PSoC™ Designer:
ICE Connection Troubleshooting
User Guide

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Section 1. Introduction

The purpose of this user guide is to facilitate establishing a connection to the In-Circuit Emulator (ICE). The PSoC ICE provides significant debugging functionality that requires full two-way communication over the ICE to operate. There are several steps in the connection process, including both setting up the hardware, and making the communications connection in the software. Making the software connection on your computer may require changes in the BIOS settings.

Some recent laptops do not support EPP and Bi-directional modes in the BIOS needed for full two-way communication over the ICE. A relatively easy method that bypasses the need for changing the BIOS settings is to install a parallel port card. This has the added benefit of providing a dedicated port to the ICE without potential conflicts with other applications or printers a user may have on their computer. Section 6. Alternate Parallel Port Cards details parallel port cards for both desktops and laptops that have been tested for compliance with the ICE.

New with PSoC Designer v. 4.1 is the USB Dongle. The USB Dongle allows the standard parallel port ICE to connect to a USB 1.1 or 2.0 port (as an alternative to the current parallel port method). See the *USB Dongle Installation Guide* for details.

We want to assist you in troubleshooting any problems with the ICE connection. If the information in this user guide is not sufficient to resolve any issues, please use the following resources:

TightLink Technical Support System
You can enter a support request in this system with a guaranteed response-time of four hours:

http://www.cypress.com/support/login.cfm

Support Forums
View and participate in discussion threads about a wide variety for PSoC MCU topics:

http://www.cypress.com/forums/

Section 2. Connecting to the ICE

Physically connecting your computer to the In-Circuit Emulator (ICE) and its related hardware is the first step before you can download and debug your project. The second step is connecting to the ICE inside PSoC Designer. Both steps are discussed in this section.

Installing PSoC Designer on Windows NT/2000/XP requires user to have local Administrator permission.

2.1 Connecting the Hardware

To physically connect your computer to the ICE (and related hardware), perform the following steps:

1. Locate the parallel interface cable, ICE-4000, power adapter, blue CAT5 Patch cable, Pod, and Pup.

   a. Plug the parallel interface cable into the LPT1 port (back of computer).

If your PC's main connection to its printer is through LPT1, you will need to connect the ICE to an alternate port. Otherwise, this will disable other uses of the parallel port. See Alternate Parallel Port Cards page 19.

   b. Plug the other end of the parallel interface cable into the ICE.

   c. Plug the power adapter into the ICE (and AC receptor).

   d. Plug the CAT5 Patch cable into the ICE and the Pod.

   e. Connect the Pup to the Pod (if you are planning to run one of the tutorial/demonstration projects).

If you are using your own circuit board, plug the Pod into your board, turn on board power, *then* connect the Pod to the ICE via the CAT5 cable. The ICE will automatically determine the power source.

2. Reboot your machine and launch BIOS during boot up by pressing [**F2**] or [**Delete**].

If [**F2**] or [**Delete**] do not launch your BIOS, see How to Access YOUR PC BIOS page 15 to identify the BIOS for your particular PC.

3. In BIOS Setup, select EPP mode, as this setting works most often (for both desktops and laptops).

Because the BIOS settings vary per machine, the correct mode cannot be known in advance and may take some trial and error. Options include EPP, ECP, EPP+ECP, and Bi-directional.

4. Save the settings, exit the BIOS, reboot, and launch PSoC Designer.

2.2 Connecting the Software

Once you have made the physical connection, you are ready to make the internal connection from PSoC Designer to the ICE. The ICE enables communication and debugging between PSoC Designer and the Pod/MCU. To connect to the ICE from inside PSoC Designer, execute the following steps (it is assumed you have already completed the following steps 1 through 3):

1. Confirm that the Pod is connected to the ICE with the blue CAT5 Patch cable (< 1 ft. in length).

2. Confirm that there is a secure parallel port connection between the ICE and the PC.

3. Confirm that the ICE is powered from the adaptor (yellow LED on, green LED off).

4. Access the Debugger subsystem (using example project, Example_PWM_28-pin, from the ...\Examples directory of PSoC Designer).

5. Click the **Connect** icon.

Upon successful connection, you will receive notification in the Output tab of the status window and a green indicator displaying Connected will appear in the lower-right corner of the subsystem.

Figure 1: Successful ICE Connection

If you do not receive notification that the ICE has connected, you will receive one of five error messages. Following are explanations for each of these error messages.

2.3 Error Message Troubleshooting

1. If you receive the error message "Could not configure ICE," any one of the following could be the problem:

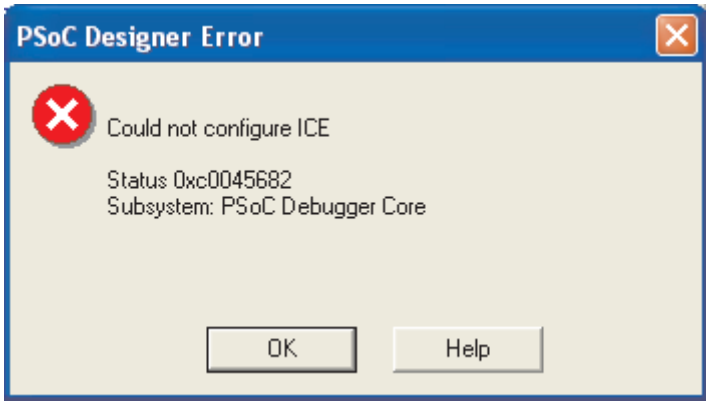

Figure 2: Could not configure ICE

Problem: Incorrect BIOS settings.

Solution: Change BIOS settings as described in 2.1 Connecting the Hardware.

Problem: System needs to reboot.

Solution: When using Windows NT, 2000, or XP with versions of PSoC Designer 2.16 or earlier, the machine needs to be rebooted twice in order for the parallel port driver to initiate the connection for the first time. For all later versions of PSoC Designer, the machine only needs to be rebooted when the installation requests a reboot with the selection of the BIOS parallel port.

Problem: Other hardware/applications may be accessing parallel port.

Solution: Printers or Adobe Acrobat (for example) can interfere with the use of the parallel port. You can redirect prints to a file. Another way to circumvent other applications interfering with the accessibility to the port is to obtain a PCI parallel card to provide a dedicated parallel port.

For further details, see Section 6. Alternate Parallel Port Cards..

If you are not interested in a dedicated port, verify that no other hardware, such as a printer or scanner, is configured to access the same LPT port as the ICE.

Problem: Gateway BIOS issue.

Solution: There can be issues connecting the ICE 4000 to a Gateway Solo 9500. This problem can be solved if you upgrade the Gateway Solo 9500 BIOS. This process is described under Section 3. Gateway BIOS Connection Issue.

Problem: Hardware failure.

Solution: Although all hardware is tested by Cypress MicroSystems before leaving the factory, it is possible to have a faulty parallel cable, CAT5 cable, or pod. Try swapping parallel cables or pods if possible. Swapping the CAT5 cable is not advised. (The ICE requires CAT5 cables 1 foot or less in length with all 8 wires connected. Some patch cables contain only 4 wires.)

2. If you receive the error message "Parallel port hardware read data errors" or "Could not read from parallel port," then you should seek to resolve the following problem:

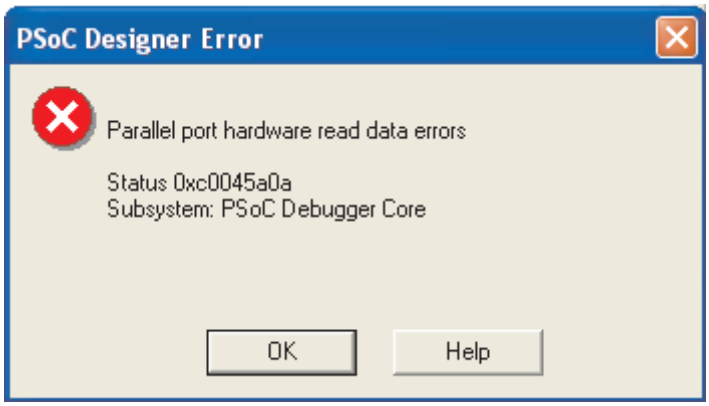

Figure 3: Parallel port hardware read data errors

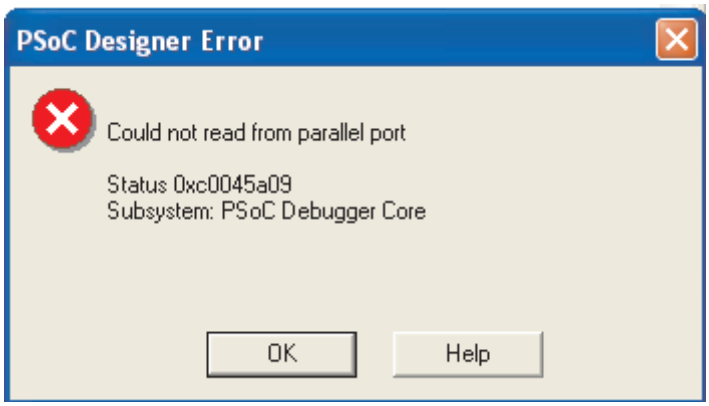

Figure 4: Could not read from parallel port

Problem: Incorrect BIOS settings.

Solution: Change BIOS settings as described in 2.1 Connecting the Hardware.

3. If you receive the error message "Could not detect pod," any one of the following could be the problem:

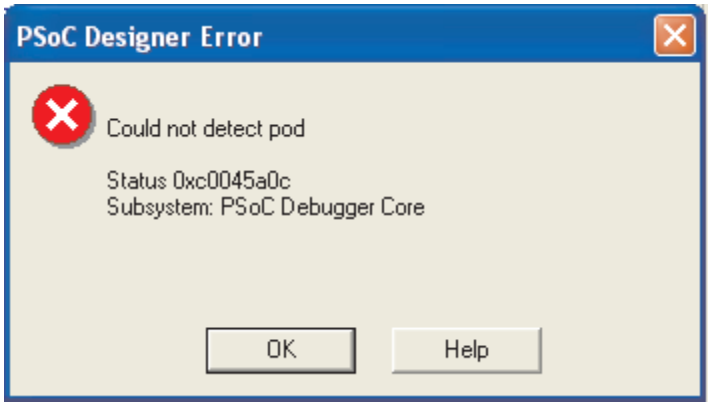

Figure 5: Could not detect pod

Problem: Pod is not connected to ICE.

Solution: Connect the pod to the ICE.

Problem: Cable connecting pod to ICE is seated loosely at either pod or ICE.

Solution: Disconnect and reconnect the cable.

Problem: A device programming board is connected to the ICE instead of the pod.

Solution: Disconnect the device programming board and connect the pod.

Problem: The pod or cable is defective.

Solution: Replace the pod or replace the CAT5 cable. Note that replacements should be obtained from CypressMicroSystems, and must have 8 connectors and be no more than 1 foot in length.

If you have a device programming board, using it to program parts can test the cable and ICE base unit. If parts can be programmed, the cable and ICE base unit are good.

4. If you receive the error message "This project is incompatible with the Pod/Chip," then resolve the following problem:

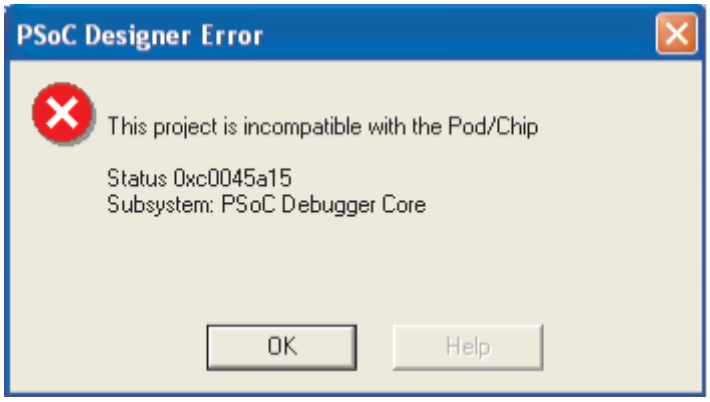

Figure 6: This project is incompatible with the Pod/Chip

Problem: An obsolete pod is connected to the ICE (CY8C25/26xxx part family Rev. E or earlier).

Solution: Upgrade to a current revision pod (Rev. G for the CY8C25/26xxx part family, Rev. AA for the CY8C27xxx part family).

5. If you receive the error message "Invalid memory reference," any one of ten problems could be the cause. Please read Application Note AN2021

"What is an Invalid Memory Reference" on http://www.cypress.com/ for a complete analysis of these problems and their solutions.

Figure 7: Invalid memory reference

If you have exhausted all the recommended options for connecting to the ICE please consider the following:

- Try making the connection on an alternative PC (to rule out faulty ICE and related hardware)
- Contact the Cypress MicroSystems Applications Engineering Hotline at 425.787.4814 or email at support@cypressmicro.com
- Contact your PC hardware vendor/manufacturer

Section 3. Gateway BIOS Connection Issue

There can be issues connecting the In-Circuit Emulator (ICE) to a Gateway Solo 9500. This problem can be solved if you upgrade the Gateway Solo 9500 BIOS, as described ahead.

Following is an excerpt from Gateway documentation found at http://www.gateway.com:

> Available on the Web at www.gateway.com/support are the following: technical support for Gateway products, live chat with a Gateway Trusted Guide, files for downloading, and e-mail support. Additional technical support can be obtained using our Fax on Demand system at (800) 846-4526 and our Automated Troubleshooting System at (800) 846-2118.
>
> File Description: Solo 9500 Bios
>
> Revision: 23.05.11
>
> Operating System: NA
>
> Driver Part Number: 7510769
>
> Date: 01/15/2002
>
> **Table of Contents**
>
>
>
> **Overview**
>
> This is BIOS 23.05.11 for the Solo 9500.
>
> **Identification**

If you have a Solo 9500, you need to upgrade to this BIOS.

Installation

Locate the folder on your hard drive where you downloaded the driver file and double-click it. This extracts the files to your hard drive. The default location is C:\DRIVERS\7510769.

Copy the extracted files to a blank floppy disk.

Insert the disk into the floppy disk drive and turn on the computer. At the Gateway boot screen, press the ESC key. You are prompted to choose your boot device. Using the arrow keys, select Removable Devices, and then press the ENTER key.

At the A:\ prompt, type: 230511. Press ENTER to begin the flash.

When the flash is complete, the computer restarts. Remove the floppy disk from the drive.

Reason for Update

The BIOS was revised to:

Add compatibility for additional parallel port devices.

Resolve compatibility issues for Intel LanDesk Client Manager in Windows 98SE.

Add MS-DOS mode compatibility for 3Com 3C575 cardbus PC card.

Add support for 3Com PCI network card in the Mini-Dock in Windows NT 4.0.

Applicable Part Numbers

The part number for this file is 7510769.

Section 4. Sony PCG-XG29 Notebook BIOS Connection

The Sony Vaio® PCG-XG29 shipped without a method to alter the parallel port from ECP to EPP in the BIOS. The parallel port on this class of notebooks must be altered to work with the Cypress MicroSystems ICE.

Following is a *free* third-party software tool from Micro-Solutions that can change your parallel port from ECP to EPP mode.

At http://www.micro-solutions.com/, click Downloads to access *testport.exe*.

1. Save in C:\windows.
2. To use: Go to full-screen DOS Prompt.
3. Type "micro-testport -epp". Hit [**Enter**].
4. Type “exit" and [**Enter**] to go back to Windows.
5. Your parallel port should now be operational.

For more information about the tool, you can also type "micro-testport /?" and hit [**Enter**] to change back to ECP, Uni-directional, or Bi-directional modes.

Note that this utility program only works on Windows 95, 98, and possibly Me. The utility does direct writes to the parallel port, which is not supported in Windows NT, 2000, and XP.

Please note that we do not support this utility and are not responsible for failures.

Section 5. How to Access *YOUR* PC BIOS

The instructions listed below may vary depending on the manufacturer of your PC. It is recommended that you reference the documentation provided with your PC to access and change the parallel port settings. If you have questions, please contact your computer manufacturer.

Many computers display BIOS access instructions while the computer boots. Pressing a key or a combination of keys before the Operating System begins to load will access the BIOS. Some common keys are [**Esc**], [**F1**], [**F2**], [**F10**], [**Ctrl**-**Delete**] or [**Delete**]. For more information, check the documentation that came with your computer to find out how to gain access to the computer BIOS.

Table 1: BIOS Manufacturer

BIOS Manufacturer	Key Command(s)
ALR Advanced Logic Research, Inc. ® PC / PCI	[**F2**]
ALR PC non / PCI	[**Ctrl**+**Alt**+**Esc**]
AMD® (Advanced Micro Devices, Inc.) BIOS	[**F1**]
AMI (American Megatrends, Inc.) BIOS	[**Delete**]
Award™ BIOS	[**Ctrl**+**Alt**+**Esc**]
Award BIOS	[**Delete**]
DTK® (Datatech Enterprises Co.) BIOS	[**Esc**]
Phoenix™ BIOS	[**Ctrl**+**Alt**+**Esc**]
Phoenix BIOS	[**Ctrl**+**Alt**+**S**]
Phoenix BIOS	[**Ctrl**+**Alt**+**Insert**]

This information was compiled from several sources including: http://www.iomega.com/ and http://www.hp.com

Table 2: Computer

Computer	Key Command(s)
Acer®	[**F1**], [**F2**], [**Ctrl**+**Alt**+**Esc**]
AST®	[**Ctrl**+**Alt**+**Esc**], [**Ctrl**+**Alt**+**Delete**]
Compaq® 8700	[**F10**]
CompUSA®	[**Delete**]
Cybermax®	[**Esc**]
Dell® 400	[**F3**]
Dell 400	[**F1**]
Dell Dimension®	[**F2**] or [**Delete**]
Dell Inspiron®	[**F2**]
Dell Latitude	[**Fn**+**F1**] (while booting)
Dell Latitude	[**F2**] (on boot)
Dell Optiplex	[**Delete**]
Dell Optiplex	[**F2**]
Dell Precision™	[**F2**]
eMachine™	[**Delete**]
Gateway® 2000 1440	[**F1**]
Gateway 2000 Solo™	[**F2**]
HP® (Hewlett-Packard)	[**F1**], [**F2**]
IBM®	[**F1**]
IBM E-pro Laptop	[**F2**]
IBM PS/2®	[**Ctrl**+**Alt**+**Insert**] after [**Ctrl**+**Alt**+**Delete**]
IBM Thinkpad® (newer)	Windows: Programs-Thinkpad CFG
Intel® Tangent	[**Delete**]
Micron™	[**F1**], [**F2**], or [**Delete**]
Packard Bell®	[**F1**], [**F2**], [**Delete**]
Sony® VIAO	[**F2**]
Sony VIAO	[**F3**]
Tiger	[**Delete**]

Table 2: Computer, continued

Computer	Key Command(s)
Toshiba® 335 CDS	[**Esc**]
Toshiba Protege	[**Esc**]
Toshiba Satellite 205 CDS	[**F1**]
Toshiba Tecra	[**F1**] or [**Esc**]

This information was compiled from several sources including: http://www.iomega.com/ and http://www.hp.com

Caution: Incorrect BIOS settings can prevent PCs from working. It is recommended that you track changes made to the BIOS in case you need to restore a previous setting.

5.1 Changing Parallel Port Mode

1. Locate the parallel port mode setting in your computer BIOS or system configuration setup. The parallel port mode settings may be located in the Advanced Settings section, Peripherals, Communication or Input/Output sections.

2. Parallel port modes set to Normal or Uni-directional will not work. Change the setting to a different mode.

3. Exit computer setup making sure you save the changes.

Compaq computers with Compaq BIOS will not allow you to change the parallel port settings. You must disable the DMA channel, which will cause the parallel port to change to EPP mode. To do this, turn off the DMA channel assigned to the port and use the same hardware configuration that the current port is assigned. This will change the mode from ECP to EPP.

Example: Change 0378-037F, IRQ 7 DMA2 to: 0378-037F, IRQ7.

On some older Compaq computers it may not be possible to assign the parallel port settings without a DMA setting. If this is the case, contact Compaq for a possible BIOS upgrade.

Section 6. Alternate Parallel Port Cards

In the event that you cannot get your existing parallel port to work with the Cypress MicroSystems PSoC ICE, you should add a parallel port card that is known to be compatible with the ICE-4000. Cypress MicroSystems has tested two parallel port cards with systems that have not connected using the existing parallel port. Both cards have proven to work with these systems. One of these solutions is compatible with PCI-bus based PCs and the second uses the PCMCIA port available on many portable computers.

Table 3: Alternate Parallel Port Cards

PC Type	Port	Parallel Port Option
Desktop	PCI	SIIG, Inc.® Cyberparallel PCI Model IO1839, Part# JJ-P00112 http://www.siig.com
Portable	PCMCIA	Quatech, SPP-100 Enhanced Parallel Port Type II PCMCIA Card http://www.quatech.com

Follow the manufacturer instructions to install and configure the parallel port. Both of these cards include drivers that support Windows 98, 98SE, Me, NT, 2000, and XP.

PSoC Designer version 2.16 or later is required to make use of a second parallel port. If the parallel port card is installed as LPT2, it must be designated from within PSoC Designer. To select an alternate parallel port, click Project >> Settings. Inside the dialog box, select the “Debugger” tab as shown in Figure 8: Project Settings Dialog Box:

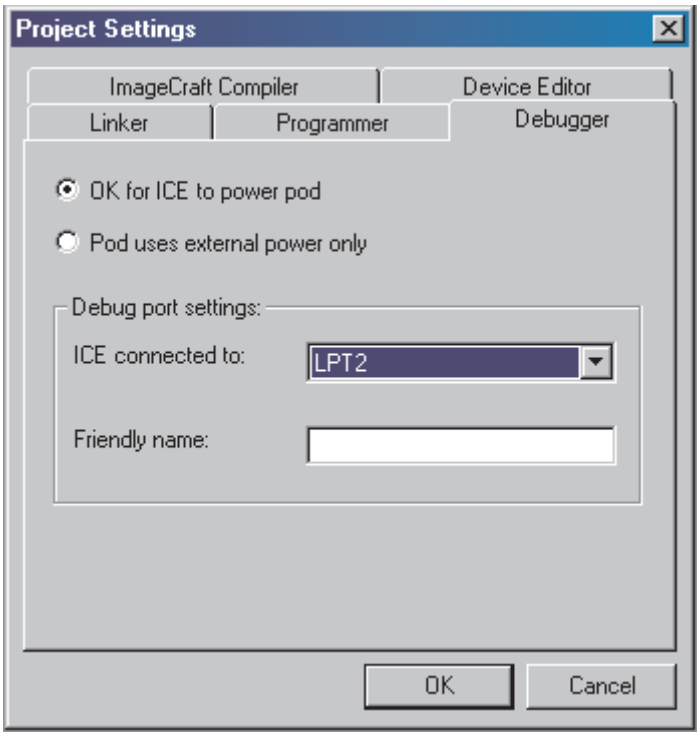

Figure 8: Project Settings Dialog Box

Use the drop-down menu labeled “ICE connected to” to select the correct port. In most cases, the default parallel port will be LPT1 and the additional port that you just installed will be LPT2. Select LPT2. After the correct port is selected, press **OK** and try to connect to the ICE by using the **Connect** icon .

If the ICE still does not connect, make sure the ICE is connected to the correct parallel port. Also, verify that the parallel port was installed correctly per the manufacturer instructions. The PC may need to be restarted after installation of the parallel port. With some operating systems, it may be required to restart the system twice after new hardware is installed. If the PC is restarted, verify the correct parallel port is selected when re-entering PSoC Designer.

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Document Revision History

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*A			HMT.	Update address and URLs.
*B			HMT.	Updates and new screen shots.
Distribution: External/Public **Posting**: None				