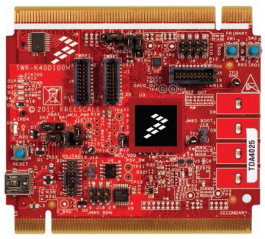
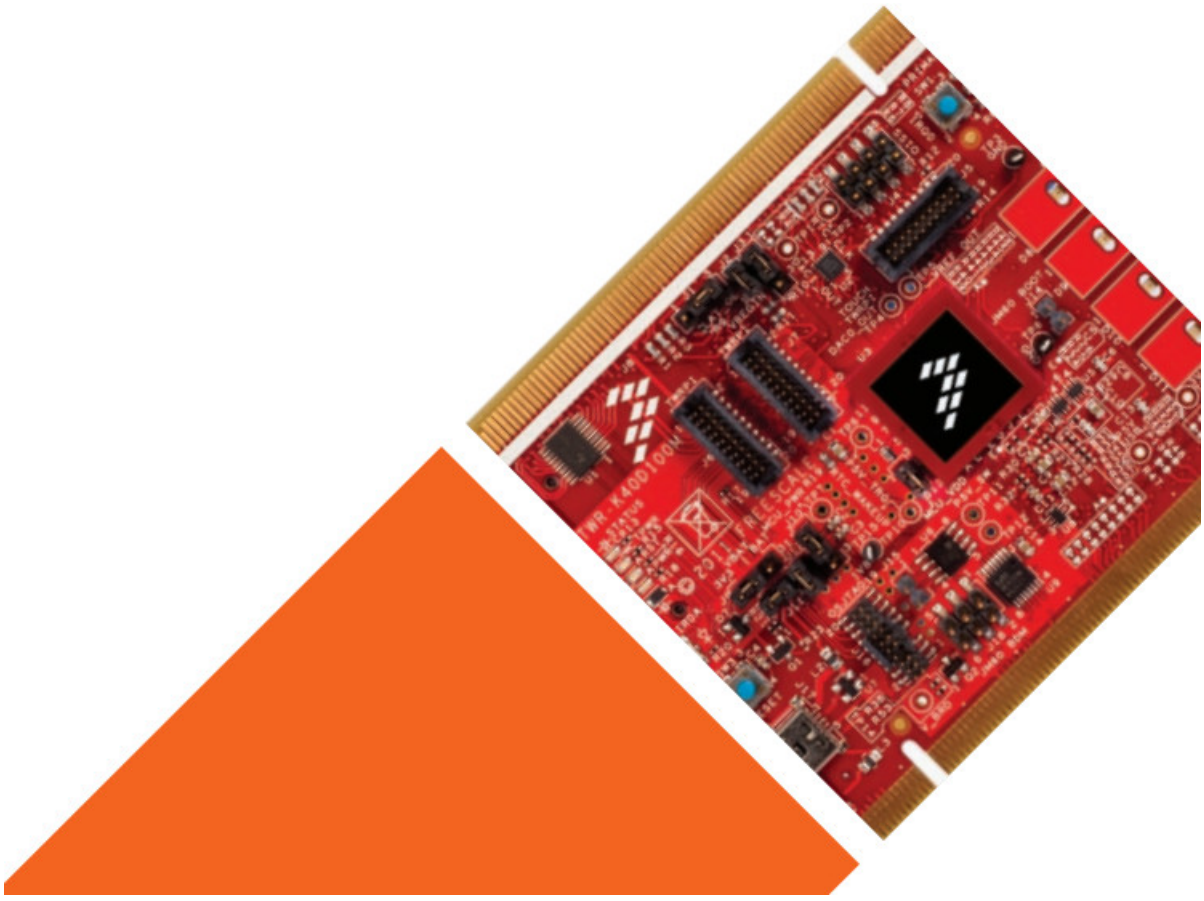


NXP TWR-K40D100M Low Power MCU with USB and Segment LCD User Guide

TWR-K40D100M Low Power MCU with USB and Segment LCD User Guide



Low-Power MCU with USB and Segment LCD
Tower System
Development Board Platform

Contents

Get to Know the TWR-K40D100M Board

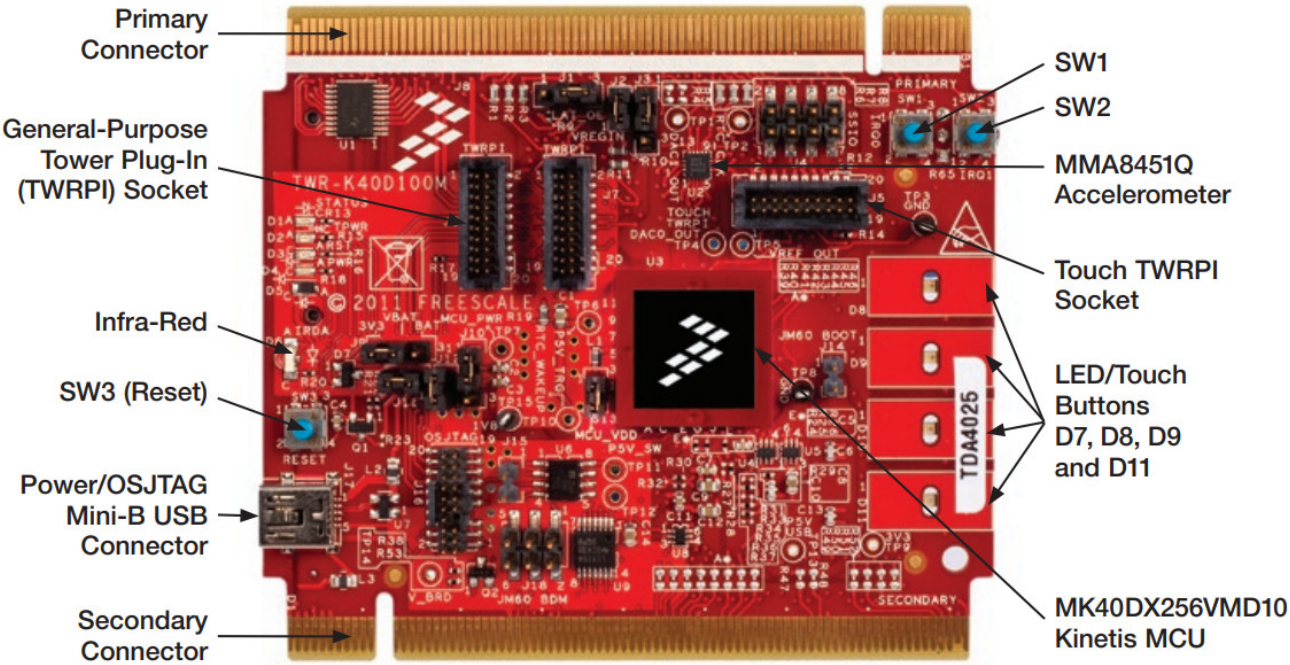


Figure 1: Front side of TWR-K40D100M board without Tower plug-in (TWRPI)

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.

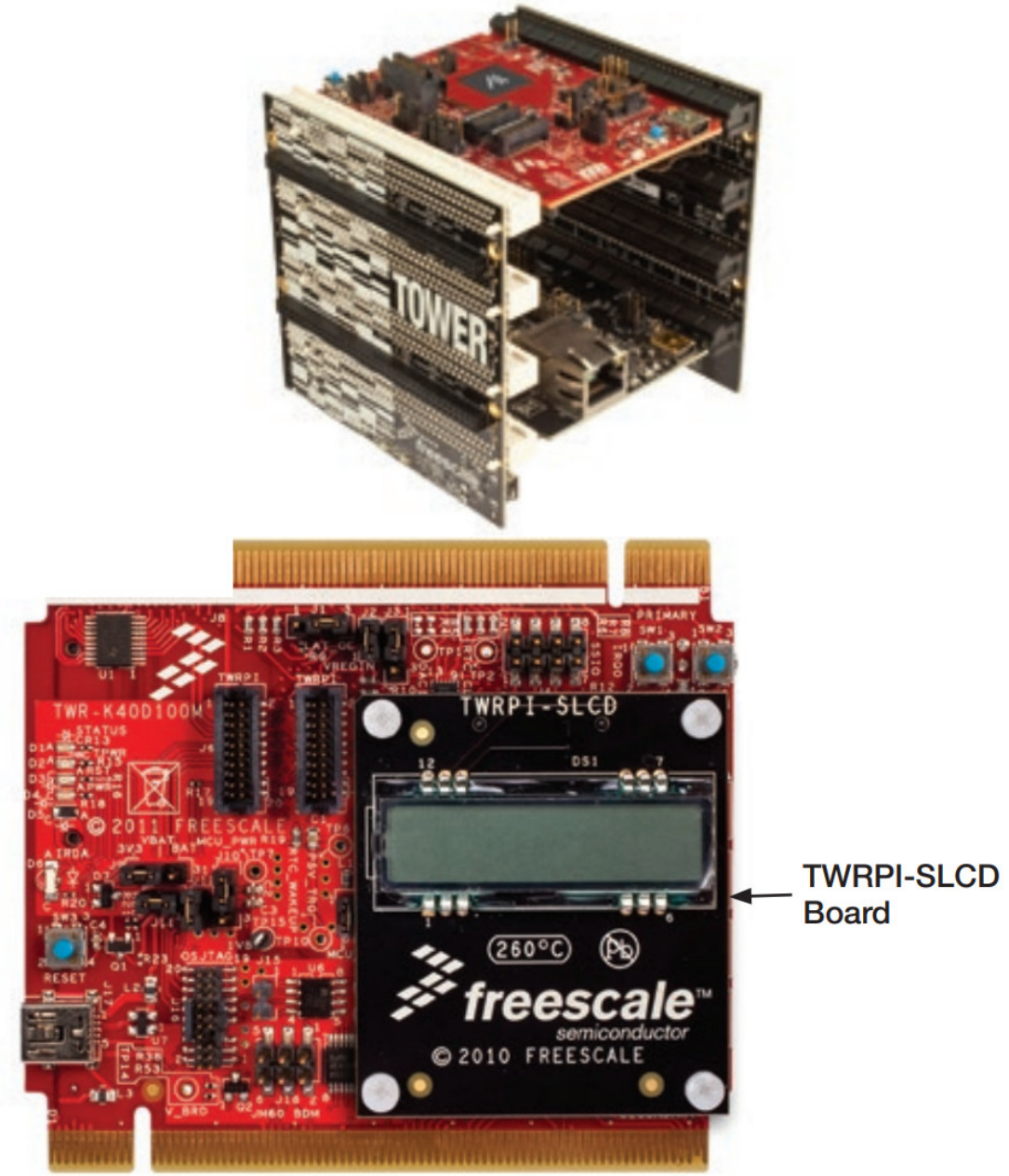


Figure 2: Front side of TWR-K40D100M board with TWRPI-SLCD attached

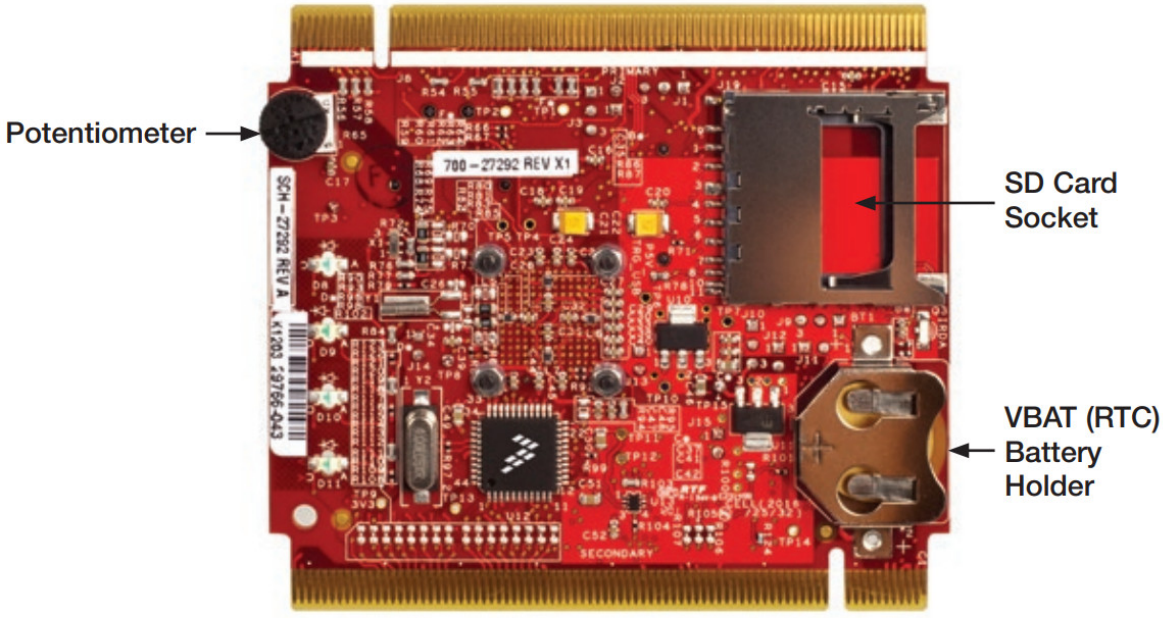


Figure 3: Back side of TWR-K40D100M board

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

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_IRO to IR transmitter (D5)
		OFF	Disconnect PTD7/CMT_IRO from IR transmitter (D5)
J11	IR Receiver Connection	ON	Connect PTC6/CMPO _INO to IR receiver (Q2)
		OFF	Disconnect PTC6/CMPO _INO from IR receiver (02)
J2	VREGIN Power Connection	ON	Connect USBO_VBUS from elevator to VREGIN
		OFF	Disconnect USBO_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

Documents / Resources

	NXP TWR-K40D100M Low Power MCU with USB and Segment LCD [pdf] User Guide TWR-K40D100M Low Power MCU with USB and Segment LCD, TWR-K40D100M, TWR-K40D 100M MCU with USB and Segment LCD, Low Power MCU with USB and Segment LCD, MCU with USB and Segment LCD, MCU, USB, Segment LCD

References

- Kinetis® K4x USB and Segment LCD Microcontrollers (MCUs) based on Arm® Cortex®-M4 Core | NXP Semiconductors
- General Purpose Microcontrollers | NXP Semiconductors
- Support | NXP Semiconductors
- TWR-K40D100M|Tower System Board|Kinetis MCUs | NXP Semiconductors
- Returns and Warranty Information | NXP Semiconductors