8-bit Microcontroller

DEMO9S08LL16

Ultra-low-power LCD microcontroller

Energy
Efficient Solutions
optimized for low power
™

- **Quick Start Guide**

- **Lab Tutorials**

- **CodeWarrior™ Manual**

- **Getting Started DVD**

freescale
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Get to Know the DEMO9S08LL16 Board

Custom LCD glass

Barrel connector for external power

Power select jumper (USB or external)

Push buttons

RESET button

LEDs

Embedded BDM

MCU port

MMA7260 accelerometer

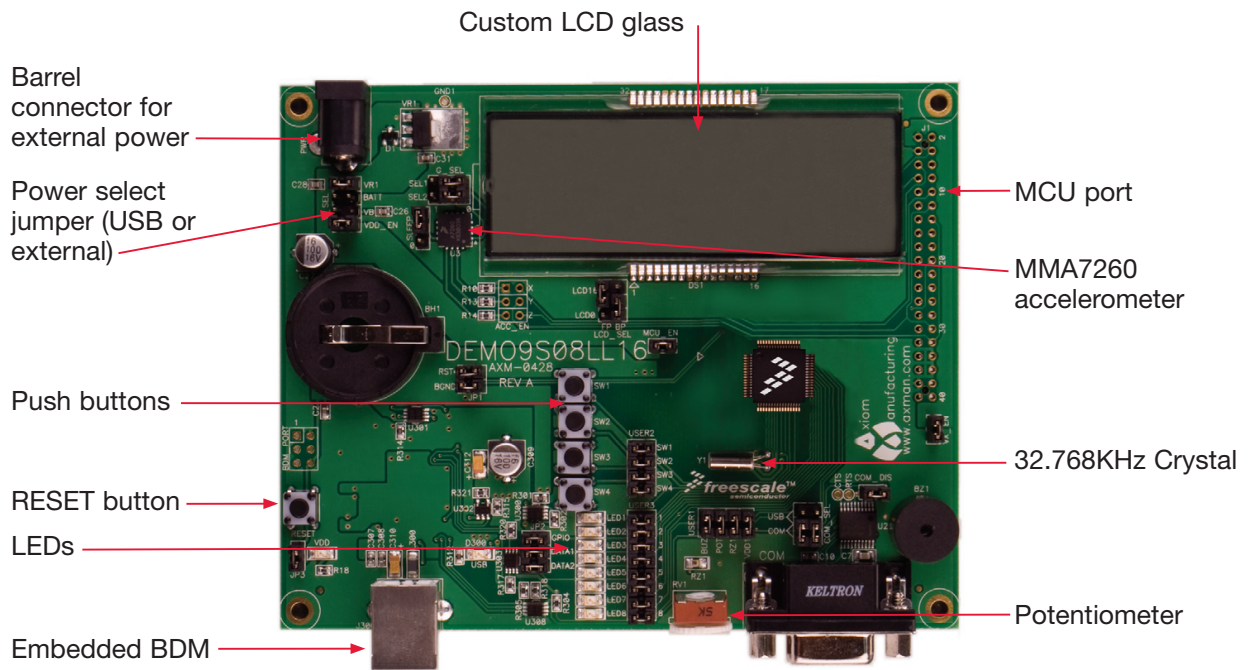32.768KHz Crystal

Potentiometer

Figure 1. DEMO9S08LL16

Introduction

DEMO9S08LL16 is a cost-effective board targeting quick microcontroller evaluation. The MC9S08LL16 device is Freescale's lowest power microcontroller with an integrated liquid crystal display (LCD) driver. DEMO9S08LL16 contains an on-board display that allows developers to explore software development using the integrated LCD driver.

This quick start guide is designed to get you ready to develop your next LCD application using the MC9S08LL16 within minutes.

Step-by-Step Installation Instructions

Please take a look at the DEMO9S08LL16 Labs document (DEMO9S08LL16LAB) included in the "Training" section of the DVD to learn more about the key benefits that MC9S08LL16 gives your application.

Install CodeWarrior™ for Microcontrollers and MC9S08LL16 Service Pack

CodeWarrior is a powerful tool designed to help you speed your time to market. The CodeWarrior Service Pack will install the appropriate support files for the MC9S08LL16 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 "Install CodeWarrior."
3. Follow the on-screen instructions until installation is complete.
4. Return to DVD menu and with the DEMO9S08LL16 board highlighted on the left, click on "Software." Here, click on "Install LL16 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 V6.2 > 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 DEMOLL16 Documentation

The Getting Started DVD included with the demo board kit contains a folder with demo board materials. This folder should be copied onto the computer for use in the next steps.

1. Insert provided DVD into your computer and from the Main Menu, with the DEMO9S08LL16 board highlighted on the left, click on "Software."

2. Click on "DEMOLL16 Toolkit."

3. Copy these contents into the C:\ directory for easy access.

4. Navigate to the DEMOLL_Toolkit folder and run the install executable for the DemoLL16_Toolkit_setup. This will install the P&E Embedded multilink utilities needed for lab examples.

For your reference, the documentation contains:

- CodeWarrior project files
- Demo board schematics
- Demo board LCD glass specifications
- Demo board user's manual

STEP 3

Connect Board to Computer and Launch the Demo Program

USB driver installation is a one-time required step that requires CodeWarrior installation first.

1. Remove board from anti-static pouch.

2. Make sure the jumpers are in the default positions.

3. Connect provided USB cable from a free USB port on your computer to the USB connector on the board.

4. The 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 the CodeWarrior installation.

5. Follow on-screen instructions until USB driver installation is complete.

Once the USB driver installation is complete the Demo Program will be launched. Upon power on or a Reset the LCD will scroll the message "9S08LL16 DEMO BOARD," then it will enter a low-power time-display mode.

Run and Debug Example Code On Board

1. Start CodeWarrior by selecting it in the Windows Start menu.

2. From the CodeWarrior main menu, choose "File > Open" and choose the DEMOLL16_Quick_Start. mcp that is found in the DEMOLL_Toolkit\DEMOLL_ Software_Examples\DEMOLL16_Quick_Start directory. This is the board example you copied from the Getting Started DVD included with the demo board tool kit.

3. Click "Open." The Project window will open.

4. The C code of this example is contained in the "main.c" file. Double click on it to open it.

5. From the main menu, choose "Project > Debug." This will compile the source code, generate an executable file and download it to the demo board.

6. A new debugger environment will open. From the main menu, choose "Run > Start/Continue." The program will be executed in real-time.

7. From the main menu, choose "Run > Halt." The program execution will stop. The next instruction to be executed is highlighted in the Source window.

8. From the main menu, choose "Run > Single Step." The instruction highlighted in the Source window will be executed, and the program execution will be stopped immediately after.

9. From the main menu, choose "Run > Start/ Continue." The application will restart from where it was previously stopped.

Now that you have successfully completed the software and hardware setup, test your board by running the demo board application pre-loaded in the microcontroller's on-chip flash memory. For information on how to use the demonstration code, please refer to the DEMO9S08LL16 Labs document (DEMO9S08LL16LAB).

Learn More: For more information about
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