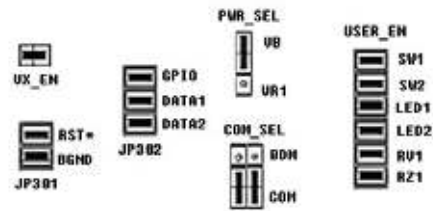# Default Jumper Settings

The following list shows the default jumper settings for DEMO9S08SE8 board.

Jumper	Status
PWR_SEL	VB
VX_EN	installed
JP301-RST*, BGND	installed
JP302-GPIO, DATA1, DATA2	installed
COM_SEL	COM
USER1, SW1, SW2, LED1, LED2, RV1, RZ1	installed

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Do More with Less

DEMO9S08SE8
Lab tutorial

Figure 1. DEMO9S08SE8

Figure labels: Push Buttons, LEDs, Power Select Jumper, MCU Port, Embedded BDM Multilink for Programming and Debug, MC9S08SE8 MCU, MCU Reset Push Button, RS232 Port

MCU Port Connector Pin Out

The following list shows the pin out for the MCU port connector on the DEMO9S08SE8 board (J1).

Symbol	Number	Number	Symbol
VX	1	2	PTA5 /IRQ/TCLK/RESET
VSS	3	4	PTA5 /IRQ/TCLK/RESET
PTB1 /KBIP5/TxD/ADP7	5	6	PTA4 /BKGD/MS
PTB0 /KBIP4/RxD/ADP6	7	8	PTB7 /EXTAL
PTA2/KBIP2/ADP2	9	10	PTB6/XTAL
PTA3/KBIP3/ADP3	11	12	NA
PTA0/KBIP0/TPM1CH0/ADP0	13	14	NA
PTB6/XTAL	15	16	NA
PTB3/KBIP7/ADP9	17	18	PTA1/KBIP1/TPM1CH1/ADP1
PTB4/TPM2CH0	19	20	PTA0/KBIP0/TPM1CH0/ADP0
PTB2/KBIP6/ADP8	21	22	NA
PTB5	23	24	NA
PTC0	25	26	PTB1/KBIP5/TxD/ADP7
PTC1	27	28	PTB0 /KBIP4/RxD/ADP6
PTC2	29	30	PTA6/TPM1CH0/ADP4
PTC3	31	32	PTA7/TPM1CH1/ADP5
PTC4	33	34	PTC7
PTC5	35	36	PTC6
NA	37	38	NA
NA	39	40	NA

DEMO9S08SE8

This document explains how to set up and use the SE8_DEMO_LAB1 example application. The example application allows the user to try out several features on Freescale's MC9S08SE8 microcontroller.

DEMO9S08SE8 Lab

This lab document applies to DEMO9S08SE8.

Start each lab with the board powered ON. Make sure to use only one utility at a time, as they share the same USB source. Familiarize yourself with these buttons:

Start/Continue (F5) button

MCU Change Wizard button

Debug button

Step 1

Setting up the Demo

1. Connect the DEMO9S08SE8 demo board to the PC with the USB cable. The jumper configuration for this application is:
   • SW1, SW2, LED1, LED2, RV1, RZ1 jumpers are installed
   • COM_SEL switches to BDM

2. Open both the CodeWarrior IDE and the SE8_DEMO_LAB1 project.

3. To compile the project and program the MCU, select "P&E Multilink/Cyclone Pro" from the pull-down menu beneath the project name. Then click the debugger icon. This will compile the project of SE8_DEMO_LAB1, launch the debugger application and prompt the user with "Erase and program FLASH." Click "Yes." The MCU is now programmed.

5. After the MCU is programmed, start the TerminalWindow. exe from the DEMO9S08SE8 Toolkit directory. It will open a terminal window connected to USB port. The USB COM port settings must be:
   • 38400 baud rate
   • 8 bits
   • No parity
   • 1 stop bit

   The demo is now ready to run.

Step 2

Running the Demo

Now click the "RUN" button. If everything is configured correctly, LED1 and LED2 will begin to blink alternately and the terminal window will display the following as soon as the demo starts:

    Welcome to the World of MC9S08SE8 Demo
    Application V1.0

    POR LVD, Reset Occurred

Main test menu
    [1] Real-time clock setup
    [2] TPM1 PWM setup
    [3] ADC test

Please select a number to execute:

- **Bus clock source**

  This demo relies on the internal clock reference to generate bus frequency and the communications baud rate. Therefore, the MCU's internal clock reference has been trimmed to 32 kHz.

- **System reset status**

  After every chip reset, the terminal will display the system reset status and state the cause or causes of the last reset.

- **Reset button**

  For this demo application, the reset pin on the MC9S08SE8 is configured as an IRQ pin function. The user can use the IRQ function to wake the MCU from low-power mode.

- **Potentiometer RV1**

  On the demo board, the RV1 is a potentiometer. The user can turn the RV1 to get the voltage (from 0V to 5V) on the RV1 jumper.

- **Photo sensor RZ1**

  On the demo board, the RZ1 is a photo sensor. As the intensity of the light shining on the RZ1 sensor changes, the RZ1 jumper voltage will vary from 0V to 5V—the lower the light, the higher the voltage. Usually, in a room environment, the RZ1 jumper voltage is about 5V, so the user needs a light source, such as lamp, to drive lower RZ1 jumper voltages.

Step 3

Demo Menu Options

The user can choose from three options to explore a few of the MC9S08SE8's features and go to the submenu of each function.

To make a selection, simply type the number next to the menu item.

[1] Real-time clock setup

    Real-time clock menu:
    [1]: Set up, enable and display real-time clock
    [2]: Disable real-time clock
    [e]: Exit real-time clock menu

Please select a number to execute.

These menu options let the user enable, disable and exit the real-time clock, which is the basis of the RTC module.

When number 1 is selected, the clock is enabled and displayed on the terminal after the current time input. Please enter the current time according to the display: format as HHMM (H=hour, M=minute). The clock will be displayed on the terminal.

When number 2 is selected, the RTC is disabled, and the clock disappears from the terminal.

[2] TPM1 PWM setup

    TPM1 menu:
    [1]: Enable TPM1
    [2]: Disable TPM1
    [e]: Exit TPM1 menu

Please select test number to execute.

These options let the user enable or disable the PWM function of TPM1.

When number 1 is selected, LED1 connected to TPM channel 0 and LED2 connected to TPM channel 1 begin to blink alternatively. When number 2 is selected, LED1 and LED2 stop blinking.

[3] ADC menu

    [1]: Enable ADC to measure the RZ1
    [2]: Disable ADC
    [e]: Exit ADC menu

Please select test number to execute.

When number 1 is selected, the analog-to-digital converter (ADC) is enabled to sample the output of RZ1. LED2 illuminates if the voltage on the photo sensor (RZ1) is higher than 4V. If the RZ1 voltage is less than 4V, LED2 will not light up. When number 2 is selected, the ADC is turned off.

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