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Quick Start Guide

TWR-K60D100M

Low-Power MCU with USB, Ethernet and Encryption

freescale™

TOWER SYSTEM

Get to Know the TWR-K60D100M

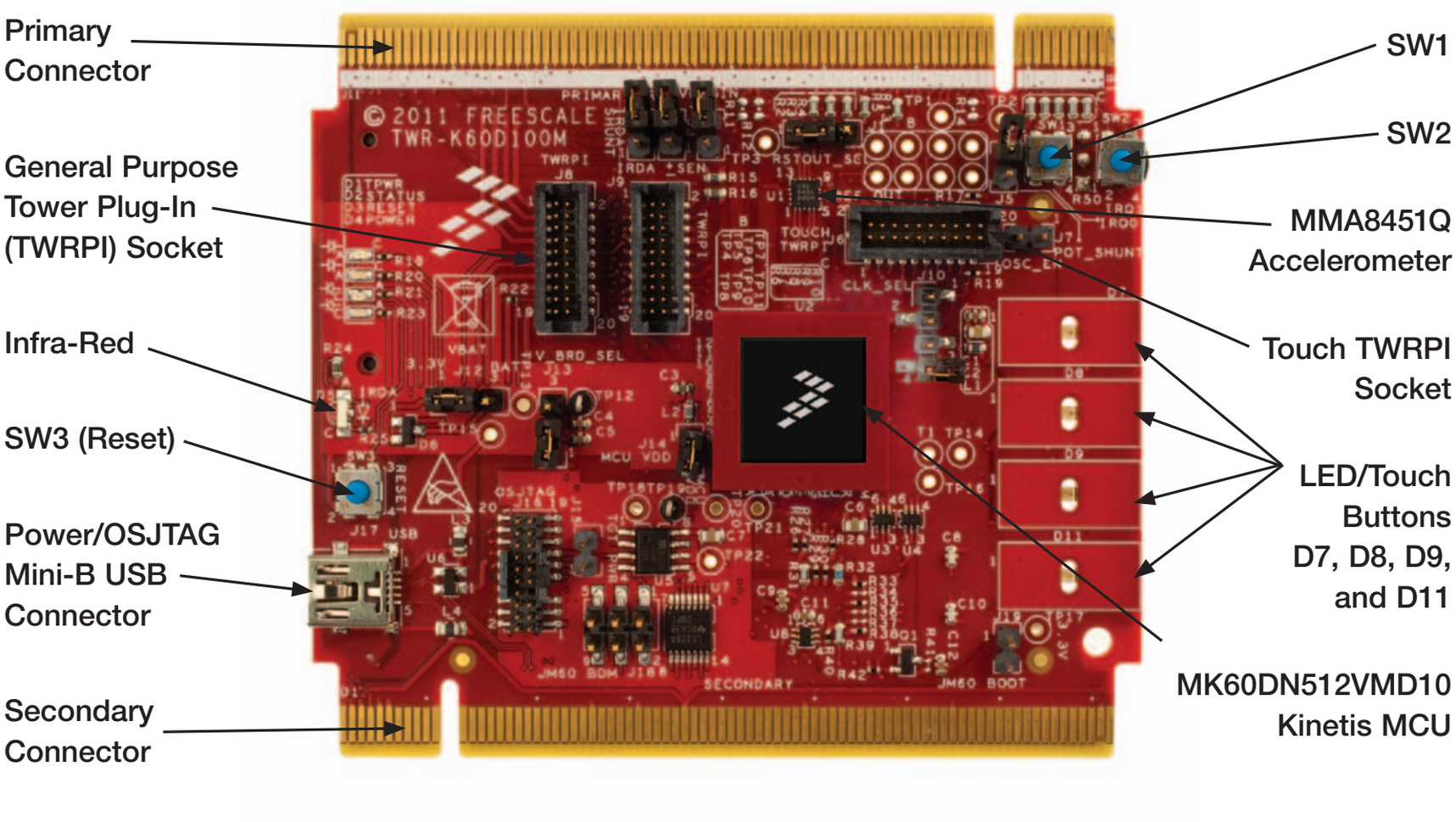

Figure 1: Front side of TWR-K60D100M module.

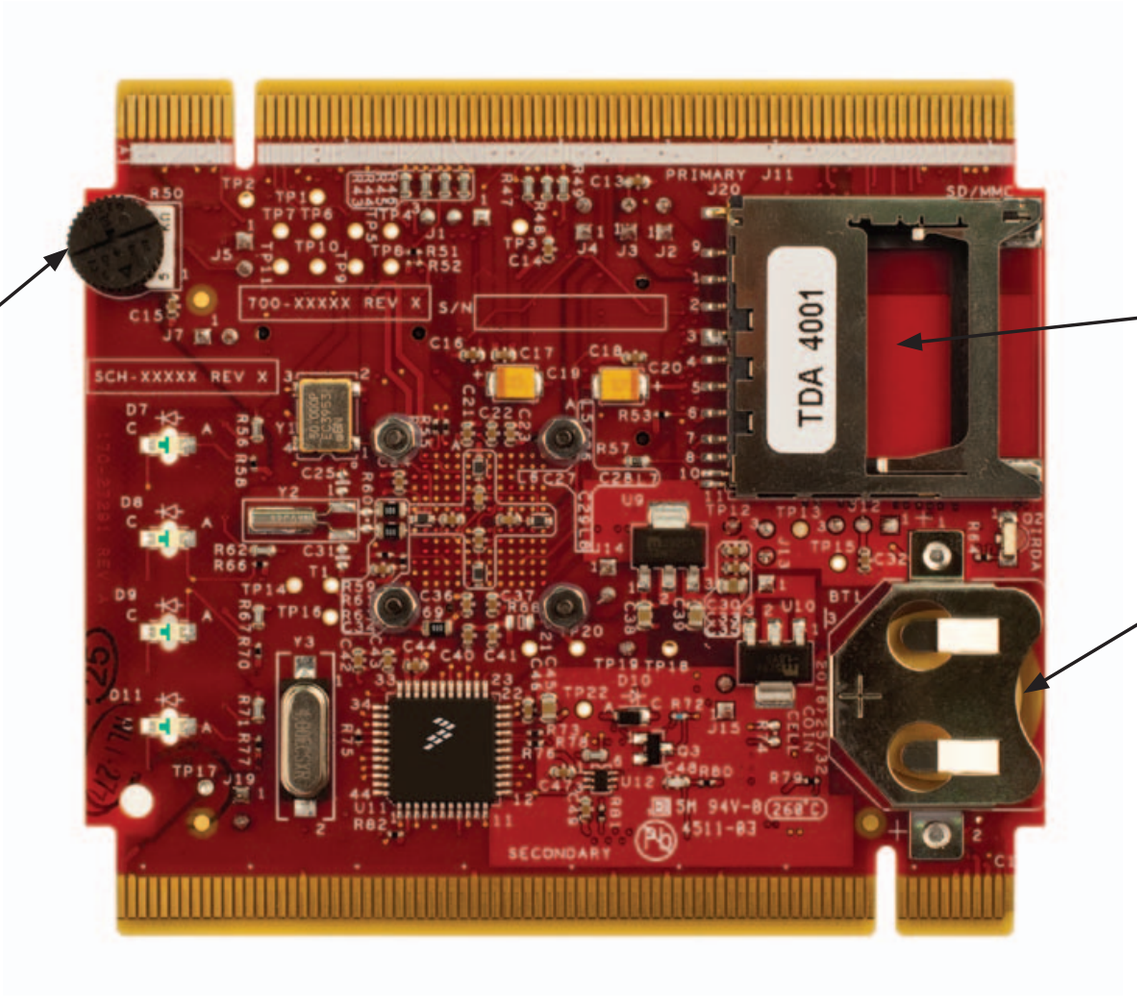

Figure 2: Back side of TWR-K60D100M module.

TWR-K60D100M

Freescale Tower System

The TWR-K60D100M module is part of the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. The TWR-K60D100M can be used with a broad selection of Tower System peripheral modules.

TWR-K60D100M Features

- MK60DN512VMD10 MCU (100 MHz ARM® Cortex™-M4 core, 512 KB flash, Ethernet, USB FS OTG, encryption, 144 MAPBGA)
- Integrated open source JTAG (OSJTAG) circuit
- MMA8451Q 3-axis accelerometer
- Four user-controlled status LEDs
- Four capacitive touch pads and two mechanical push buttons
- General-purpose TWRPI socket (Tower plug-in module)
- Potentiometer, SD card socket and coin-cell battery holder

Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the TWR-K60D100M module and run the default demonstration.

1 Install the Software and Tools

Install the P&E Micro Kinetis Tower toolkit. The toolkit includes the OSJTAG and USB-to-serial drivers. These can be found on line at **freescale.com/TWR-K60D100M**.

2 Configure the Hardware

Install the included battery into the VBAT (RTC) battery holder. Then, connect one end of the USB cable to the PC and the other end to the power/OSJTAG mini-B connector on the TWR-K60D100M module. Allow the PC to automatically configure the USB drivers if needed.

3 Tilt the Board

Tilt the board side to side to see the LEDs on D7, D8, D9 and D11 light up as it is tilted. While the board is held flat, touch the pads on D7, D8, D9, D11 to toggle the LEDs.

4 Play the Memory Game

Press SW2 to play a memory recall game using the touch pads D7, D8, D9 and D11. A sequence will light up, then press the touch pads in the order flashed. If an incorrect sequence is touched or too much time has elapsed, the LEDs will blink rapidly and the game will reset.

Press SW1 to return to the accelerometer demo.

5 Explore Further

Explore all of the features and capabilities of the pre-programmed demo by reviewing the lab document located at **freescale.com/TWR-K60D100M**.

6 Learn more about the Kinetis K60 MCUs

Find more MQX™ and bare-metal labs and software for the Kinetis K60 MCUs at **freescale.com/TWR-K60D100M**.

TWR-K60D100M Jumper Options

The following is a list of all jumper options. The default installed jumper settings are shown in white text within the red boxes.

Jumper	Option	Setting	Description
J13	V_BRD Voltage Selection	**1-2**	On-board power supply set to 3.3V
		2-3	On-board power supply set to 1.8V (Some on-board peripherals may not operate)
J14	MCU Power Connection	**ON**	Connect MCU to on-board power supply (V_BRD)
		OFF	Isolate MCU from power (Connect to ammeter to measure current)
J12	VBAT Power Selection	**1-2**	Connect VBAT to on-board power supply
		2-3	Connect VBAT to the higher voltage between on-board power supply or coin-cell supply

Jumper	Option	Setting	Description
J10	Clock Input Source Selection	**1-2**	Connect main EXTAL to on-board 50 MHz oscillator (Y1)
		2-3	Connect EXTAL to the CLKIN0 signal on the elevator connector
		3-4	Connect ENET_CLKIN to the CLKIN0 signal on the elevator connector
J19	OSJTAG Bootloader Selection	ON	OSJTAG bootloader mode (OSJTAG firmware reprogramming)
		OFF	Debugger mode
J15	JTAG Board Power Connection	ON	Connect on-board 5V supply to JTAG port (supports powering board from JTAG pod supporting 5V supply ouput)
		OFF	Disconnect on-board 5V supply from JTAG port
J2	IR Transmitter Connection	ON	Connect PTD7/CMT_IR0 to IR transmitter (D5)
		OFF	Disconnect PTD7/CMT_IR0 from IR transmitter (D5)
J3	IR Receiver Connection	ON	Connect PTC6/CMP0_IN0 to IR receiver (Q2)
		OFF	Disconnect PTC6/CMP0_IN0 from IR receiver (Q2)
J4	VREGIN Power Connection	**ON**	Connect USB0_VBUS from elevator to VREGIN
		OFF	Disconnect USB0_VBUS from elevator to VREGIN
J1	GPIO to Drive RSTOUT	**1-2**	PTE27 to drive RSTOUT
		2-3	PTB8 to drive RSTOUT
J5	Potentiometer Shunt	**ON**	Connect potentiometer to ADC
		OFF	Disconnect potentiometer (For lower power measurement)
J7	Oscillator Enable	ON	Disables 50 MHz oscillator (Y1)
		OFF	Enables 50 MHz oscillator (Y1)

Visit **freescale.com/TWR-K60D100M, freescale.com/K60** or **freescale.com/Kinetis** for information on the TWR-K60D100M module, including:

- TWR-K60D100M user guide
- TWR-K60D100M schematics
- Tower System 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

Doc Number: TWRK60D100MQSG REV 0
Agile Number: 926-78671 REV B