

Flexis™ Microcontroller Series

DEMOJM

Cost-effective USB development

- **Quick Start Guide**
- **Lab Tutorials**
- **CodeWarrior® Manual**
- **Getting Started DVD**



Introduction

DEMOJM is a cost-effective kit targeting quick microcontroller evaluation. The kit includes a DEMOJM base board, a red MCF51JM128 daughter card and a green MC9S08JM60 daughter card. The included kit can first be used to demonstrate the features of the MC9S08JM60 devices, starting with an on-chip USB device controller and transceiver. Then, move to MCF51JM128 with an on-chip USB On-The-Go (OTG) dual-role controller. The USB features are supported in hardware through a dedicated USB mini-AB connector and in software through the included complimentary USB-LITE stack by CMX.

This Quick Start Guide includes two sections and is designed to get you ready to develop your next USB application using the MC9S08JM60 and MCF51JM128 within minutes.

Quick Start Guide for MC9S08JM60

Step-by-step instructions

Please take a look at the DEMO9S08JM60 Labs document (DEMO9S08JM60LAB) included in the “Training” section of the DVD to learn more about the key USB benefits that JM60 gives your application.

STEP 1

Install CodeWarrior® for Microcontrollers and JM60 Service Pack

CodeWarrior is a powerful tool designed to help you maximize your time to market. The CodeWarrior Service Pack will install the appropriate support files for the MC9S08JM60 to the existing CodeWarrior installation. CodeWarrior installation is a one-time required step before connecting the board to your computer.

1. Insert provided DVD into computer and a menu will appear.
2. Click on appropriate board and “Install CodeWarrior.”
3. Follow the on-screen instructions until installation is complete.
4. Return to DVD menu and click on “Install JM60 Service Pack.”
5. Follow the on-screen instructions until installation is complete.

Once installation is complete, take advantage of several CodeWarrior tutorials that will walk you through various development tool features, such as “C Programming,” “Assembly Programming,” “Using Processor Expert™” and more. Simply open CodeWarrior via the “Programs>Freescale CodeWarrior>CW for Microcontroller V6.x>CodeWarrior IDE.exe” path. Click “Run Getting Started Tutorial” from the startup dialog, select a tutorial and follow the on-screen instructions.

STEP 2

Install USB-LITE Stack by CMX for MC9S08JM60

USB-LITE stack by CMX for MC9S08JM60 is a complimentary stack with the appropriate JM60 USB device mode low-level drivers and top-level HID class and CDC class examples. To exercise the various USB examples packaged with the stack follow the step-by-step DEMO9S08JM60 Labs document (DEMO9S08JM60LAB) included in the “Training” section of the DVD. Stack installation is a one-time required step before developing with this software.

1. Insert provided DVD into computer and a menu will appear.
2. Click on “8-bit Flexis JM60” under “Install Complimentary Freescale USB-LITE by CMX”. This will launch the stack installer.
3. Follow on-screen instructions until installation is complete.

**STEP
3**

Install PEMICRO Embedded Multilink Toolkit

PEMICRO Embedded Multilink Toolkit includes graphical utilities that run on your computer and help speed up your development. These utilities take development beyond the hardware and interact with the target microcontroller over the same USB multilink reference design on the board that allows you to debug using CodeWarrior. Best of all, you can debug your microcontroller in CodeWarrior while simultaneously using one of the following utilities: Logic Analyzer, Serial Grapher, Terminal Window and Accelerometer Demo Grapher. PEMICRO Embedded Multilink Toolkit install is a one-time required step.

1. Insert provided DVD into computer and a menu will appear.
2. Click on "Install PEMICRO Toolkit." This will launch the toolkit installer.
3. Follow the on-screen instructions to complete installation.

For more information on PEMICRO Embedded Multilink Toolkit read the DEMOJM User Manual (DEMOJMUM.pdf) included in the "Documentation" section of DVD. For new and upgraded utilities to the PEMICRO Embedded Multilink Toolkit, visit www.pemicro.com.

**STEP
4**

Connect Board to Computer

USB driver installation is a one-time required step, to be completed after CodeWarrior installation.

1. Remove DEMOJM base board and green MC9S08JM60 daughter from anti-static bags.
2. Plug in the green daughter card to DEMOJM base board aligning pin 1 arrows.
3. Connect provided A to B gray USB cable from a free USB port on your computer to the USB connector on the board.
4. Operating system will recognize your board as new hardware and will prompt you to install the USB drivers. Choose recommended option to install the software automatically. USB drivers for your board were pre-loaded in CodeWarrior installation.
5. Follow on-screen instructions until all USB driver installations are complete. The green USB LED on-board should illuminate.

**STEP
5****Test Board by Running Quick Start Application**

Now that you have successfully completed the software and hardware setup, test your board by running the Quick Start Application pre-loaded in the microcontroller's on-chip flash memory.

The programmed application is the HID class software included in the complimentary USB-LITE stack by CMX for MC9S08JM60. The HID class software includes several examples (mouse, keyboard, etc.) with the default example, turning your board and making it a simple HID mouse by exercising the JM60 on-chip USB 2.0 full-speed device controller and transceiver. The example takes control of your computer's mouse cursor and moves it continuously in a back and forth motion following USB enumeration.

1. Turn the SYSTEM POWER switch to the “on” position. The red POWER LED will illuminate and the application will start.



2. Connect provided A to mini-B black USB cable from a free USB port on your computer to the mini-AB USB connector on the board.

3. Your computer will recognize the MC9S08JM60 as an HID mouse device and begin installation (no user interaction needed). When hardware installation is complete, the MC9S08JM60 will control your mouse cursor by moving it back and forth.
4. Now that your board is functional, try out the labs discussed in the DEMO9S08JM60 Labs document (DEMO9S08JM60LAB) included in the “Training” section of the DVD. These labs will guide you step by step through all the HID and CDC class examples included in the complimentary USB-LITE stack by CMX for MC9S08JM60.

Quick Start Guide for MCF51JM128

Step-by-step instructions

Please take a look at the DEMO51JM128 Labs document (DEMO51JM128LAB) included in the “Training” section of the DVD to learn more about the key USB benefits that JM128 gives your application.

STEP
1

Install CodeWarrior for Microcontrollers and JM128 Service Pack

CodeWarrior is a powerful tool designed to help you maximize your time to market. The CodeWarrior Service Pack will install the appropriate support files for the MCF51JM128 to the existing CodeWarrior installation. CodeWarrior installation is a one-time required step before connecting the board to your computer.

1. Insert provided DVD into computer and a menu will appear.
2. Click on appropriate board and “Install CodeWarrior.”
3. Follow the on-screen instructions until installation is complete.
4. Return to DVD menu and click on “Install JM128 Service Pack.”
5. Follow the on-screen instructions until installation is complete.

Once installation is complete, take advantage of several CodeWarrior tutorials that will walk you through various development tool features, such as “C Programming,” “Assembly Programming,” “Using Processor Expert” and more. Simply open CodeWarrior via the “Programs>Freescale CodeWarrior>CW for Microcontroller V6.x>CodeWarrior IDE.exe” path. Click “Run Getting Started Tutorial” from the startup dialog, select a tutorial and follow the on-screen instructions.

STEP
2

Install USB-LITE Stack by CMX for MCF51JM128

USB-LITE stack by CMX for MCF51JM128 is a complimentary stack with the appropriate JM128 USB OTG dual-mode low-level drivers and top-level HID class and CDC class examples. To exercise the various USB examples packaged with the stack follow the step-by-step DEMO51JM128 Labs document (DEMO51JM128LAB) included in the “Training” section of the DVD. Stack installation is a one-time required step before developing with this software.

1. Insert provided DVD into computer and a menu will appear.
2. Click on “32-bit Flexis JM” under “Install Complimentary Freescale USB-LITE by CMX.” This will launch the stack installer.
3. Follow on-screen instructions until installation is complete.

**STEP
3****Install PEMICRO Embedded Multilink Toolkit**

PEMICRO Embedded Multilink Toolkit includes graphical utilities that run on your computer and help speed up your development. These utilities take development beyond the hardware and interact with the target microcontroller over the same USB multilink reference design on the board that allows you to debug using CodeWarrior. Best of all, you can debug your microcontroller in CodeWarrior while simultaneously using one of the following utilities: Logic Analyzer, Serial Grapher, Terminal Window and Accelerometer Demo Grapher. PEMICRO Embedded Multilink Toolkit install is a one-time required step.

1. Insert provided DVD into computer and a menu will appear.
2. Click on “Install PEMICRO Toolkit.” This will launch the toolkit installer.
3. Follow the on-screen instructions to complete installation.

For more information on PEMICRO Embedded Multilink Toolkit read the DEMOJM User Manual (DEMOJMUM.pdf) included in the “Documentation” section of DVD. For new and upgraded utilities to PEMICRO Embedded Multilink Toolkit, visit www.pemicro.com.

**STEP
4****Connect Board to Computer**

USB driver installation is a one-time required step, to be completed after CodeWarrior installation.

1. Remove DEMOJM base board and the red MCF51JM128 daughter card from anti-static bags.
2. Plug in the red daughter card to DEMOJM base board aligning pin 1 arrows.
3. Connect provided A to B gray USB cable from a free USB port on your computer to the USB connector on the board.
4. Operating system will recognize your board as new hardware and will prompt you to install the USB drivers. Choose recommended option to install the software automatically. USB drivers for your board were pre-loaded in CodeWarrior installation.
5. Follow on-screen instructions until all USB driver installations are complete. The green USB LED on-board should illuminate.

STEP 5

Test Board by Running Quick Start Application

Now that you have successfully completed the software and hardware setup, test your board by running the Quick Start Application pre-loaded in the microcontroller's on-chip flash memory. The programmed application is the HID class software included in the complimentary USB-LITE stack by CMX for MCF51JM128. The HID class software includes several examples (mouse, keyboard, etc.) with the default example turning your board and making it a simple HID mouse by exercising the JM128 on-chip USB 2.0 OTG controller. The example takes control of your computer's mouse cursor and moves it continuously in a back and forth motion following USB enumeration.

1. Turn the SYSTEM POWER switch to the "on" position. The red POWER LED will illuminate and application will start.
2. Connect provided A to mini-B black USB cable from a free USB port on your computer to the mini-AB USB connector on the board.



3. Your computer will recognize the MCF51JM128 as an HID mouse device and begin installation (no user interaction needed). When hardware installation is complete, the MCF51JM128 will control your mouse cursor by moving it back and forth.
4. Now that your board is functional, try out the labs discussed in the DEMO51JM128 Labs document (DEMO51JM128LAB) included in the "Training" section of the DVD. These labs will guide you step by step through all the HID (device & host), CDC, and Mass Storage examples included in the complimentary USB-LITE stack by CMX for MCF51JM128.

For more information on PEMICRO Embedded Multilink Toolkit read the DEMOJM User Manual (DEMOJMUM.pdf) included in the "Documentation" section of DVD. For new and upgraded utilities to PEMICRO Embedded Multilink Toolkit, visit www.pemicro.com.

Accelerometer Demo Grapher

This utility will graph data from the virtual serial port on the DEMOJM board. The state of the on-board three-axis accelerometer can be sampled by the microcontroller's analog-to-digital converter channels and results can be graphed by transmitting over the virtual serial port using the microcontroller's serial communication interface.

Virtual Serial Port

The DEMOJM board has the capability of implementing a virtual serial port on the PC. This allows the PC to send and receive serial data via the serial communication pins of P&E's Embedded Multilink design. Using jumper J4, this virtual serial port may be configured to connect to the SCI port on the JM60 or JM128 processor.

Freescale USB-LITE Stack by CMX

Freescale is providing a comprehensive USB software solution through a complimentary USB stack. The Freescale USB-LITE stack by CMX enables USB device/host/OTG modes of operation. The USB stack supports several HID (device & host), CDC, and Mass Storage projects. The complimentary stack also interfaces with CodeWarrior Development Studio, providing a productive, comprehensive development environment for designing embedded applications.

Get to Know the DEMOJM Board

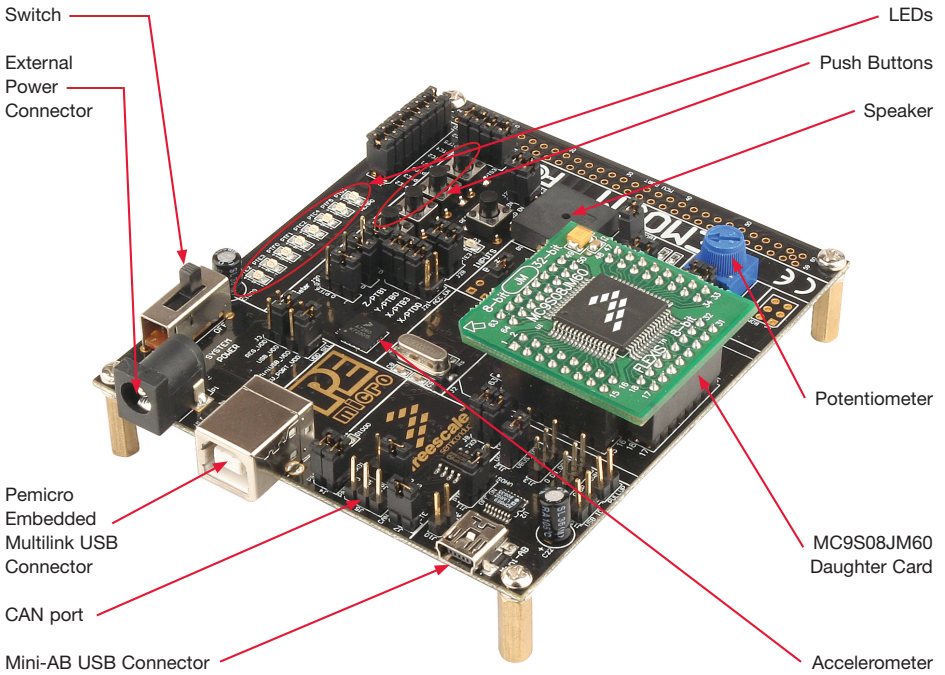


Figure 1. DEMOJM baseboard with MC9S08JM60 daughter card

Learn More: For more information about the JM family, please visit www.freescale.com/flexis.



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