



TWR-KL46Z48M Quick Start Guide

Development Kit for Kinetis
KL46/36/34/26/16 MCU Families

Tower System
Development Board
Platform



Get to know the TWR-KL46Z48M Board

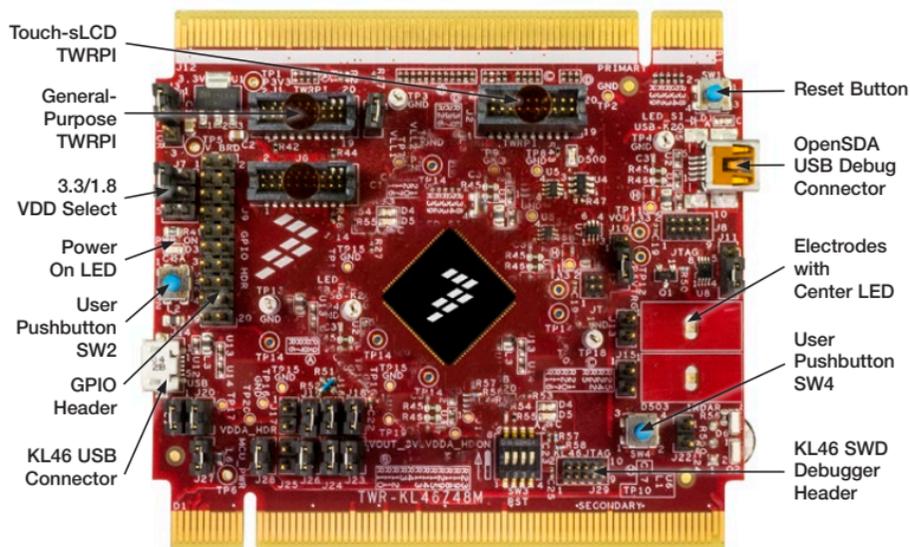


Figure 1: Front side of TWR-KL46Z48M board (TWRPI device not attached)

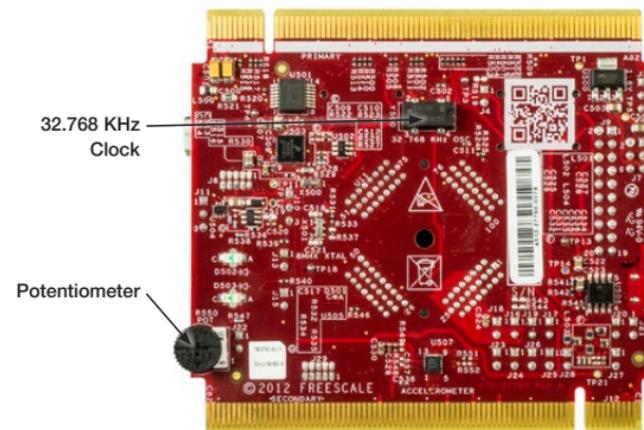


Figure 2: Back side of TWR-KL46Z48M board



TWR-KL46Z48M

Freescale Tower System Development Board Platform

The TWR-KL46Z48M MCU board is designed to work either in standalone mode or as part of the Freescale Tower System, a modular development board platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Take your design to the next level and begin constructing your Tower System evaluation board platform today by visiting freescale.com/Tower for additional Tower System MCU boards and compatible peripherals.



TWR-KL46Z48M Features

- Tower System-compatible MCU board
- MKL46Z256VLL4 MCU (48 MHz, 256 KB flash, 32 KB RAM, low power, sLCD controller, 100 LQFP package)
- Segment LCD module (TWRPI-SLCD)
- Dual role USB interface with Micro-AB USB connector
- Touch Tower plug-in socket
- General-purpose Tower plug-in (TWRPI) socket
- Onboard debug circuit MK20D50 OpenSDA with virtual serial port
- Three axis accelerometer (MMA8451Q)
- Four (4) user-controllable LEDs
- Two (2) capacitive touchpads
- Two (2) user pushbuttons switch
- Infrared transmit and receive
- Potentiometer
- General-purpose pin header to directly access MCU signals

Tools

- Freescale CodeWarrior Development Studio for Microcontrollers V10.4 (CW-MCU10)
- IAR EWARM V6.50.6 or higher
- Processor Expert software configuration tool with MQX™ Lite integration available for CodeWarrior IDE or a standalone for integrating generated code into other IDEs

Step-by-Step Installation Instructions

In this Quick Start Guide, you will learn how to set up the TWR-KL46Z48M board and run the included demonstrated software. For more detailed information, review the user manual at freescale.com/TWR-KL46Z48M.

1 Download Software and Tools

Download installation software and documentation under **“Jump Start Your Design”** at freescale.com/TWR-KL46Z48M.



2 Install Software and Tools

Install the OpenSDA Tower Toolkit to install the OpenSDA and USB-to-Serial drivers.

3 Configure the Hardware

Connect one end of the USB cable to the PC and the other end to the Power/OpenSDA mini-B connector on the TWR-KL46Z48M module. Allow the PC

to automatically configure the USB drivers if needed.

4 Segment LCD

All segments are turned on for three seconds, then potentiometer readings are displayed.

5 Touch Electrodes

When board is picked up, the four LEDs will toggle in the direction of the inclination. Toggling frequency will increase as the tilt angle increases.

6 Move the Potentiometer

The TWRPI-SLCD shows the ADC reading.

7 Explore Further

Explore Kinetis KL46 MCU ultra-low-power modes and USB communication by conducting the additional labs located at freescale.com/TWR-KL46Z48M.

1 VV11-TL+δZ48M Jumper Options

The following is a list of all the jumper options. The default installed jumper settings are indicated in the shaded boxes or bold text in the "Signal" column.

Jumper	Position	Signal	KL46 Pin Name
J3	1-2	BOARD POWER SELECTOR 1-2 P5 V_TRG_USB 2-3 VBUS_ELEV	
J19	1-2	MCU_POWER	
J4	1-2	Reset 1-2 RESET_B 2-3 RST_TGTMCU_B	
J7	1-3	V_BRD Voltage Selection 1-3 3.3 V 3-5 1.8 V	
J27	1-2	V_BRD to MCU_POWER	
J28	1-2	VDDA_HDR to MCU_POWER enable	
J17	Open	VLL3 to VDD enable	VLL3
J16	Open	VOOUT_3V3 to MCU_POWER	
J18	1-3	VREG_IN Selector 1-2 P5 V_KL46_USB 2-3 VBUS_ELEV	P5V_KL46_USB_L

Jumper	Position	Signal	KL46 Pin Name
J21	1-2	KL46_USB_FLGA	PTE31/FTM0_CH4
J20	1-2	KL46_USB_ENABLE	PTB11/SPI1_SCK
SW3	1-8 ON	LED Green	PTA17
SW3	7-2 ON	LED Red	PTB8
J13	1-2	LED Orange	PTE26/TPM0_CH5
J15	1-2	LED Yellow	PTA16
SW3	6-3 OFF	IR (Tx)	PTE22
SW3	5-4 OFF	IR (Rx)	PTE23
J24	1-2	Accelerometer SCL Enable	PTC10 I2C1_SCL
J26	1-2	Accelerometer SDA Enable	PTC11 I2C1_SDA
J23	Open	Accelerometer INT1 Enable	PTC5/LLWU_P9/SPI0_SCK/ CMP0_OUT
J25	Open	Accelerometer INT2 Enable	PTC6/LLWU_P10/EXTRG_ IN/SPI0_MISO
J10	2-3	2-3 UART2 Tx- OpenSDA 2-1 UART2 Tx Elevator	PTE16
J11	2-3	2-3 UART2 Rx- OpenSDA 2-1 UART2 Rx- Elevator	PTE17
J22	1-2	Potentiometer Enable	PTE29/ADC0_SE4B



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Download installation software and documentation under
“**Jump Start Your Design**” at freescale.com/TWR-KL46Z8M.

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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Doc Number: TWRKL46Z48MQSG REV 1 Agile Number: 926-78772 REV B