TWR-K40D100M
Quick Start Guide

Low-Power MCU with USB
and Segment LCD

Tower System
Development Board
Platform

Energy
Efficient Solutions
optimized for low power

Get to Know the TWR-K40D100M Board

Primary Connector

General-Purpose Tower Plug-In (TWRPI) Socket

Infra-Red

SW3 (Reset)

Power/OSJTAG Mini-B USB Connector

Secondary Connector

SW1

SW2

MMA8451Q Accelerometer

Touch TWRPI Socket

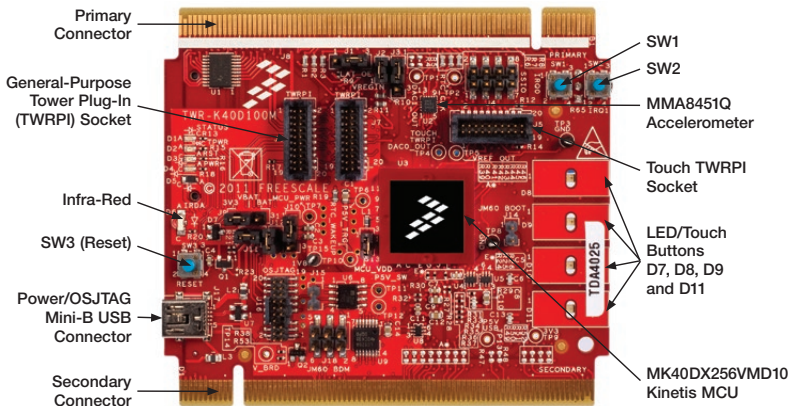LED/Touch Buttons D7, D8, D9 and D11

MK40DX256VMD10 Kinetis MCU

Figure 1: Front side of TWR-K40D100M board without Tower plug-in (TWRPI)

TWR-K40D100M Freescale Tower System Development Board Platform

The TWR-K40D100M board is part of the Freescale Tower System, a modular development board platform that enables rapid prototyping and tool re-use through reconfigurable hardware. The TWR-K40D100M can be used with a broad selection of Tower System peripheral boards.
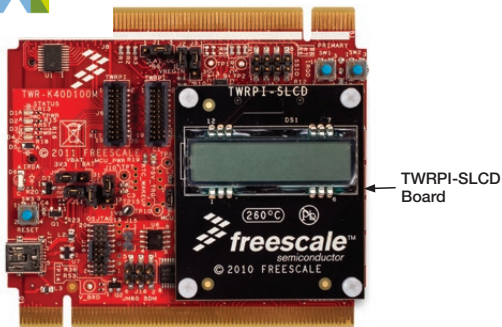
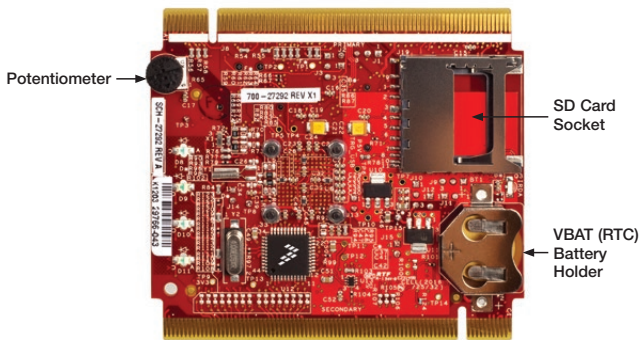Figure 2: Front side of TWR-K40D100M board with TWRPI-SLCD attached

Figure 3: Back side of TWR-K40D100M board

3

Guide

TWR-K40D100M Features

- MK40DX256VMD10 MCU (100 MHz ARM® Cortex®-M4 core, 512 KB flash, SLCD, USB FS OTG, 144 MAPBGA)

- Integrated open source JTAG (OSJTAG) circuit

- MMA8451Q 3-axis accelerometer

- Four user-controlled status LEDs

- Four capacitive touchpads and two mechanical pushbuttons

- 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-K40D100M 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 online at **freescale.com/TWR-K40D100M**.

2 Configure the Hardware

Install the included battery into the VBAT (RTC) battery holder. Then, plug the included segment LDC TWRPI-SLCD into the TWRPI socket. Finally, connect one end of the USB cable to the PC and the other end to the power/OSJTAG

mini-B connector on the TWR-K40D100M 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 D8, D9, D10 and D11 light up as it is tilted.

4 Navigate the Segment LDC

The segment LDC will display the seconds elapsed since boot-up. Press **SW2** to toggle between viewing the seconds, hours and minutes, potentiometer and temperature.

5 Explore Further

Explore all of the features and capabilities of the preprogrammed demo by reviewing the lab document located at **freescale.com/TWR-K40D100M**.

6 Learn More About Kinetis K40 MCUs

Find more MQX™ RTOS and bare-metal labs and software for the Kinetis 40 MCUs at **freescale.com/TWR-K40D100M**.

TWR-K40D100M Jumper Options

The following is a list of all jumper options. The default installed jumper settings are shown in shaded boxes.

Jumper	Option	Setting	Description
J10	V_BRD Voltage Selection	**1-2**	Onboard power supply set to 3.3 V
		2-3	Onboard power supply set to 1.8 V (Some onboard peripherals may not operate)
J13	MCU Power Connection	**ON**	Connect MCU to onboard power supply (V_BRD)
		OFF	Isolate MCU from power (Connect to ammeter to measure current)
J9	VBAT Power Selection	**1-2**	Connect VBAT to onboard power supply
		2-3	Connect VBAT to the higher voltage between onboard power supply or coin-cell supply

6

Jumper	Option	Setting	Description
J14	OSJTAG Bootloader Selection	ON	OSJTAG bootloader mode (OSJTAG firmware reprogramming)
		OFF	Debugger mode
J15	JTAG Board Power Connection	ON	Connect onboard 5 V supply to JTAG port (supports powering board from JTAG pod supporting 5 V supply ouput)
		OFF	Disconnect onboard 5 V supply from JTAG port
J12	IR Transmitter Connection	ON	Connect PTD7/CMT_IR0 to IR transmitter (D5)
		OFF	Disconnect PTD7/CMT_IR0 from IR transmitter (D5)
J11	IR Receiver Connection	ON	Connect PTC6/CMP0_IN0 to IR receiver (Q2)
		OFF	Disconnect PTC6/CMP0_IN0 from IR receiver (Q2)
J2	VREGIN Power Connection	ON	Connect USB0_VBUS from elevator to VREGIN
		OFF	Disconnect USB0_VBUS from elevator to VREGIN
J3	GPIO to Drive RSTOUT	1-2	PTE27 to drive RSTOUT
		2-3	PTB9 to drive RSTOUT
J1	FlexBus Address Latch Selection	1-2	FlexBus address latch disabled
		2-3	FlexBus address latch enabled

Visit **freescale.com/TWR-K40D100M**, **freescale.com/K40** or **freescale.com/Kinetis** for information on the TWR-K40D100M module, including:

- TWR-K40D100M user manual
- TWR-K40D100M 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