Quick Start Guide

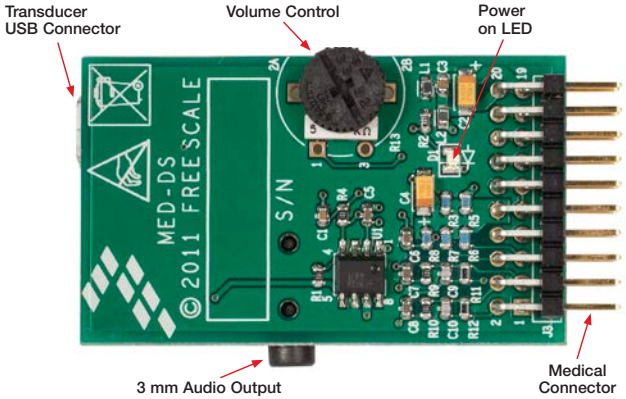
MED-STETH

Ultrasound Digital Stethoscope
Plug-in Board

freescale™

TOWER SYSTEM

Get to Know the MED-STETH Board



MED-STETH
Freescale Tower System

The MED-STETH plug-in board is compatible with the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Elevate your design to the next level with this industrial powerhouse by building your Tower System today.

MED-STETH Features

MED-STETH implements a stethoscope application based on the use of ultrasonic waves. This board is auxiliary in the design of applications using ultrasound in the detection of heart rate such as digital stethoscopes or fetal heart rate monitors.

Features

- Tower System compatible
- Hardware-ready solution for ultrasound heart rate monitoring
- Application software available
- Designed for use with TWR-LCD, a 16-bit color screen for designs involving graphics

Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the MED-STETH and Tower System and run the included demonstrated software. For more detailed infomation, review the user manual at **freescale.com/healthcare**.

1 Verify the Jumper Configuration

Verify the jumper configuration on each board according to the Jumper Configurations table found later in this guide.

2 Assemble the Tower System

Assemble the Tower System by matching primary and secondary sides on TWR-K53N512 to corresponding elevators.

3 Connect the TWR-LCD

Connect the TWR-LCD module to the primary elevator. Press carefully until all pins are fully inserted.

4 Connect the Board

Connect the MED-STETH board to the TWR-K53N512 medical connector as shown in the image below.

5 Download CodeWarrior

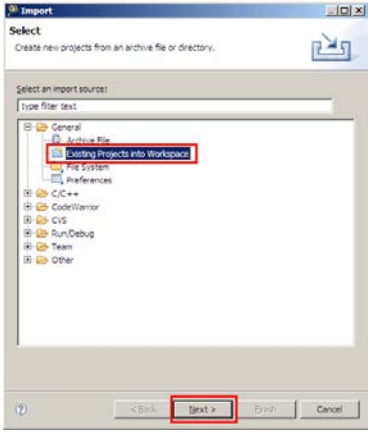
Download and install the latest version of CodeWarrior V10 for Microcontrollers. A 30-day trial version can be downloaded from **freescale.com/cwmcu10**.

6 Download Software

Download and uncompress DRM132SW.zip. This file can be downloaded from freescale.com together with DRM132 (Medical Stethoscope Design Reference Manual).

7 Import Project

Open CodeWarrior V10. Go to menu File and select Import. Click on General to open the drop-down list and select Existing Projects into Workspace. Click next.

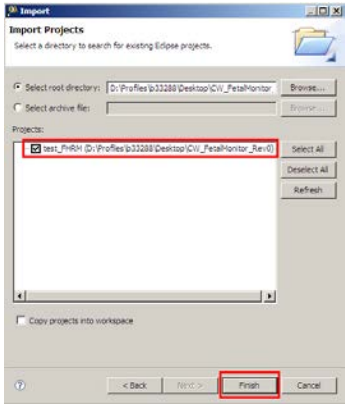


Step-by-Step Installation Instructions

Continued

8 Select Location

In the section **Select root directory** click **Browse** and indicate the location of test_FHRM folder (uncompressed from DRM132SW.zip). Make sure that test_FHRM is checked in **Projects** section and click **Finish**.



9 Build Directory

On the workspace project tree click on the test_FHRM root folder. Then deploy the **Build** drop down list and select MK53DN512Z_INTERNAL_FLASH.

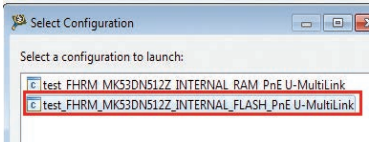
10 Connect a USB Cable

Connect a USB cable from the computer to the USB port on the TWR-K53N512 board. Install drivers if necessary.

Note: Drivers can be fund in the CodeWarrior installation folder \Drivers\P&E\Drivers\osbdm

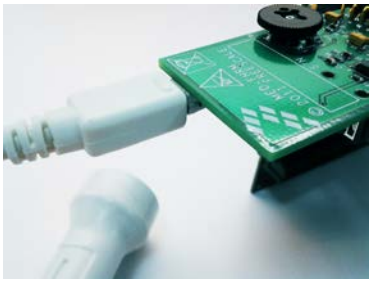
11 Download Firmware

Click on the **Debug** button to start downloading firmware. If the Select **Configuration** window prompts, select the **Internal Flash** configuration and click OK.



12 Connect Transducer

Connect the ultrasound transducer to the USB port on the MED-STETH board.



Step-by-Step Installation Instructions

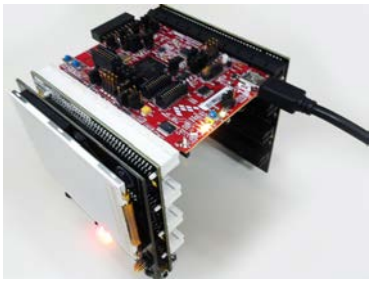
Continued

13 Connect Active Speaker

Connect the active speaker to the 3 mm audio output on the MED-STETH board.

14 Disconnect and Reconnect

Disconnect and reconnect the USB cable from the TWR-K53N512 board.

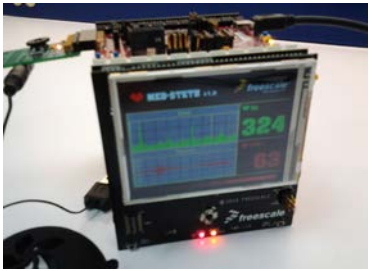


15 Use the Transducer

Place some gel on the ultrasound transducer. Place transducer on chest as shown in the image below.

16 View Results

Results will appear in the TWR-LCD screen.



MED-STETH Jumper Options

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

TWR-K53N512 Jumper Configurations

Jumper	Position	Function
J1	Open	R71 to ADC1_DM1
J3	Open	FlexBus Latch OE
J4	2-3	Medical Connector Pin 4 Function
J11	**1-2**	External Oscillator Selection
J15	**Connected**	Core VDD
J17	**Connected**	Oscillator Power Enable
J18	**Connected**	USB0_VBUS Voltage In
J24	**1-2**	SYS_PWR Select
J28	**Open**	Disable JM60 Bootloader
J34	**Open**	Oscillator OE Control

TWR LCD Configurations

Switch	Position	Description
SW1-1	On	LCD Driver: MCU Communication Method
SW1-2	Off	LCD Driver: MCU Communication Method
SW1-3	On	JM/ELE Selection
SW1-5	**Off**	SPI CS Select
SW1-7	**On**	LCD Backlight

Visit **freescale.com/healthcareAFE** for the latest information, including:

- Design reference manual DRM132

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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