1 marked with an arrow on the cable connector to the header pin 1 on both RS485 ports. All TWR-MPC8309 headers have pin 1 marked with a white dot printed on the board and increasing pin numbers proceeding top to bottom, right to left from pin 1 while looking into the header pins.

7 Debugger Interface Connections

Connect the desired debugger hardware to the standard JTAG/COP header lining up pin 1 with the OBSEL configure switch setting in the OFF position. TWR-MPC8309 includes on-board debugging circuitry to support an OSJTAG debugger library. To use OSJTAG connect the host computer to the USB2 Full-Speed port and set the OBSEL configure switch setting to the ON position.

8 Configuration Switch Settings

See configuration switch settings on the following page.

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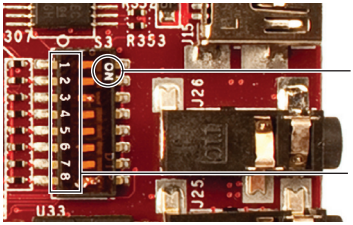
Configuration Switch Settings



SW[1]	Signals[2]	Settings[2]	Switch[3]	Description
1,2	UART_ SEL[0:1]	00	ON, ON	RS232 header (console)
		01	ON, OFF	Elevator UART1 (console) + elevator UART0
		10	OFF, ON	USB2 Full-Speed port (console)
		11	**OFF, OFF**	USB2 Full-Speed port (console) + elevator UART0
3	OBSEL	0	ON	USB2 Full-Speed port OSJTAG debugging
		1	**OFF**	JTAG/COP header debugging
4	RS485_EN1	0	ON	Disable RS485 port 1
		1	**OFF**	Enable RS485 port 1
5	RS485_EN2	0	ON	Disable RS485 port 2
		1	**OFF**	Enable RS485 port 2
6, 7	SW[0:1]	00	**ON, ON**	Software configuration bits (default software behavior)
		Any	Any	Specific settings for a given software application
8	OB_BOOT	0	**ON**	Boot from on-board NOR flash
		1	OFF	Boot from elevator (see user manual)

1) Switch positions as printed on the switch
2) Schematic signal settings readable from software from MSB (top-left as bit 0) to LSB (bottom-right as bit 7)
3) Switch settings as printed on the switch, factory settings highlighted red

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Visit **freescale.com/TWR-MPC8309** for the latest information on the TWR-MPC8309 module, including:

- Board database: schematics, layout and BOM
- User manual
- Quick start guide
- Software BSPs, industrial protocol evaluation stacks and CodeWarrior
- Demos and tutorial
- Fact sheet

Support

Visit **freescale.com/support** for a list of phone numbers within your region.

Warranty

Visit **freescale.com/warranty** for complete warranty information.

For more information, visit freescale.com/Tower

Join the online Tower community at towergeeks.org

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