Quick Board References

Default Jumper Settings

The following is a list of default jumper settings for DEMOQE board. The settings listed indicate the “on” (or installed) position.

Jumper	Installed Settings
J3	2&3
J4	3&4
J5	1&2
J6	2&3
J7	2&3
J8	2&3
J9	1&2, 3&4, 5&6, 7&8, 9&10, 11&12, 13&14, 15&16
J11	1&2, 3&4
J12	1&2, 3&4, 5&6, 7&8
J13	2&3
J14	2&3
J15	2&3
J16	1&2, 3&4, 7&8
J18	1&2, 3&4
J19	1&2
J20	1&2, 3&4
J21	1&2, 3&4

MCU Port Connector Pinout

The following is the pinout for the MCU port connector on the DEMOQE board.

VDD	1	2	PTA5/IRQ/TPM1CLK /RESET
VSS	3	4	PTA5/IRQ/TPM1CLK/RESET
PTB1/KBI1P5/TxD1/ADP5	5	6	PTA4/ACMP1O/BKGD/MS
PTB0/KBI1P4/RxD1/ADP4	7	8	PTE7/TPM3CLK (n/c for 32 LQFP)
PTA2/KBI1P2/SDA1/ADP2	9	10	VREFH
PTA3/KBI1P3/SCL1/ADP3	11	12	VREFL
PTC0/TPM3CH0	13	14	PTA0/KBI1P0/TPM1CH0/ADP0/ACMP1+
PTC1/TPM3CH1	15	16	PTA1/KBI1P1/TPM2CH0/ADP1/ACMP1-
PTB3/KBI1P7/MOSI1/ADP7	17	18	PTF0/ADP10 (n/c for 32 LQFP)
PTB4/TPM2CH1/MISO1	19	20	PTF1/ADP11 (n/c for 32 LQFP)
PTB2/KBI1P6/SPSCK1/ADP6	21	22	PTA6/TPM1CH2/ADP8
PTB5/TPM1CH1/SS1	23	24	PTA7/TPM2CH2/ADP9
PTD1/KBI2P1/MOSI2	25	26	PTH6/SCL2 (n/c for 32 LQFP)
PTD2/KBI2P2/MISO2	27	28	PTH7/SDA2 (n/c for 32 LQFP)
PTD0/KBI2P0/SPSCK2	29	30	PTD4/KBI2P4 (n/c for 32 LQFP)
PTD3/KBI2P3/SS2	31	32	PTD5/KBI2P5 (n/c for 32 LQFP)
PTC2/TPM3CH2	33	34	PTD6/KBI2P6 (n/c for 32 LQFP)
PTC3/TPM3CH3	35	36	PTD7/KBI2P7 (n/c for 32 LQFP)
PTC4/TPM3CH4/RSTO	37	38	PTC7/TxD2/ACMP2-
PTC5/TPM3CH5/ACMPO	39	40	PTC6/RxD2/ACMP2+
(n/c for 32 LQFP) PTF2/ADP12	41	42	PTB7/SCL1/EXTAL
(n/c for 32 LQFP) PTF3/ADP13	43	44	PTB6/SDA1/XTAL
(n/c for 32 LQFP) PTF4/ADP14	45	46	PTG0 (n/c for 32 LQFP)
(n/c for 32 LQFP) PTF5/ADP15	47	48	PTG1 (n/c for 32 LQFP)
(n/c for 32 LQFP) PTF6/ADP16	49	50	PTH0 (n/c for 32 LQFP)
(n/c for 32 LQFP) PTF7/ADP17	51	52	PTH1 (n/c for 32 LQFP)
(n/c for 32 LQFP) PTG2/ADP18	53	54	PTE6 (n/c for 32 LQFP)
(n/c for 32 LQFP) PTG3/ADP19	55	56	NC

Learn More: For more information about ColdFire family products, please visit **www.freescale.com/flexis**.

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Document Number: DEMOQE128QSG
REV 2



Flexis™ Series—8-bit and 32-bit Compatible MCUs

Energy Efficient Solutions optimized for low power

DEMOQE128
Quick Start Guide

Step 1: Install CodeWarrior® for Microcontrollers

Step 2: Install DEMOQE Toolkit

Step 3: Connect Board to Computer

Step 4: Test Board by Running Quick Start Application

Introduction

DEMOQE128 is a cost-effective board targeting quick microcontroller evaluation. The board includes two plug-in daughter cards to highlight the ease of migration between the Flexis™ QE128, 8-bit S08 and 32-bit ColdFire V1® microcontrollers. The board also includes a power terminal to measure the ultra-low power consumption of the Flexis QE128 devices.

This quick start guide is designed to get you ready to develop your application on the QE128 within minutes. Please take a look at the DEMOQE128 Labs document (DEMOQE128LAB) to learn more about the key benefits that QE128 gives your application.

Step by Step Installation Instruction

STEP 1 Install CodeWarrior® for Microcontrollers

CodeWarrior is a powerful tool designed to help you maximize your time to market. 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 using your default browser.**
2. **Click on the appropriate board and "Install CodeWarrior."**
3. **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 V6.0>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 DEMOQE Toolkit

DEMOQE Toolkit install is a one-time required step. The DEMOQE 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.

1. **Insert provided DVD into computer and a menu will appear using your default browser.**
2. **Click on "DEMOQE128," then click on "Install DEMOQE Toolkit." This will launch the P&E DEMOQE Toolkit Installer.**
3. **Follow the on-screen instructions to complete installation.**

For more information on DEMOQE Toolkit read the board user manual (DEMOQE128UM.pdf) on **www.freescale.com/flexis** and included on the DVD under "DEMOQE128>DEMOQE128 User Manual." For new and upgraded utilities to "DEMOQE Toolkit," visit **www.pemicro.com/fixedlinks/demoQEtoolkit.html**.

STEP 3 Connect Board to Computer

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

1. **Remove board from anti-static pouch. The green 8-bit MC9S08QE128 daughter card will be mounted on the base board.**
2. **Connect provided USB cable from a free USB port on your computer to the USB connector on the board.**
3. **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.**
4. **Follow on-screen instructions until all USB driver installations are complete. The green USB LED on-board should illuminate.**

STEP 4 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 samples the microcontroller's general-purpose input pins connected to push buttons to perform two actions. The first action is to illuminate the respective LED with either a general-purpose output pin or a pulse-width modulated signal pin. The second action is to play a different tone per push button on the speaker using a pulse-width modulated signal programmed at different frequencies. Last, the application samples the potentiometer using the microcontroller's analog-to-digital converter and uses the result to vary the light intensity of two LEDs by changing their pulse-width modulated signal's duty cycle.

1. **Turn the SYSTEM POWER switch to the "on" position. The red POWER LED will illuminate and application will start.**
2. **Press push buttons labeled PTA2, PTA3, PTD2 and PTD3. A different tone will be emitted from speaker when each push button is pressed, and the corresponding LEDs labeled PTC1, PTC2, PTC3 and PTC4 will illuminate.**
3. **Rotate potentiometer to vary light intensity of the LEDs labeled PTC0 and PTC5. Rotating clockwise will brighten the PTC0 LED and dim the PTC5 LED. Rotating counter clockwise has the opposite effect.**
4. **Now that your board is functional, try out the labs discussed in the DEMOQE128 Labs document to learn more about the Flexis QE128 microcontrollers and other features included with your board.**

Additional DEMOQE Toolkit Applications

In addition to the Quick Start Application and Logic Analyzer Utility, the DEMOQE Resources on the Breaking Bit Boundaries DVD-ROM features other toolkit applications that work with the DEMOQE128 board. One such application is featured below.

Accelerometer Demo Application

This graphing application will graph data from the serial port or virtual serial port on the DEMOQE board. The state of the on-board three-axis accelerometer is sampled by the microcontroller-based serial accelerometer demonstration code using on-chip A/D converter channels. This data is converted into ASCII characters and sent out the serial port of the DEMOQE board. The data is then graphed by the PC-based graphing application for the user to view. This application may be used to graph any data as long as the data is formatted properly.

Both the MCU-based demonstration code and the PC-based graphing application may be downloaded from **www.pemicro.com/fixedlinks/demoQEtoolkit.html**.

Virtual Serial Port

The DEMOQE128 board also 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 jumpers J6 and J7, this virtual serial port may be configured to connect to the SCI port on the QE128 processor.