# **NP** QE128 Quick Start Guide



Before connecting the Evaluation Board to the PC, it is recommended that you install CodeWarrior first, so that the appropriate USB driver will be

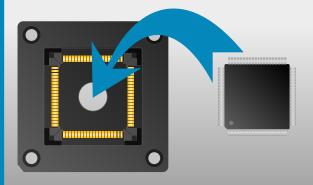
automatically found by Windows when you connect the Evaluation Board.

To install the Code-Warrior Development Studio, insert the Flexis QE128 DVD-ROM into your computer's DVD-ROM drive. A startup window will automatically appear. Follow the on-screen instructions.

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#### Insert Micro in Socket

Insert either the MC9S08QE128 or MCF51QE128 microcontroller into the socket, using the provided pick-up vacuum pump. Please verify the correct alignment of microcontroller pin 1 with socket pin 1.



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#### **Board Connection**

Power the board through either the barrel connector or the USB connector, making sure that the "POWER SEL" jumper selects the correct power source. Slide the "ON-OFF" switch to the "ON" position. The "POWER" LED will turn on.

Insert one end of the USB cable into a free USB port of the PC.

Insert the other end of the USB cable into the USB connector on the board.

The first time the board is connected to the PC, Windows recognizes the



instrument and starts the "Found New Hardware Wizard" procedure, asking you to specify the driver to use for the instrument. Follow the Wizard steps, choosing to install the software automatically when requested.

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### Standalone Mode

In standalone mode, no PC connection is required, unless you are powering the board through USB. Both microcontrollers are factory programmed with the same sample application.

To run the built-in example:

- Ensure that all of the jumpers in the "I/O" sections are inserted.
- Press the "PTD4" push-button. The value of the ADP0/PTA0 potentiometer will be displayed on the PTE[7..0] LEDs.
- Press the "PTD5" push-button. The value of the light sensor will be displayed on the PTE[7..0] LEDs.
- Press the "PTD6" push-button. The APD0/PTA0 potentiometer will vary the frequency of the sound played by the buzzer.
- Press the "PTD7" push-button. The value of the temperature sensor will be displayed on the PTE[7..0] LEDs.

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## Standalone Mode - Part 2

The output of the potentiometer, light sensor and temperature sensor is also sent to the host PC (if connected) through the virtual COM port over the USB connection.

To see the data sent to the virtual COM port, do the following:

- Ensure that the J206 jumpers ("COM1 ENA") select the "MDI" position;
- Connect the board to the PC through the USB connection;
- Check the "Device Manager" for the correct port number;
- Start your terminal utility (e.g. HyperTerminal) with these parameters:

Baud rate: 9600 Data bits: 8 Parity: None Stop bits: 1 Flow control: None Buzzer frequency is (Hz):4089
Buzzer frequency is (Hz):4111
Buzzer frequency is (Hz):4089
Buzzer frequency is (Hz):4111
value of the Light Sensor is:16
value of the Light Sensor is:06
value of the Potentiometer is:0
value of the Potentiometer is:0
value of the Potentiometer is:0

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#### Congratulations!

For an in-depth guide of all of the user interface features, read the User's Manual present on the DVD



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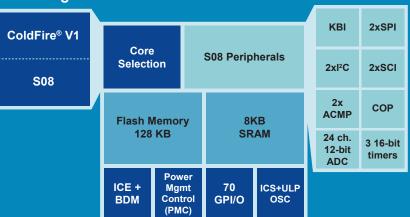


#### **Component References**

COMPONENT	RELATED MCU PIN
PTD4 SWITCH (SW301)	PTD4
PTD5 SWITCH (SW302)	PTD5
PTD6 SWITCH (SW303)	PTD6
PTD7 SWITCH (SW304)	PTD7
RESET SWITCH (SW305)	PTA5
PTE7 LED (LD301)	PTE7
PTE6 LED (LD302)	PTE6
PTE5 LED (LD303)	PTE5
PTE4 LED (LD304)	PTE4
PTE3 LED (LD305)	PTE3
PTE2 LED (LD306)	PTE2
PTE1 LED (LD307)	PTE1
PTE0 LED (LD308)	PTE0
RSTO LED (LD309)	PTC4
ACMP2O LED (LD310)	PTC5/ACMP2O
POTENTIOMETER (P301)	PTC6/ACMP2+ & PTA0/ADP0/ACMP1+
LIGHT SENSOR (R317)	PTA1/ADP1/ACMP1-
TEMPERATURE SENSOR (R319)	PTC7/ACMP2- & PTG7/ADP23
RS-232_1 RX / MDI RX (J209 / J401)	PTB0
RS-232_1 TX / MDI TX (J209 / J401)	PTB1
RS-232_2 RX (J210)	PTC6/ACMP2+
RS-232_2 TX (J210)	PTC7/ACMP2-
BUZZER (BZ301)	PTC3/TPM3CH3
LCD PORT (J208)	PTD0 & PTD1 & PTD2 & PTD3
IIC1 PULL-UPS (J303)	PTB6 & PTB7
IIC2 PULL-UPS (J304)	PTH7 & PTH6

Highlighted pin/lines are shared between two I/O components

#### **Block Diagram**



#### Important I/O Registers \*

PERIPHERAL	REGISTER NAME
Analog-to-Digital Converter	ADCSC1
	ADCSC2
	ADCRH
	ADCRL
	ADCCFG
Timer/Pulse-Width Modulator	TPMxSC
	TPMxCNTH
	TPMxCNTL
	TPMxCnSC
	TPMxCnVH
	TPMxCnVL
Serial Communications Interface	SCIxBDH
	SCIxBDL
	SCIxC1
	SCIxC2
	SCIxS1
	SCIxS2
	SCIxD

Related to the preprogrammed demo example

#### MCF51QE128 Memory Map

CPU Address	
0x(00)00_0000 0x(00)01 FFFF	Flash 128K BYTES
0x(00)02_0000 0x(00)7F FFFF	Reserved
0x(00)80_0000 0x(00)80_1FFF	RAM <b>8K BYTES</b>
0x(00)80_2000 0x(00)BF 7FFF	Reserved
0x(00)C0_0000 0x(00)C0_000F	ColdFire Rapid GPIO
0x(00)C0_0010 0x(FF)FF 7FFF	Reserved
0x(FF)FF_8000	Slave Peripherals

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#### MC9S08QE128 Memory Map

#### Extended Address **CPU Address** 0x00000 0x0000 DIRECT PAGE REGISTERS 128 BYTES PPAGE=0 When PPAGE 0 is When the CPU 0x007F 'accessed through 'accesses PPAGE RAM the linear address 0 directly, RAM 6016 BYTES pointer or through 0x17FF and registers, **FLASH** the paging 0x1800 HIGH PAGE REGISTERS 128 BYTES when present, 16384 BYTES window, the flash take priority over ' memory is read I flash memory 0x187F 0x1880 PPAGE=7 RAM 2048 BYTES 0x207F PPAGE=6 0x2080 PPAGE=5 **RAM** 8000-0x1BF **8064 BYTES** PPAGE=4 0x03FFF 0x3FFF 0x04000 0x4000 PPAGE=1 PPAGE=3 PPAGE=2 FLASH 16384 BYTES PPAGE=1 0x07FFF 0x7FFF PPAGE=0 0x08000 0x8000 Paging Window -Extended **FLASH** addresses formed 16384 BYTES with PPAGE and A13:A0 of CPU address 0x0BFFF 0xBFFF 0x0C000 0xC000 PPAGE=3 **Extended Address** FLASH 16384 BYTES

0xFFFF



0x0FFFF