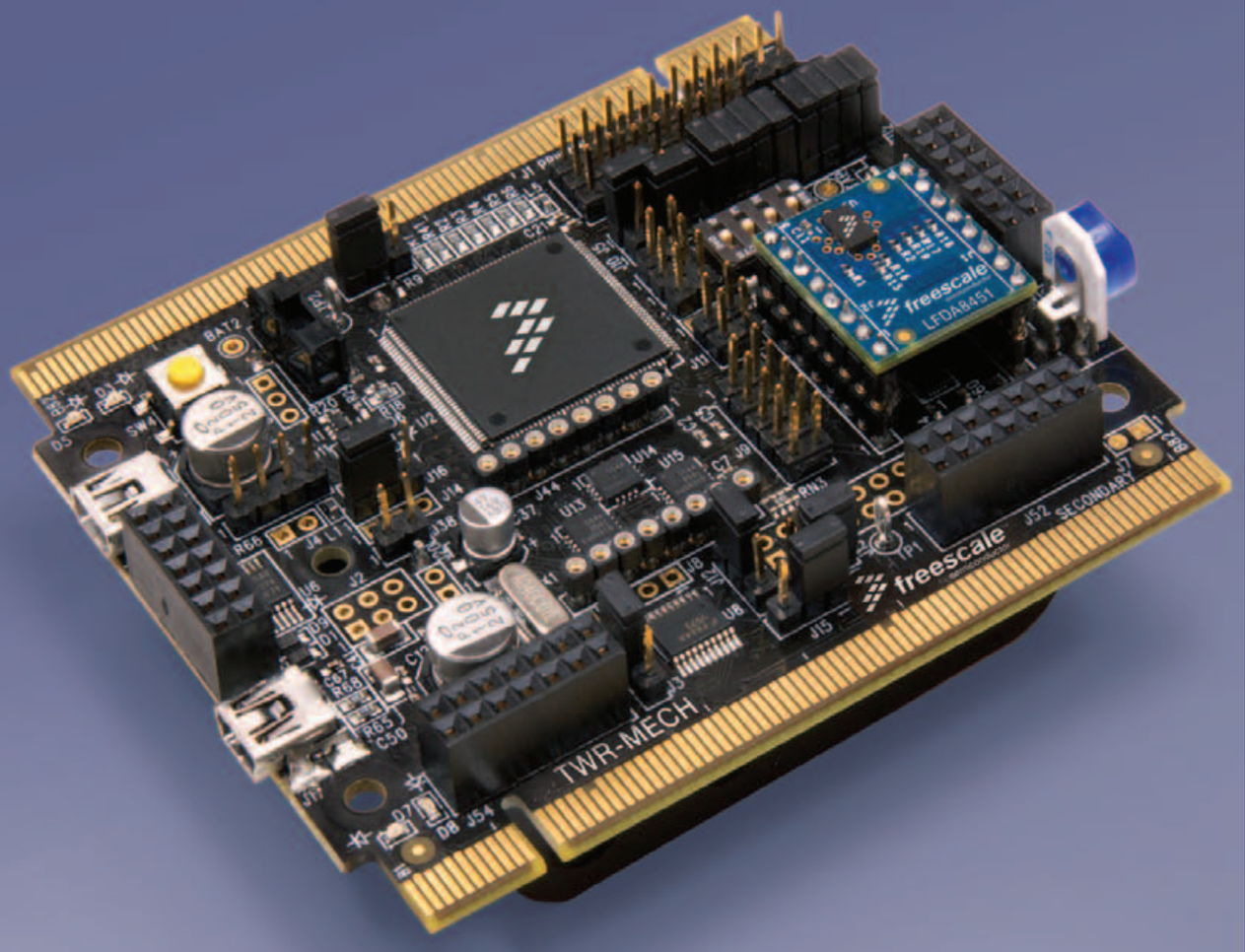


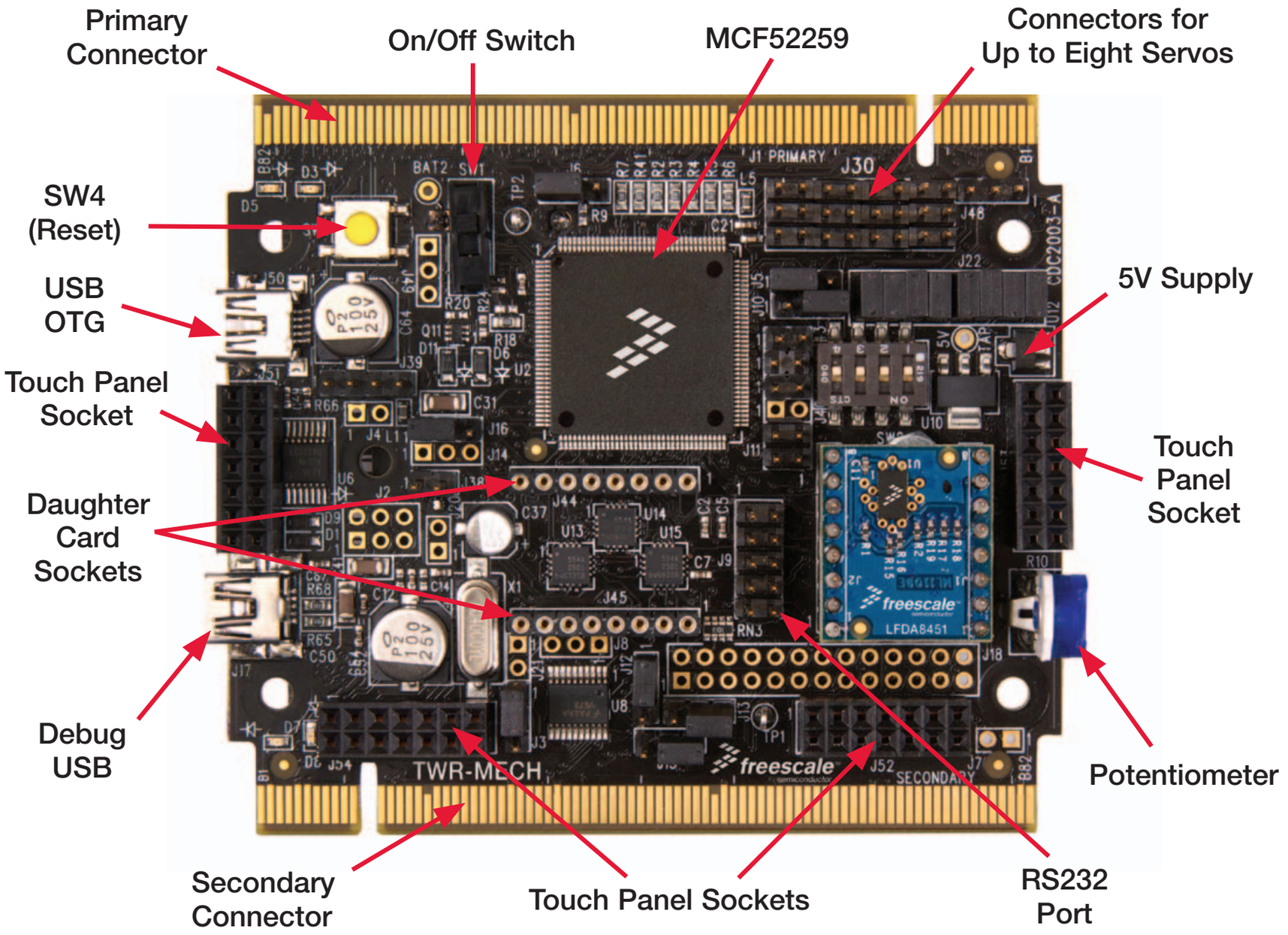
Quick Start Guide

TWR-MECH
Mechatronics Board

freescale™

TOWER SYSTEM

Get to Know the Tower Mechatronics Board



How to Use the Mechatronics Robot

The Freescale robot (FSLBOT) kit operates with the Tower mechatronics (TWR-MECH) board to create an easy-to-use mechatronics development and demonstration platform. It is designed specifically to be used and programmed with StickOS® BASIC. More advanced users can take programming to new levels of functionality with the use of CodeWarrior and Freescale's Tower System.

TWR-MECH BOARD
Freescale Tower System

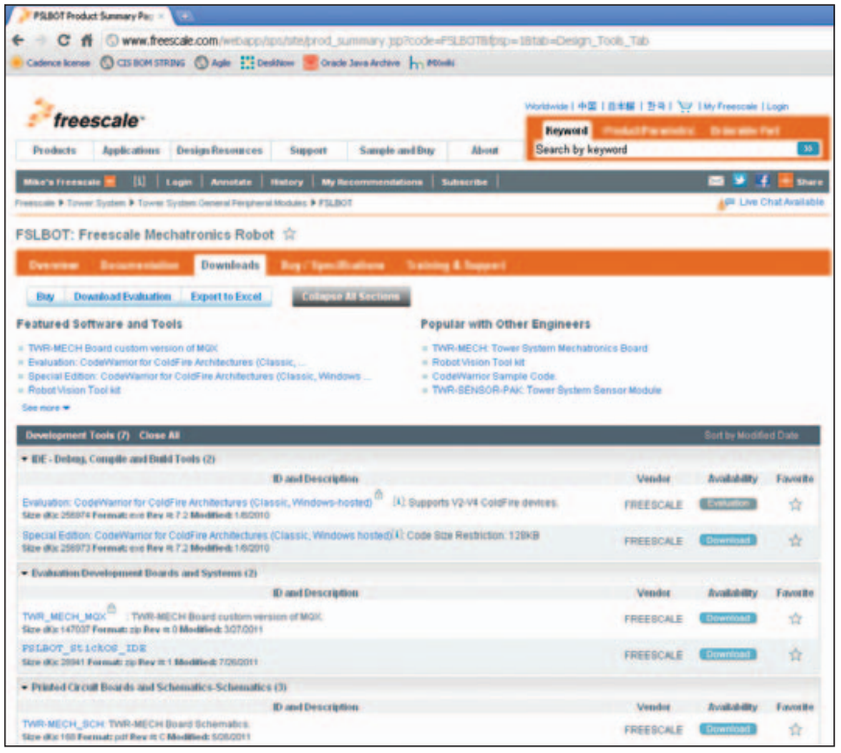
The TWR-MECH board is part of the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Take your design to the next level and begin constructing your Tower System today.

Step-by-Step Installation Instructions for StickOS

StickOS BASIC is a programming language and an IDE. It's specifically designed to allow those with little or no programming experience to get up and running quickly with the TWR-MECH board. It also provides complex functionality such as vision filters and face tracking.

1 Install StickOS

1. Open an Internet browser of your choice and navigate to **freescale.com/mechbot**



2. Select the "Download" tab. Scroll through the list of downloads and select FSLBOT_StickOS_IDE. Click "Download" and save the file to an easily accessible place on your computer.
3. Decompress the downloaded file.

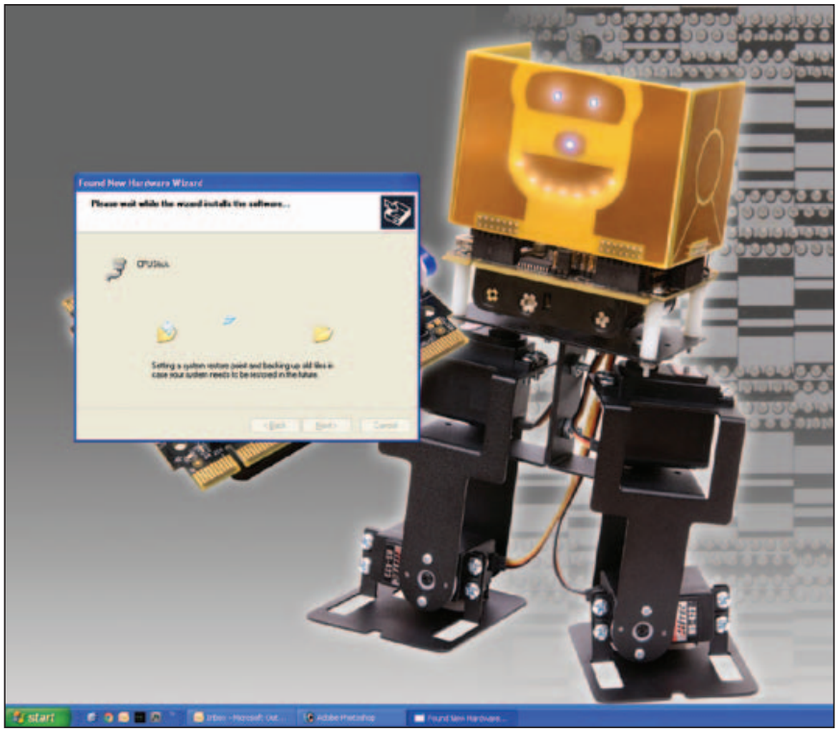
2 Connect the USB Cable

1. Plug the included FSLBOT USB cable into the computer and into the left rear mini-USB port on the board (labeled USB OTG).
2. The “Found New Hardware Wizard” will appear. Choose “Install” from a list or specific location (Advanced). Click “Next.”

3 Configure Drivers with Windows® XP

1. Ensure “Search for the best driver in these locations” is selected. Also, the “Include this location in the search” box should be checked. Click “Browse” and navigate to the folder of the recently downloaded file. Click “OK,” followed by “Next.”

2. The hardware wizard will install the needed files to run the Freescale TWR-MECH.



3. Once the hardware wizard has finished, click “Finish” to complete the installation.

Additional Resources

For more information, visit **freescale.com/mechbot**.

Join the online Tower community at **towergeeks.org**.

Installation Instructions for CodeWarrior

1 Install CodeWarrior

- Download and install the latest version of CodeWarrior for ColdFire V2 from **freescale.com**.
- Download the CodeWarrior sample code for the Freescale mechatronics robot. This can be found on the Freescale website on the right hand side of the TWR-MECH page under **"Featured Software."**

2 Connect the USB Cable

Connect the USB cable to the PC and the other end to the J17 on the TWR-MECH board, also labeled "DEBUG."

3 Configure Drivers

Allow PC to automatically configure drivers if needed. If you have driver problems, please see the TWR-MECH driver installation guide located in the sample code folder mentioned above, or visit **pemicro.com/osbdm**.

4 Launch Software

Launch CodeWarrior for ColdFire V2. Close the startup box, and click **"File > Open"** to open the sample code. The file path is: **TWR_MECH_FSLBOT_Cadewarrior_Sample_CODE/ mcf5225x_SC_FreeBot/build/cw/twr-mcf5225x/TWR_Mechatronics_MCF5225X_base.mcp**.

You are now ready to start programming with CodeWarrior.

Note: On/Off switch must be in **"On"** position for the servos to activate.

Additional Resources

Please see the related documents provided in the sample code folder, and visit **freescale.com** for more information.

TWR-S08PT60 Default Jumper Options

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

Jumper	Option	Setting	Description
J3	Default Clock Mode Selection (CLKMOD1)	**1-2**	Disable PLL at startup
		2-3	Enable PLL at startup
J4	MCU Power Connection	**On Cut-Trace**	Supply 3.3V to MCU
		Off	Isolate MCU from power (connect an ammeter to measure current)
J5	Clock Input Source Selection	**1-2**	Connect EXTAL to the on-board crystal
		2-3	Connect EXTAL to the CLKIN0 signal on the elevator connector
J6	Default Clock Mode Selection (CLKMOD0)	**1-2**	Do not use crystal oscillator at startup
		2-3	Use crystal oscillator at startup
J7	Potentiometer Selection	**On Cut-Trace**	Connect AN6 to potentiometer
		Off	Isolate AN6 from potentiometer
J8	Serial Flash Programming Mode	**1-2 Cut-Trace**	Pull RCON high, allow normal reset behavior
		2-3	Pull RCON low, as exiting reset give EzPort access to flash memory for programming by external device
J10	Default Clock Mode Selection (XTAL)	1-2	Bypass crystal oscillator at startup (if CLKMOD0 = 0)
		2-3	Enable internal relaxation oscillator at startup (if CLKMOD0 = 0)
		Off	Use crystal oscillator at startup

TWR-MECH Jumper Options *(continued)*

Jumper	Option	Setting	Description
J11	UART Hardware Flow Control Connections	1-2	Connect CTS0 to the RS232 transceiver for flow control
		3-4	Connect RTS0 to the RS232 transceiver for flow control
J12	UART TXD0 Routing Selection	1-2	Connect TXD0 to the RS232 transceiver
		2-3	Connect TXD0 to the OSBDM debugger interface circuit
J13	UART RXT0 Routing Selection	1-2	Connect RXD0 to the transceiver
		2-3	Connect RXD0 to the OSBDM debugger interface circuit
J14	BDM/JTAG Enable Selection	1-2 Cut-Trace	BDM mode
		2-3	JTAG mode
J15	TCLK/PSTCLK Routing Selection	1-2	Connect TCLK/PSTCLK to PSTCLK for BDM mode
		2-3	Connect TCLK/PSTCLK to TCLK for JTAG
J16	TCLK/PSTCLK/ CLKOUT Routing Selection	1-2	Connect TCLK/PSTCLK/CLKOUT to TCLK/PSTCLK for BDM/JTAG mode
		2-3	Connect TCLK/PSTCLK/CLKOUT to CLKOUT0 on the elevation connector
J20	OSBDM Bootloader Selection	On	OSBDM bootloader mode (OSBDM firmware reprogramming)
		Off Non-Pop	Debugger mode
J21	RESET Select	On	Suspend MCU in reset state (hold RSTIN low)
		Off Non-Pop	Release RSTIN so it can be controlled by SW4 to initiate reset sequences

TWR-MECH Jumper Options *(continued)*

Jumper	Option	Setting	Description
J22	Servo Motor Signal Selection	1-2	Connect SERVO_1 PWM signal to servo plug
		3-4	Connect SERVO_2 PWM signal to servo plug
		5-6	Connect SERVO_3 PWM signal to servo plug
		7-8	Connect SERVO_4 PWM signal to servo plug
		9-10	Connect SERVO_5 PWM signal to servo plug
		11-12	Connect SERVO_6 PWM signal to servo plug
		13-14	Connect SERVO_7 PWM signal to servo plug
		15-16	Connect SERVO_8 PWM signal to servo plug
J40	Touch Sensor Interrupt Select	On Cut-Trace	Connect IRQ_TOUCH to IRQ7_b to use touch sensor interrupt
		Off	Isolate IRQ7_b from touch sensor
J41	Universal Sensor No. 1 Interrupt No. 1 Select	On	Connect AN0 to IRQ1_b to sense interrupt signal
		Off	Isolate AN0 from IRQ1_b to measure analog signal
J42	Universal Sensor No. 1 Interrupt No. 2 Select	On	Connect AN1 to IRQ3_b/FEC_MDIO to sense interrupt signal
		Off	Isolate AN1 from IRQ3_b/FEC_MDIO to measure analog signal
J43	Universal Sensor No. 1 Interrupt No. 3 Select	On	Connect AN2 to IRQ5_b/FEC_MDC to sense interrupt signal
		Off	Isolate AN2 from IRQ5_b/FEC_MDC to measure analog signal
J49	Battery Selection	1-2 Cut-Trace	Connect SW1 to BAT1 for 4x AA cells
		2-3	Connect SW1 to BAT2 for 7.2V external battery pack

For more information, visit
freescale.com/Tower

Join the online Tower community at
towergeeks.org

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Doc Number: TWRMECHQSG REV1 Agile Number: 926-27081 REV B

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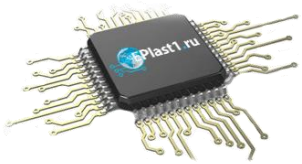
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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