Quick Start Guide

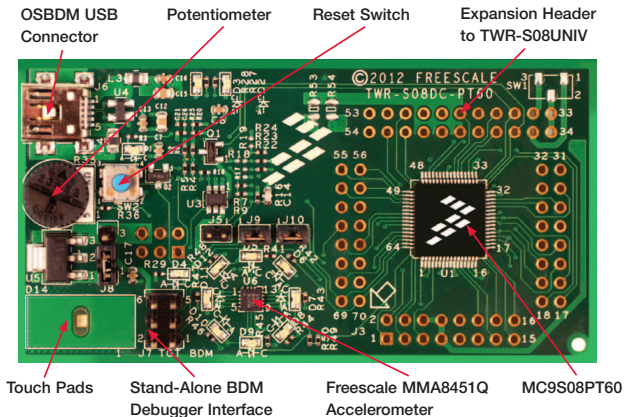## TWR-S08DC-PT60

Tower System Daughter Card for
the 5-Volt 8-bit MC9S08P Family

Get to Know the TWR-S08DC-PT60

OSBDM USB Connector

Potentiometer

Reset Switch

Expansion Header to TWR-S08UNIV

Touch Pads

Stand-Alone BDM Debugger Interface

Freescale MMA8451Q Accelerometer

MC9S08PT60

TWR-S08DC-PT60 Daughter Card
Freescale Tower System

The TWR-S08DC-PT60 daughter card, in conjunction with the TWR-S08UNIV MCU module, is part of the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware.

TWR-S08DC-PT60 Daughter Card Features

TWR-S08DC-PT60 demonstrates the capability of the 5-volt, 8-bit MC9S08P family of MCUs, targeted for industrial and home appliance applications.

It can function as a stand-alone, low-cost platform for evaluation of MC9S08PT60 devices or used in conjunction with the TWR-S08UNIV Tower System module.

TWR-S08DC-PT60 Daughter Card Features

- GPIO via LEDs
- Touch-sensing interface with touch pad
- ADC from potentiometer input
- I²C to Low-g sensor
- Flash/EEPROM operation with silicon
- Additional functionality if connected to TWR-S08UNIV module

Step-by-Step Installation Instructions

This quick start guide is designed to provide step-by-step guidelines to get you ready to develop your applications using the MC9S08PT60 within minutes.

1 Download and Install Software and Tools

1. Download and install CodeWarrior Development Studio for Microcontrollers V10.2 or later, available **here**.

2. Next, download CodeWarrior for MCU 10.2 Update 1.0.0 or later available **here**.

Install by following these steps:

- Open the CodeWarrior application from the Windows Start menu

- Select the required workspace and click **"OK"**

- Go to the **Help** menu in the current window

- Select **"Install New Software"** item from the drop down menu

- In the **"Install"** dialog, click **"Add"** in the upper right-hand corner

- In the **"Add Repository"** dialog, insert your favorite site name as the update location in the **"Name"** text box and click **"Archive"**

- In the **"Repository archive"** browse dialog, select the zip archive containing the Service Pack Updater Archive and click **"Open"**

- Open the **"Work with:"** drop down list and select the update location you have just added

- Select the repository name you have just added and click "Select All" and uncheck **"Contact all updates sites during install to find required software"**, then click **"Next"**

- Wait for the Updater to open the archive and the **"Install/Install Details"** dialog will appear. Select the Service Pack and click **"Finish."** This will automatically install all the Service Pack dependencies

- Select **"I accept the terms of the license agreement"** and click **"Finish"**

- You will be asked to restart CodeWarrior again. Select **"Yes"**

3. Install PEMICRO Embedded Multilink Toolkit (Visit **pemicro.com/osbdm/index.cfm** and click "OSBDM Virtual Serial Toolkit" to download).

4. Create a local workspace (folder) on your computer, for example, PT60Lab.

2 Set Up the TWR-S08DC-PT60 Daughter Card

1. Remove the TWR-S08DC-PT60 daughter card from the package. Ensure the jumpers are in the default positions as shown in the Default Jumper Options table on the following pages of this quick start guide.

2. After ensuring the jumpers are in the default positions, connect USB cable (not provided) from a free USB port on your computer to the mini-B USB connector on the TWR-S08DC-PT60 daughter card. Allow the PC to automatically configure the USB drivers as needed. USB drivers for your TWR-S08DC-PT60 daughter card were pre-loaded in the CodeWarrior installation.

Step-by-Step Installation Instructions (cont.)

3 **Run CodeWarrior Software V10.2 or Later and Debug Environment**

Note: Find codes and projects at **freescale.com/S08P**

1. Run CodeWarrior V10.2 or later by selecting it from the Windows Start menu.

2. From the CodeWarrior main menu, choose **"File > Switch Workspace"** and select **"Other…"** The Workspace Launcher dialog appears where the current (default) workspace name is displayed on **"Workspace:"** edit text box. If this workspace is not the one on your computer that contains lab projects, click **"Browse…"** to launch the **"Select Workspace Directory"** dialog. In this dialog, browse to the project folder (workspace) containing the lab projects and select it by clicking **"OK."** The project folder appears on the **"Workspace"** text box. Click **"OK"** to allow CodeWarrior to configure and switch to the desired workspace.

3. Click **"File > Import…"** menu item to open **Import** dialog. In the **Import** dialog, double click **"General"** and select the **"Existing Projects into Workspace"** item followed by selecting **"Next."** The Import Projects dialog appears.

4. Click **"Browse..."** in the Import projects dialog. Browse to and select the project folder **"TWR_S08DC_PT60_LAB"** followed by clicking **"OK."** The project name will appear in the Projects list and will be checked. Ensure **"Copy projects into workspace"** is unchecked, and click **"Finish."**

5. When the Remote System Missing dialog appears, click **"Yes"** until the Welcome window appears. Close this window.

6. Click the fast view icon at the bottom left of the window which will pop up on the fast view menu. Select **"CodeWarrior Projects"** from this menu to view the opened projects.

7. Click the lab project name to highlight it. Click the **"Project > Clean…"** menu item to bring up the Clean dialog. In this dialog, check **"Clean projects selected below."** Select and check the project name. Check **"Build only the selected projects"** followed by pressing **"OK."** This will start the project building process. When you see the **"Finished building: …"** message in Console view, the project building process is complete.

8. Click the **"Run > Debug Configurations…"** menu item and the Debug Configurations dialog will pop up. In the Debug Configurations dialog, expand **"CodeWarrior Download"** and select **"S08PT60_PnE MultiLink or OSBDM Connection."**

9. Click **"Debug"** to download code to the PT60. This starts the launching progress until the debugger perspective appears and stops at the line of main() in the source view.

4 Run and Debug Lab Code on TWR-S08DC-PT60 Daughter Card

1. From the main menu, choose **"Run > Resume"** or click the **Resume** icon in the Debug view toolbar. The program will be executed in real time.

2. From the main menu, choose **"Run > Suspend"** or click the **Suspend** icon. The program execution will stop. The next instruction to be executed is highlighted in the source window.

3. From the main menu, choose **"Run > Step Into"** or click the **Step Into** icon. The instruction highlighted in the C source window will be executed and the program execution will be stopped immediately.

Step-by-Step Installation Instructions (cont.)

4. From the main menu, choose **"Run > Step Over"** or click the **Step Over** icon. The debugger will execute the current statement and advance to the next statement in the source code. If the current statement is a routine call, program execution continues until it reaches:

> **end of the called routine, breakpoint, watchpoint, or an eventpoint that stops execution**

5. From the main menu, choose **"Run > Step Return"** or click the **Step Return** icon. The debugger will execute the rest of the current routine and stop program execution after the routine returns to its caller. This command causes execution to return up the call chain.

6. From the main menu, choose **"Run > Restart"** or click the **Restart** icon. The debugger goes back to the beginning of the program and begins execution again. This behavior is equivalent to killing execution and starting a new debugging session.

7. From the main menu, choose **"Run > Reset"** or click the **Reset** icon. The debugger will reset the target.

8. Click on instruction stepping mode icon, you can debug the program in Disassembly View instead of the source view.

5 Learn More

After completing the steps in this quick start guide, please take a look at the TWR-S08DC-PT60 Labs Tutorial document (TWR-S08DC-PT60_LAB) to learn more about the key benefits that MC9S08PT60 provides to your application.

TWR-S08DC-PT60 Default Jumper Options

The following is a list of all default jumper options.

Jumper	Setting	Description
J8	1 – 2	Power supply 3.3V selection
J9	1 – 2	Reset
J10	1 – 2	BKGD

Note: Other jumpers are open. For some labs, special connections are required. For more information on the special connections, consult TWR-S08DC-PT60 Labs Tutorial. Populated when connected to TWR-S08UNIV (Populate R53: when VDD_U is 5V; Populate R54: when VDD_U is 3.3V) and de-populated when disconnected from TWR-S08UNIV.