Quick Start Guide

TWR-K53N12 for low-power
MCU with analog, USB and
segment LCD

freescale™

Get to Know the TWR-K53N512

Primary Connector

Infra-Red

General Purpose Tower Plug-In (TWRPI) Socket

SW3 (Reset)

Power/OSJTAG Mini-B USB Connector

Secondary Connector

SW1

SW2

Touch/SLCD TWRPI Socket

LED/Touch Buttons E1–E2

PK53N512CMD100 Microcontroller
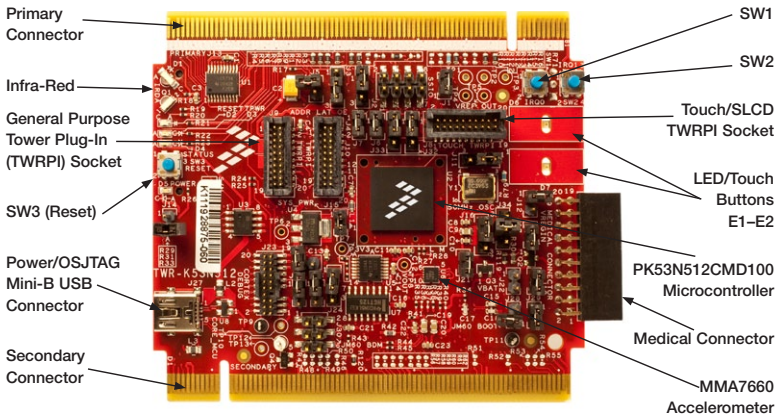
Medical Connector

MMA7660 Accelerometer

Figure 1: Front Side of TWR-K53N512 Module Not Including TWRPI.

TWR-K53N512 Freescale Tower System

The TWR-K53N512 microcontroller module is part of the Freescale Tower System, a modular development 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 today by visiting freescale.com/Tower for additional Tower System microcontroller modules and compatible peripherals.
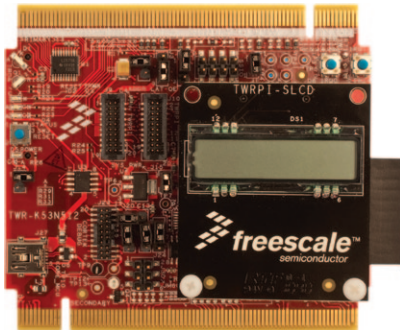
Figure 2: Front Side of TWR-K53N512 Module with TWRPI-SLCD Attached.

Potentiometer
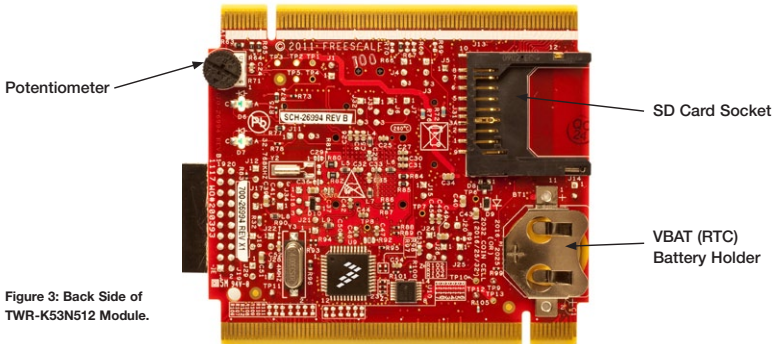
SD Card Socket

VBAT (RTC) Battery Holder

Figure 3: Back Side of TWR-K53N512 Module.

Configuration Instructions

In this Quick Start Guide, you will learn how to set up the TWR-K53N512 module and run the default demonstration.

1 Install the Software and Tools

Install the P&E Micro Kinetis Tower Toolkit to install the OSJTAG and USB-to-serial drivers. These can be found on the DVD under "Software."

2 Configure the Hardware

Install the included battery into the VBAT (RTC) battery holder. Then, plug in the included segment LCD Tower plug-In (TWRPI-SLCD) into the touch/SLCD 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-K53N512 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 E1–E2 light up as it is tilted.

4 Navigate the Segment LCD
The segment LCD toggles all the segments on and off. Press SW2 to cycle between viewing the seconds, hours and minutes, potentiometer percent and temperature.

5 Explore Further by Conducting Lab 1: TWR-K53N512 Quick Start Demo
Explore all the features and capabilities of the pre-programmed demo by reviewing the "TWR-K53N512 Quick Start Demo Labs" document located on the DVD under "Documentation" or at **freescale.com/TWR-K53N512**.

6 Learn More About the Kinetis K50 Microcontrollers
Find more MQX™ and bare-metal labs and software for the Kinetis K50 micro controllers at **freescale.com/TWR-K53N512**.

Jumper Options

The following is a list of all the jumper options. The default installed jumper settings are shown in **Red**.

Jumper	Option	Setting	Description
J1	ADC1_DM1 Input Selection	**ON**	ADC1_DM1 reads POTENTIOMETER
		OFF	ADC1_DM1 reads MEDICAL CONNECTOR
J3	FlexBus Address Latch Selection	**2-3**	Enable FlexBus address latch
		1-2	Disable FlexBus address latch
J4	Medical Connector J19 Pin3 Selection	**1-2**	Select I2C1_SCL connection to MEDICAL CONNECTOR
		2-3	Select FTM2_CH1 connection to MEDICAL CONNECTOR
J5	IR Transmitter Connection	**OFF**	Disconnect PTD7/CMT_IRO from IR transmitter circuit (IRDA)
		ON	Connect PTD7/CMT_IRO to IR transmitter circuit (IRDA)
J6	FlexBus or SSIO Selection	**ON**	Use PTE7 for Flex bus
		OFF	Use PTE7 for SSIO

Jumper	Option	Setting	Description
J7	Ethernet/TOUCH PAD TWRPI Selection	ON	Use PTB0 for Ethernet
		OFF	Use PTB0 for TOUCH PAD TWRPI
J11	Clock Input Source Selection	**1-2**	Connect main EXTAL to on-board 50 MHz clock
		2-3	Connect EXTAL to the CLKIN0 signal on the elevator connector
J12	SD Card/TOUCH PAD TWRPI Selection	**OFF**	Use PTE2 for SD card reader (SD/MMC SKT)
		ON	Use PTE2 for TOUCH PAD TWRPI
J14	IR Transmitter Filter Selection	**OFF**	IR input to CMP0_IN0 is not low-pass filtered by a 0.1 uF cap
		ON	IR input to CMP0_IN0 is low-pass filtered by a 0.1 uF cap
J15	MCU Power Connection	ON	Connect on-board 3.3V supply to MCU
		OFF	Isolate MCU from power (connect an ammeter to measure current)

Jumper	Option	Setting	Description
J16	VBAT Power Connection	**1-2**	Connect VBAT to on-board 3.3V supply
		2-3	Connect VBAT to the higher voltage between on-board 3.3V supply or coin-cell supply
J17	On-Board 50 MHz Power Connection	**ON**	Connect on-board 3.3V supply to on-board 50 MHz OSC
		OFF	Disconnect on-board 3.3V supply to on-board 50 MHz OSC
J18	VREGIN Power Connection	**ON**	Connect USB0_VBUS from Elevator to VREGIN
		OFF	Disconnect USB0_VBUS from Elevator to VREGIN
J20	SD Card/GENERAL PURPOSE TWRPI Selection	**OFF**	Use PTE1 for SD card reader (SD/MMC SKT)
		ON	Use PTE1 for GENERAL PURPOSE TWRPI

Jumper	Option	Setting	Description
J21	Accelerometer Power Connection	**ON**	Connect accelerometer to on-board 3.3V supply
		OFF	Disconnect accelerometer from on-board 3.3V supply
J22	Off-Board Power input	**Always OFF**	J22 pin 1 can be connected to an off-board external power source. This board is only tested with 3.3V. Care should be taken not to connect to a voltage that is out of the components specification
		Always OFF	J22 pin 2 can be connected to the ground of the off-board external power source
J24	Off or On Board Power Input Selection	**1-2**	Board SYS_PWR is powerd from on-board 3.3V regulator
		2-3	Board SYS_PWR is powerd from off-board supply from J22 pin 2
J25	JTAG Board Power Connection	**OFF**	Disconnect on-board 5V supply to JTAG port
		ON	Connect on-board 5V supply to JTAG port (supports powering board from JTAG pod supporting 5V supply output)

Jumper	Option	Setting	Description
J26	SD Card/GENERAL PURPOSE TWRPI Selection	**OFF**	Use PTE0 for SD card reader (SD/MMC SKT)
		ON	Use PTE0 for GENERAL PURPOSE TWRPI
J28	OSJTAG Bootloader Selection	**OFF**	Debugger mode
		ON	OSJTAG bootloader mode (OSJTAG firmware reprogramming)
J29	Ethernet/TOUCH PAD TWRPI Selection	**ON**	Use PTB1 for Ethernet
		OFF	Use PTB1 for TOUCH PAD TWRPI
J32	TOUCH PAD/SLCD TWRPI Selection	**1-2**	PTB10_LCD_P10 pin is connected to J8 pin 3 for SLCD TWRPI
		2-3	PTB0_TSI0_CH0 pin is connected to J8 pin 3 for TOUCH PAD TWRPI. Make sure J29 and J7 are off to avoid conflict with Ethernet

Jumper	Option	Setting	Description
J33	TOUCH PAD/SLCD TWRPI Selection	**1-2**	PTB11_LCD_P11 pin is connected to J8 pin 5 for SLCD TWRPI
		2-3	PTB1_TSI0_CH6 pin is connected to J8 pin 5 for TOUCH PAD TWRPI. Make sure J29 and J7 are off to avoid conflict with Ethernet
J34	On-Board 50 MHz Enable Source	**OFF**	On-board 50 MHz osc is enabled if J17 jumper is on. No need to have any jumper on J34
		1-2	On-board 50 MHz osc is enabled if J17 jumper is on
		2-3	On-board 50 MHz osc enable by GPIO PTA19 allowing MCU to turn off clock for lower power consumption

For more information about this and other Tower System modules and kits, please visit freescale.com/TWR-K53N512, freescale.com/Kinetis and freescale.com/Tower.

Doc Number: K53N512QSG / REV 0
Agile Number: 926-78598 / REV A

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331