

# Quick Start Guide

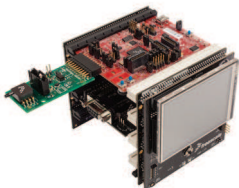
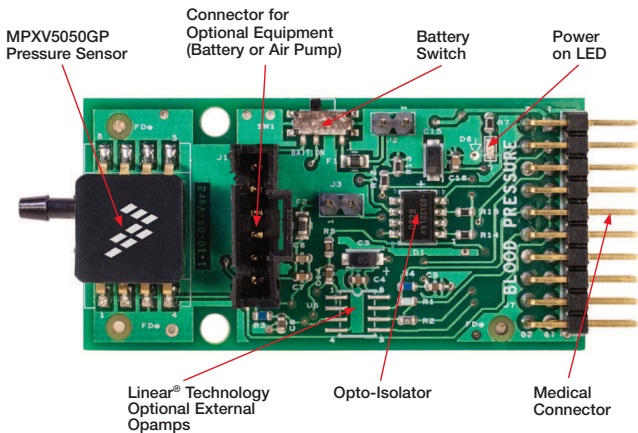
## MED-BPM

Blood Pressure Monitor  
Plug-in Board



**TOWER SYSTEM**

# Get to Know the MED-BPM Board



## MED-BPM Freescale Tower System

The MED-BPM 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-BPM Features

MED-BPM is a development board that eases and accelerates the design of blood pressure monitoring applications. It is suitable for portable medical applications designed to operate within the 3 to 3.3 V range.

## **Features**

- Tower System compatible
- Comprehensive hardware and software solution for blood pressure monitoring applications
- Contains an integrated Freescale MPXV5050GP pressure sensor

# Step-by-Step Installation Instructions

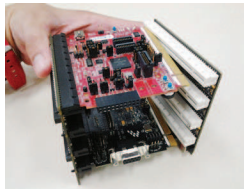
In this quick start guide, you will learn how to set up the MED-BPM and Tower System and run the included demonstrated software. For more detailed information, review the user manual at [freescale.com/healthcare](http://freescale.com/healthcare).

## 1 Verify the Jumper Configuration

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

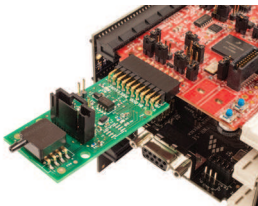
## 2 Assemble the Tower System

Assemble the Tower System by matching primary and secondary sides on the serial and MCU boards to corresponding elevators.



## 3 Connect the MED-BPM AFE

Connect the MED-BPM AFE to the medical connector on TWR-K53N512 board as shown below.



## 4 Download and Install Software

Download and install IAR Embedded Workbench 6 for ARM. A 30-day trial version can be downloaded from [iar.com](http://iar.com).

## 5 Install the Drivers

Install P&E Micro drivers. The installer is located in IAR installation folder\arm\drivers\pemicro.

Name	Date modified	Type	Size
DRIVERS11_install_120720	8/31/2012 1:52 PM	Application	4,303 KB
DEMicro_Pemicro_V100	8/31/2012 1:43 PM	Win32 Executable	100 KB

## 6 Connect a USB Cable

Connect a USB cable from the computer to the USB port on the TWR-K53N512 board. Wait for drivers to install.



## 7 Download the Application Note

Go to **freescale.com** and conduct a parametric search for AN4328. Download AN4328SW.zip.

## 8 Open the File

Open the file MED-BPM K53.eww using IAR from \Software\MED-BPM MK53N512\app\cdc\iar\_ew\kinetis.

## 9 Load the Firmware

Click the Debug button to load the firmware to the MCU.



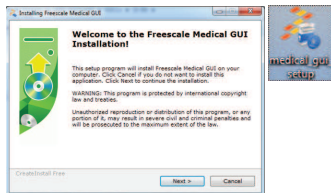
# Step-by-Step Installation Instructions

*Continued*

## 10 Install the Software

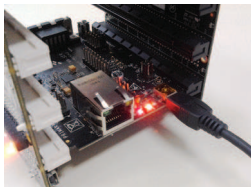
Install the Medical GUI software. It can be downloaded from **freescale.com**.

**Note:** Make sure you have already installed Java® JDK on your computer. Look for JDK folder in: C:\Program Files\Java



## 11 Change the Connection

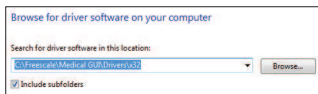
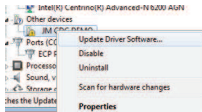
Disconnect the USB cable from the TWR-K53N512 and connect it to the TWR-SER board.



## 12 Install Drivers for JM CDC Demo

If the driver is not installed automatically, open Device Manager and install drivers for JM CDC Demo. Drivers can be found here:

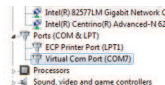
- 32-bit version:  
C:\Freescale\Medical GUI\Drivers\x32
- 64-bit version:  
C:\Freescale\Medical GUI\Drivers\x64



**Note:** Open the Device Manager by opening the start menu, right-clicking on Computer and selecting Manage. Device manager is on the left options tree.

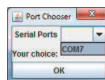
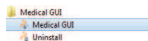
## 13 Look for the COM Number

In the device manager, look for the COM number assigned to “Virtual Com Port.”



## 14 Open the Medical GUI

Open the Medical GUI and select the Virtual Com Port from previous step.

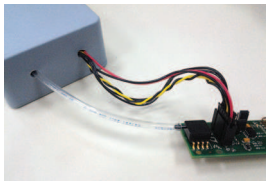


# Step-by-Step Installation Instructions

*Continued*

## 15 Connect the Air Tube and Electrical Connector

Connect the air tube and the electrical connector from the gray box to the MED-BPM board. Gray box content can be consulted in AN4328.



**Note:** MED-BPM requires 2x AA batteries. Make sure they are loaded into the gray box and fully charged. SW1 on MED-BPM must be in the BATT ON position.

## 16 Attach the Second Air Tube

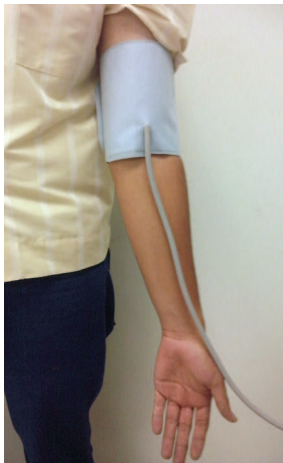
Attach the second air tube from the gray box to the arm cuffs' air tube.





## 17 Put On the Arm Cuff

Place the arm cuff tightly around your left arm as shown in the image below.



## 18 Start Measurements

In the main screen, click the BPM section (red) to start measurements. Wait for the test to complete before disconnecting.



## MED-BPM 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	<b>1-2</b>	External Oscillator Selection
J15	<b>Connected</b>	Core VDD
J17	<b>Connected</b>	Oscillator Power Enable
J18	<b>Connected</b>	USB0_VBUS Voltage In
J24	<b>1-2</b>	SYS_PWR Select
J28	<b>Open</b>	Disable JM60 Bootloader
J34	<b>Open</b>	Oscillator OE Control

## TWR-SER Jumper Configurations

Jumper	Position	Function
J10	1-2	VBDEV Source
J16	3-4	USB Mode Select
J2	1-2	CLK_SEL Source

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

- AN4328 application note

## 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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