CYDBä

CY3654 Development Kit

Reference Manual

CYPRESS

Version 1.00

Contents

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Conventions

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Document Conventions

The following table describes each typographic convention used in this manual.

Example of Convention	Description
Setup	Entries to be typed by the user appear in bold. For example, "Type **setup** at the prompt."
Insert menu	Button, icon, menu, and command names appear in bold title caps.
Variable	Italic letters indicate placeholders for information the user supplies. Italic formatting is also used for book titles, figure headings, and occasionally for emphasis.
`Set task_priority = 10` `Set task_stack_size = 40000`	This font is used for code.
CY.EXE	Words in all capital letters indicate filenames. All capital letters are also used for directory and folder names.
ENTER	Small capital letters are used for the names of keys and key sequences, such as ENTER and CTRL+R.
ALT+F1	A plus sign (+) between key names indicates a combination of keys. For example, ALT+F1 means to hold down the ALT key while pressing the F1 key.

Example of Convention	Description
ALT,F,S,ENTER	A comma (,) between key names indicates that the individual keys are pressed in sequence.
DOWN ARROW	Individual direction keys are referred to by the direction of the arrow on the key top (LEFT, RIGHT, UP, or DOWN). The phrase "arrow keys" is used when describing these keys collectively.
BACKSPACE, HOME	Other navigational keys are referred to by their specific names.
Universal Serial Bus (USB)	Acronyms are spelled out the first time they are used. For a complete list of acronyms used in this manual, refer to Appendix A, "Acronyms and Abbreviations".

Manual Organization

This manual is composed of three chapters:

Chapter 1 is the INTRODUCTION. This chapter covers the basic capabilities of the system, the system requirements, where to look for help, who to call for technical support, and an overview of the CYDB Main Window.

Chapter 2 is FUNCTIONS. This chapter describes each element (dialog box, menu item, etc.) of the development kit software.

Chapter 3 contains the APPENDICES. This chapter contains the list of acronyms and abbreviations and the detailed hardware description.

Chapter 1

Introduction

Contents

1.1   Overview

The CYDB Debugger/CY3654 Development Kit is an easy-to-use kit for application code development. It is a combination of hardware and software designed to allow firmware developers to design, debug, test, and emulate the firmware of microcontrollers for a variety of target applications.

This document is intended to be used as a reference to the elements of the CYDB software. It is not intended to be a step-by-step guide through the use of the kit. For step-by-step instructions, refer to the *CYDB User's Guide*. For information regarding the hardware in the CY3654 Development Kit, see Appendix B, "Detailed Hardware Description."

1.2   System Requirements

To install and run the CYDB Debugger/CY3654 Development Kit, your computer must have at least the basic Windows 95/NT setup. Minimum requirements include:

- Windows® 95® or later operating system or Windows NT™ Workstation operating system version 4.0 or later.

- An Intel® Pentium® or higher CPU.

- At least 16 megabytes (MB) of Random Access Memory (RAM).

- A personal computer (PC) hard disk or shared network drive with at least 20 MB of hard memory available.

- A video graphics adapter (VGA) monitor.

- A CD-ROM drive.

- A serial input/output (I/O) port.

- A mouse or other suitable pointing device. (The software can be operated without a mouse. However, using a mouse facilitates use of the software.)

1.3   Help Sources

The following help sources are available:

- *CYDB User's Guide*.

- *CYDB Reference Manual*.

- Online help.

1.4   Technical Support

For technical support:

Web Site: http://www.cypress.com

E-mail: CYAPPS@cypress.com

1.5   CYDB Main Window

The CYDB Main Window is the foundation of the user interface. It is from here that you:

- Download, run, and debug applications;

- Run the emulator;

- Configure the target chip, emulator, and platform board;

- and view the Data Memory, Program Memory, CPU Registers, I/O Registers, Memory FIFO, Breakpoints, and .LST File windows.

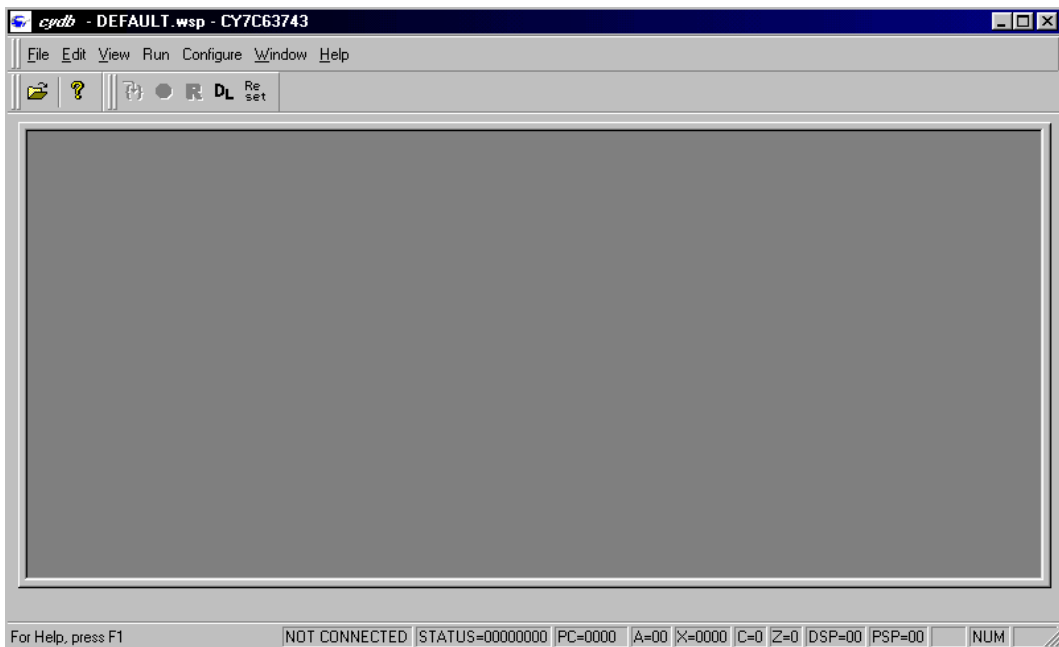The CYDB Main Window also allows you to configure your workspace and customize the toolbars and command buttons.

Figure 1 – The CYDB Main Window

Chapter 2

Functions

Contents

2.1   Overview

This chapter describes the function of each element of the CYDB software. It is separated into six sections: Overview, Buttons, Status Bar Items, Menu Items, Dialog Boxes, and Windows.

2.1.1   How the Software Works with the Hardware

Although this Reference Manual focuses on the elements of the CYDB software, it is important to note the relationship between the hardware and the software. The CYDB software is your connection between the "host" system where CYDB is run, and the emulator system where your programs run. The emulator has the ability to configure the emulator for multiple microcontrollers.

The emulator governs the communication between your host and target, so you can debug without consuming target resources. It can reproduce the behavior of real or theoretical target hardware on your host platform. Then, you can debug software before hardware is available or while target hardware is not connected to your host. You can emulate any device: mouse, keyboard, joystick, scanner, printer, camera, zip drive, etc.

2.2   **Buttons**

The following table describes each command button and box in the CYDB Main Window and dialog boxes.

Button	Name	Action
?	About	Displays the About Dialog Box.
...	Browse	Activates the Open Dialog Box for browsing for files.
×	Close	Closes the current window or dialog box.
DL	Download	Displays the Download dialog box for downloading programs.
□	Maximize	Increases the size of the window to maximum.
_	Minimize	Hides the current window.
📂	Open	Activates the Open dialog box.
Re set	Reset	Resets the microcontroller.
🗗	Reduce	Reduces the size of the current window to allow reshaping and moving.
R	Run	Runs the selected program.
{+}	Step	Runs the program until the next instruction. If the program counter starts on a function call, "step" calls the function, then stops at the first instruction within the function.
●	Stop	Stops the program while it is running. The program counter positions itself on the next instruction that will be executed when you restart the program.

2.3   **Status Bar Items**
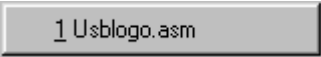
The following table describes each status indicator on the status bar in the CYDB Main Window.
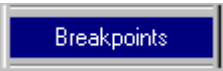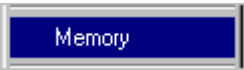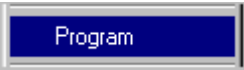
Item	Indicator	Description
* `A=00`	A Register	Indicates the value of the Accumulator.
* `C=0`	Carry Flag	Shows the status of the Carry/Borrow Flag.
`CAP`	Caps Lock	Indicates that the Caps Lock is on.
`CONNECTED` `NOT CONNECTED`	Connection	Indicates whether or not the connection to the development board is established.
* `DSP=00`	DSP Register	Indicates the value of the Data Stock Pointer.
`NUM`	Number Lock	Indicates that the Number Lock is on.
* `PC=0000`	PC Register	Indicates the value of the Program Counter.
* `PSP=00`	PSP Register	Indicates the value of the Program Stock Pointer.
`SCRL`	Scroll Lock	Indicates that the Scroll Lock is on.
`STATUS=00000000`	Status	Indicates the status of the development board.
* `X=0000`	X Register	Indicates the value of the Index Register.
* `Z=0`	Zero Flag	Shows the status of the Zero Flag
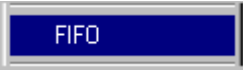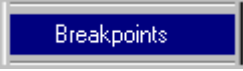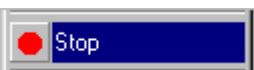
* Refer to the *Cypress USB Development Kit Assembler Guide*.
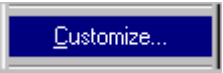
2.4　　Menu Items
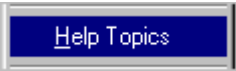
The following table describes each menu and sub-menu item in the CYDB Main Window. The items in the table appear in the same order in which they appear in the CYDB Main Window.

Menu/Sub-menu Item	Shortcut	Description
File	ALT+F	Displays the **File** menu.
Open...	CTRL+O or ALT+F,O	Displays the Open dialog box.
Close		Closes the selected window.
Open Workspace		Displays the Open Workspace dialog box.
Save Workspace		Saves the current workspace settings in the current workspace file.
Save Workspace As		Displays the Save Workspace dialog box.
Close Workspace		Closes the workspace, including any open windows.
Recent Files ▶	ALT+F,F	Displays the **Recent Files** sub-menu: 1 Usblogo.asm Click the file you want to open.

Menu/Sub-menu Item	Shortcut	Description
Recent Workspaces ▶	ALT+F,W	Displays the **Recent Workspaces** sub-menu: ✔ 1 C:\DEFAULT.wsp Click the workspace you want to open. Remember, DEFAULT.WSP is the default workspace.
Exit	ALT+F4 or ALT+F,X	Closes the CYDB Main Window.
Edit	ALT+E	Displays the **Edit** menu.
Breakpoints		Displays the Breakpoints window.
Find PC		Moves the cursor to the PC register location (i.e., 0000) in the listing window.
View	ALT+V	Displays the **View** menu.
✔ Status Bar		Toggles the status bar on and off.
Memory		Displays the Data Memory window.
Program		Displays the Program Memory window.
Registers		Displays the CPU Registers window.

Menu/Sub-menu Item	Shortcut	Description
IO Registers		Displays the IO Registers window.
FIFO		Displays the Memory FIFO window.
Breakpoints		Displays the Breakpoints window.
Refresh		Refreshes the current window(s).
Reload Listing		Reloads the .LST file.
Run	ALT+R	Displays the **Run** menu.
R Run		Starts the program from the program counter position.
● Stop		Stops the program. While the program is running, you can stop it at any time. The program counter positions itself on the next instruction that will be executed when you start the program again.
Step		Steps through a program. A step corresponds to one instruction.
Reset Reset		Resets the micontroller, resets all variables and registers, and resets the target hardware if it is connected.

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Menu/Sub-menu Item	Shortcut	Description
Connect		Displays the Connect to Target dialog box 1.
D_L Download		Displays the Download dialog box. NOTE: Before you begin downloading and running an application, make sure the platform board is properly connected to the development PC and the target USB controller (refer to section 1.3, "Installation" of the *CYDB User's Guide*).
Reset Emulator		Resets the connection to the emulator.
Configure	ALT+C	Displays the **Configure** menu.
Workspace ▶		Displays the **Workspace** sub-menu.
Customize...		Displays the Customize dialog box with the Toolbars tab selected.
Options		Displays the Workspace Options dialog box.
Target		Displays the Configure Target/Emulator dialog box.
Update Firmware		Displays the Configure Development Board Emulator dialog box.

Menu/Sub-menu Item	Shortcut	Description
Window	ALT+W	Displays the **Window** menu.
New Window		Opens a new window.
Cascade		Arranges the open windows in an overlapping manner in the CYDB Main Window.
Tile		Arranges the open windows in the CYDB Main Window so that each window is visible.
Arrange Icons		Arranges the minimized windows left to right across the bottom of the CYDB Main Window.
✔ 2 Usblogo.asm		Items listed after the Arrange Icons menu item are open files. The ✔ indicates the *current* file.
Help	Alt+H	Displays the **Help** menu.
Help Topics		Displays the online help.
About Cydb...		Displays the About dialog box.

2.5   Dialog Boxes

This section describes each dialog box available from the CYDB Main Window. This section shows the dialog boxes in alphabetical order.

2.5.1   About

The About dialog box shows the platform board and firmware revision installed, the platform configuration and version, the personality board revision, and the CYDB Debugger software version.

- From the **Help** menu, click **About CYDB**, or click the **About** (![?]) button.   The About dialog box appears:
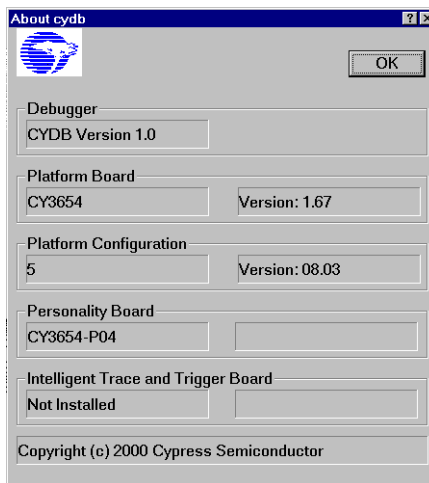
Figure 2 – About Dialog Box

OK	Click **OK** to close the About dialog box.

2.5.2 Configure Development Board Emulator Dialog Box

To update the firmware on the platform board, perform the following:

- From the **Configure** menu, click **Update Firmware**. The Configure Development Board Emulator dialog box appears:
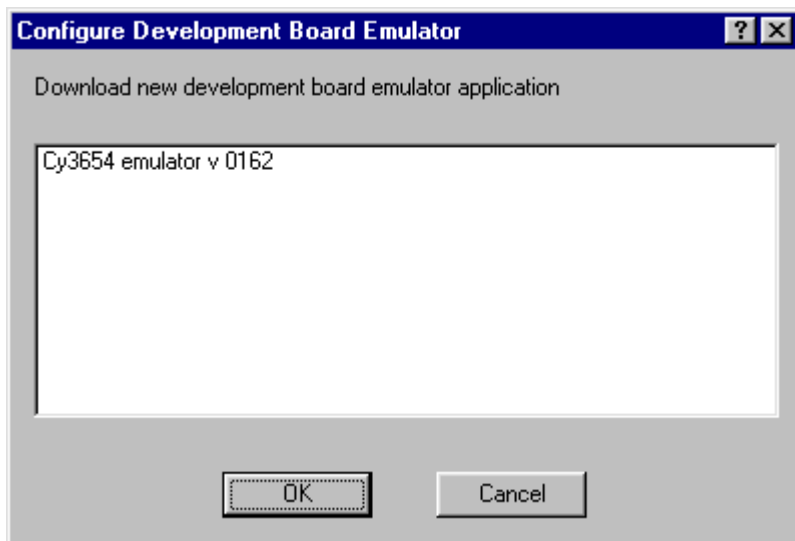
Figure 3 – Configure Development Board Emulator Dialog Box

	Select the desired emulator.
OK	Click **OK** to update the firmware.
Cancel	Click **Cancel** to exit without selecting an emulator configuration.

2.5.3 Configure Target/Emulator Dialog Box

To reconfigure the platform board to emulate a different microcontroller, perform the following:

- From the **Configure** menu, click **Target**. The **Development Board** sub-menu appears.

- Click **Platform**. The Configure Target/Emulator dialog box appears:
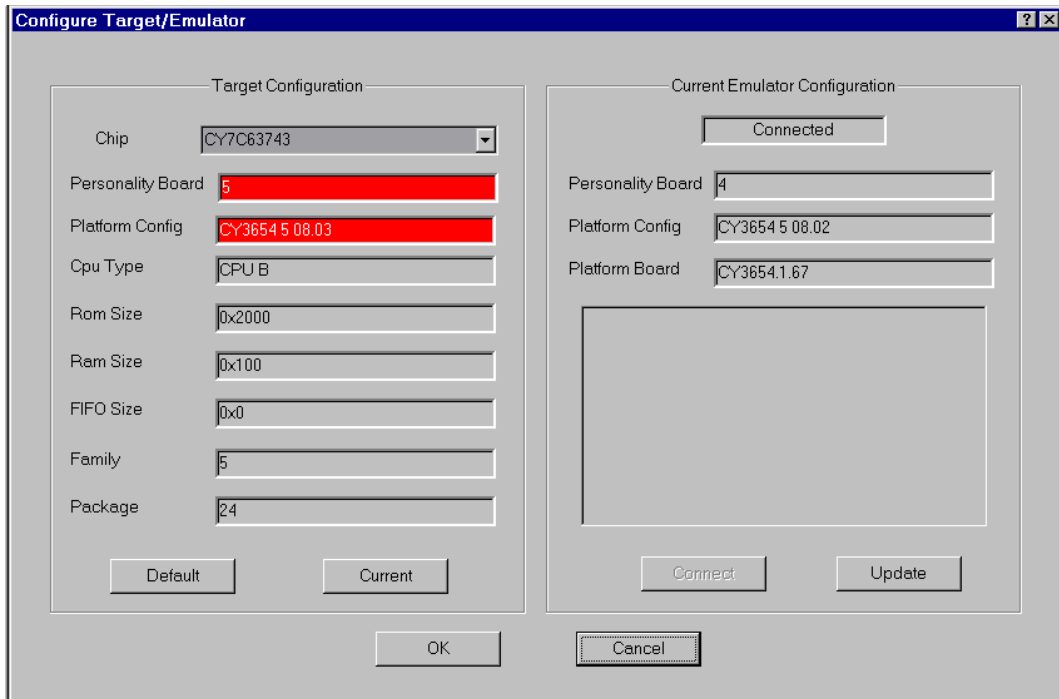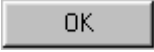
Figure 4 – Configure Target/Emulator Dialog Box

Chip ▼	Type or select the microcontroller you want to emulate. The text boxes show the specified information for the selected microcontroller.
Default	Displays the configuration for the default chip.
Current	Displays the configuration for the chip currently selected in the workspace.
Connect	Connects to the Development Board.
Update	Updates the platform board to emulate the selected chip.
OK	Click **OK** to confirm the microcontroller selection.
Cancel	Click **Cancel** to exit without changing the selection.

2.5.4   Configuring Development Board Message

| Update | • At the Configure Target/Emulator dialog box, click **Update** to update the chip configuration. |
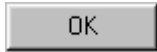
➤ If the Development Board is not ready, the Development Board Not Ready dialog box appears (see Figure 12).

| OK | ➤ Follow the Instructions and click **OK**. The Configuring Development Board Message appears: |
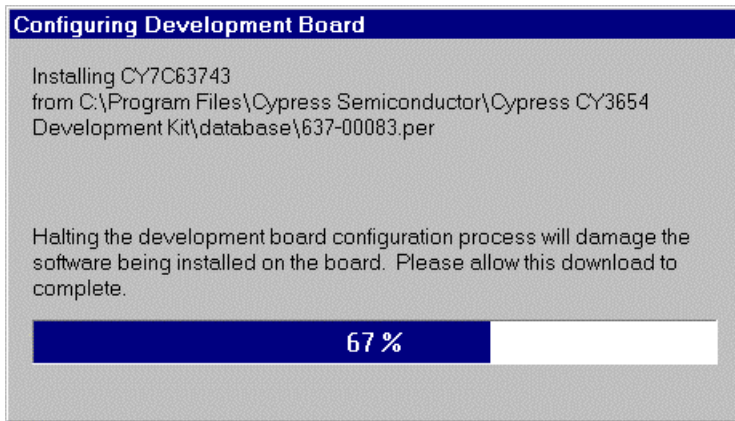
Figure 5 – Configuring Development Board Message

➤ Wait for the download to complete.

2.5.5   Connect to Target Dialog Box 1

- In the CYDB Main Window, click **Run** on the menu bar. The **Run** menu appears.

- Click **Connect**. The Connect to Target dialog box 1 appears:
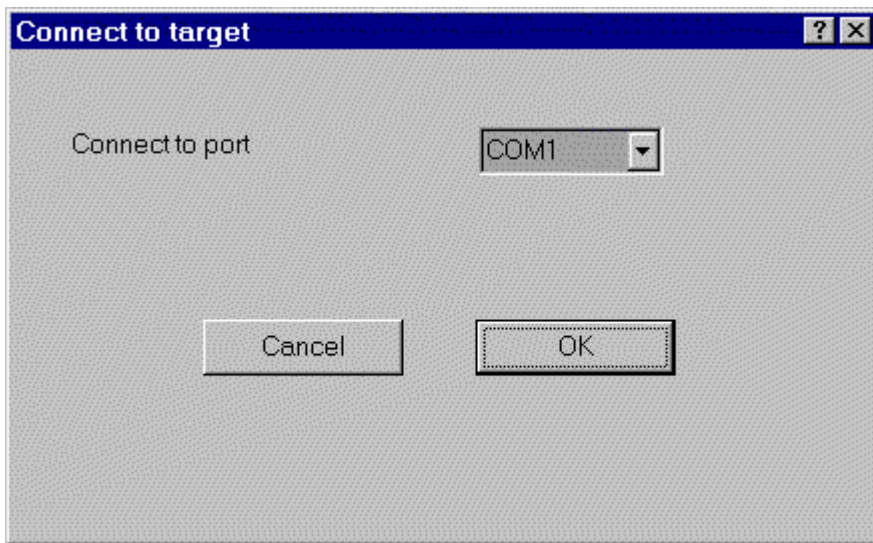
Figure 6 – Connect to Target Dialog Box 1

	Select the communications port you want to connect to.
OK	Click **OK** to connect to the port. The Connect to Target dialog box 2 appears (see Figure 6).
Cancel	To exit without connecting, click **Cancel**.

2.5.6 Connect to Target Dialog Box 2
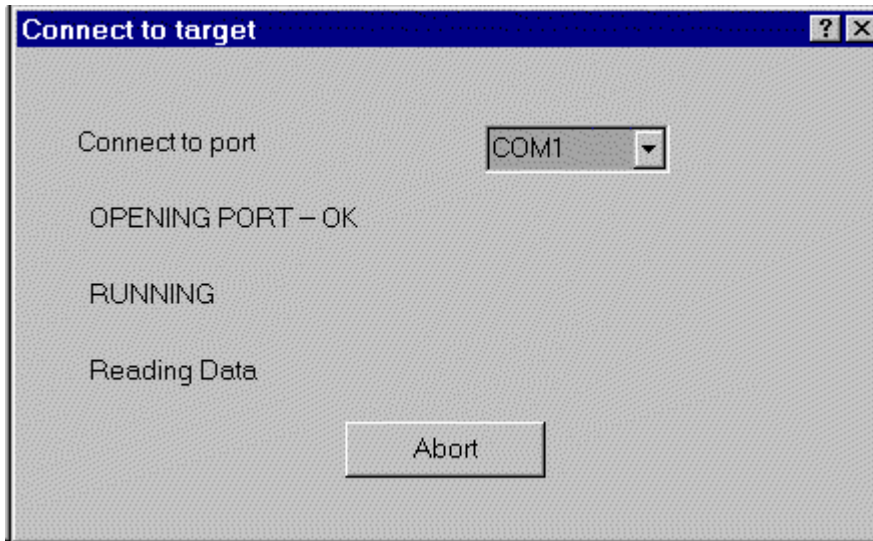
Figure 7 – Connect to Target Dialog Box 2

Abort	• Click **Abort** if you want to abort the connection process. The dialog box disappears when the connection is complete or if the connection times out

2.5.7   Customize Dialog Box - Toolbars

This section describes the check boxes and buttons available in the Customize dialog box when the **Toolbars** tab is selected.

- From the **Workspace** sub-menu, click **Customize**. The Customize dialog box appears with the Toolbars tab selected:
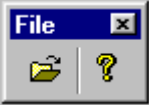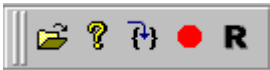
Figure 8 – Customize Dialog Box – Toolbars

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Commands	Click the **Commands** tab to view the Commands tabbed page (see "Customize Dialog Box – Commands").
Toolbars	Click the **Toolbars** tab to display the Toolbars tabbed page.
☑ Menu bar	The Menu bar check box is always selected. You can not clear this selection.
☑ File	Select the File check box to enable the File toolbar. For a description of each button, see Section 2.2, "Buttons."
☑ Debug	Select the Debug check box to enable the Debug toolbar. For a description of each button, see Section 2.2, "Buttons."
☑ Default	Select the Default check box to enable the Default toolbar. For a description of each button, see Section 2.2, "Buttons."

☑ Show Tooltips	Select the Show Tooltips check box if you want to display ToolTips when the mouse pointer is over a button:
☑ Cool Look	Select the Cool Look check box if you want to change the appearance of the menu bar and tool bar(s): Leave the Cool Look check box blank if you want to leave the menu bar and toolbars as they are:
☑ Large Buttons	Select the Large Buttons check box if you want to make the command buttons appear larger:
Delete	In the Toolbars group box, click on the name of the new toolbar you want to delete and click **Delete**. The new toolbar name is removed from the Toolbars group box and the new toolbar is removed from the CYDB Main Window. NOTE: The **Delete** button does not appear unless there is at least one new toolbar.

New...	In the Toolbars group box, click **New**. The New Toolbar dialog box appears (see "New Toolbar").
Reset	If you add a number of menu bar or toolbar items, you can reset the changes before you click **OK**. Click **Reset** to return the toolbars and menu bar to their previous configuration.
OK	Once you have made all the changes to the workspace, click **OK**.
Cancel	NOTE: Clicking **Cancel** will only undo the changes made to the Show Tooltips, Cool Look, and Large Buttons check boxes before closing the Customize dialog box.
Help	Click **Help** to display the online help.

New Toolbar
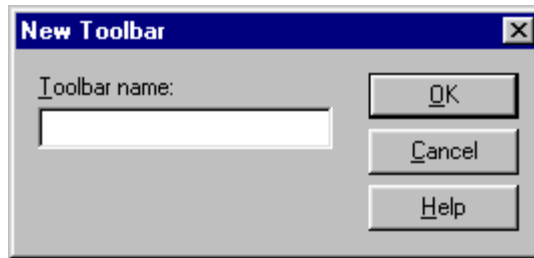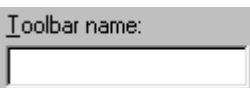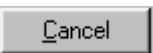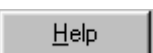
Figure 9 – New Toolbar Dialog Box

Toolbar name:	Type the name you want to give your new toolbar.
OK	Click **OK**. The new toolbar name appears in the Toolbars group box and the new toolbar appears in the CYDB Main Window.
Cancel	Click **Cancel** to return to the Customize dialog box without setting a new toolbar name.
Help	Click **Help** to display the online help.

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Customize Dialog Box - Commands

This section describes the check boxes and buttons available in the Customize dialog box when the **Commands** tab is selected.

- From the **Workspace** sub-menu, click **Customize**. The Customize dialog box appears with the **Toolbars** tab selected.

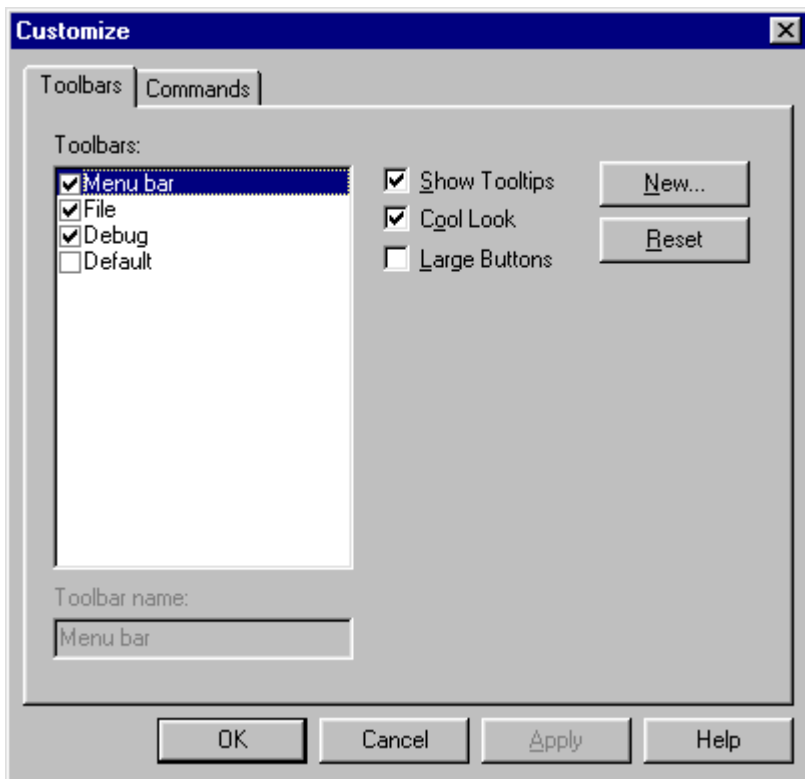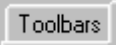- Click the **Commands** tab to view the Commands tabbed page:
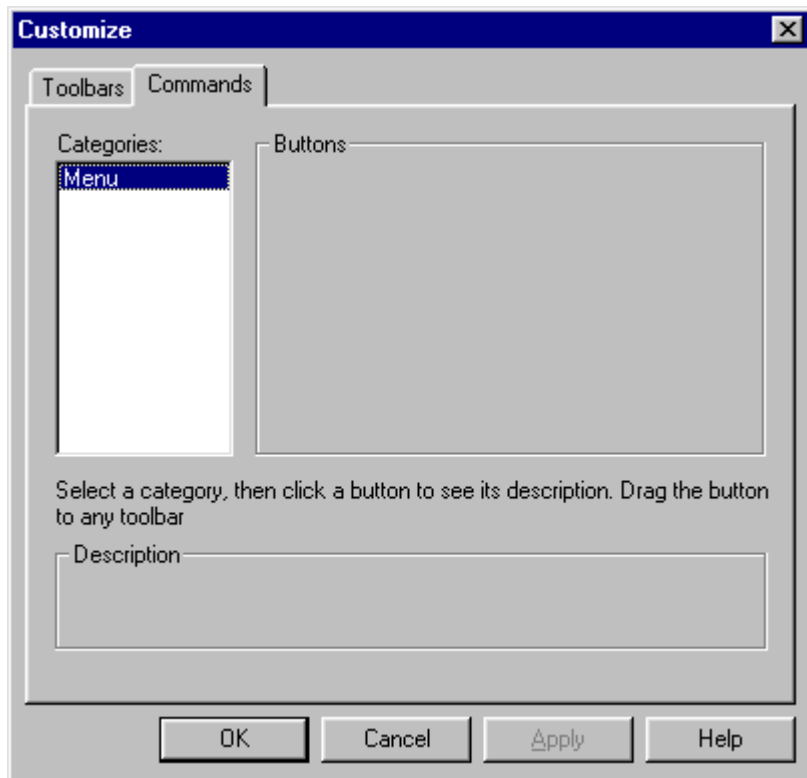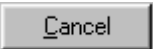
Figure 10 – Customize Dialog Box –Commands

Menu	Menu is currently the only selection available. For descriptions of the available menu items, see Section 2.4, "Menu Items." • Click a menu name and drag it to the menu bar. • To remove a menu name from the menu bar, drag it back to the Customize dialog box.
OK	Once you have made all the changes to the workspace, click **OK**.
Cancel	Click **Cancel** to exit the Customize dialog box without saving your changes. NOTE: Clicking **Cancel** will only undo the changes made to the Show Tooltips, Cool Look, and Large Buttons check boxes on the Toolbars tab before closing the Customize dialog box.
Help	Click **Help** to display the online help.

2.5.8 **CYDB Not Connected**

If you try to access the development board from the Configure Development Board Emulator dialog box or the Configure Target/Emulator dialog box and the development board is not ready for configuration, the following Error message appears:

Figure 11 – Error Message

OK	Click **OK** to acknowledge the error.

2.5.9   **Development Board Not Ready**
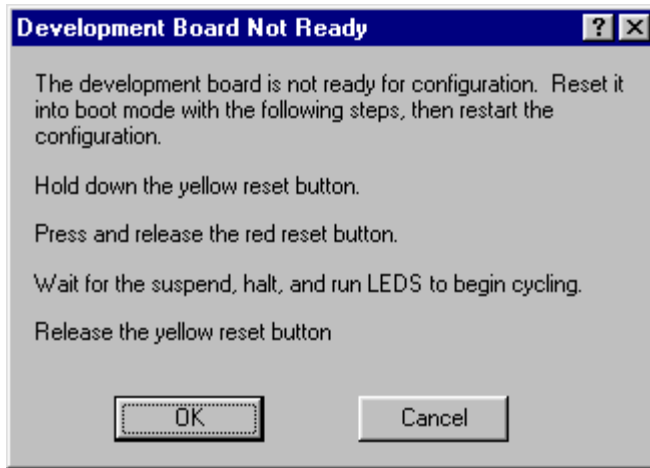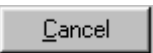
Figure 12 – Development Board Not Ready Dialog Box

OK	Follow the instructions in the dialog box and then click **OK**.
Cancel	Click **Cancel** to return to the CYDB Main Window.

This ensures that the emulator is in *boot* mode for reconfiguring the platform board or updating the firmware.

2.5.9   Download File to Emulator

From the **Run** menu, click **Download**, or click the Download (DL) button. The Download dialog box appears:
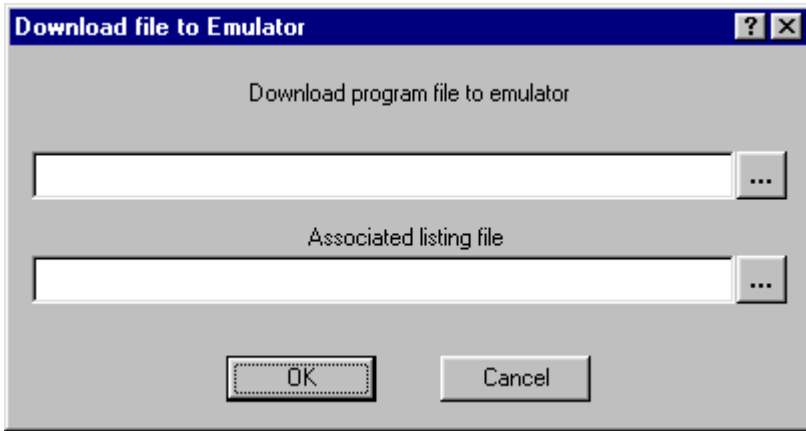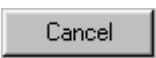
Figure 13 – Download Dialog Box

	In the first box, enter the path and filename of the application you want to download, or you can browse for it (see "Select File").
	In the second box, enter the path and filename of the associated listing file, or you can browse for it (see "Open File").
	Click **OK** to download the program to the emulator, and to update and open the .LST file.
	Click **Cancel** to exit without downloading.

Select File

- At the Download dialog box, click the browse (...) button. The Select File dialog box appears:
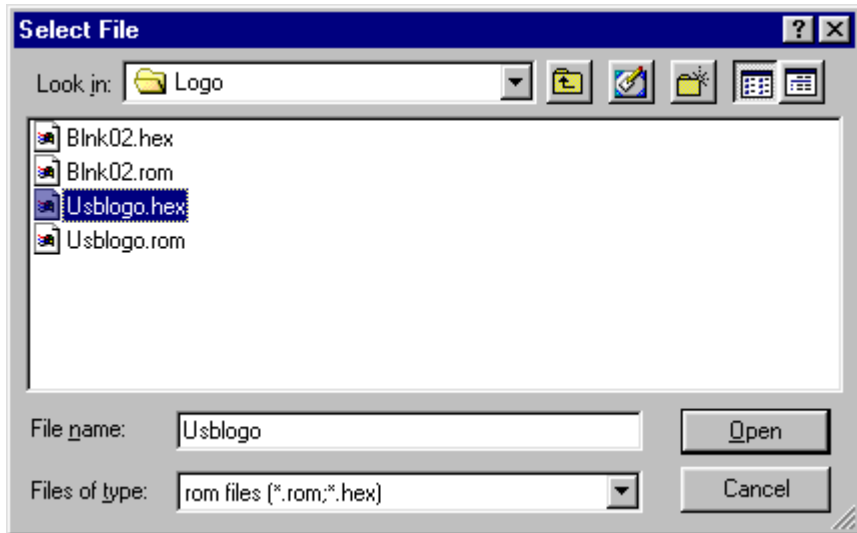
Figure 14 – Select File Dialog Box

Usblogo.hex File name: Usblogo	Select the application you want to download.
Open	Click **Open**. The Download dialog box reappears with the application's path and filename entered in the text box. NOTE: Applications have the .ROM or .HEX file extension. Listing files have the .LST file extension.

Open File

The Open dialog box is used to open .LST files for setting breakpoints or for selecting files for you workspace configuration.

- From the **File** menu, click **Open**. The Open dialog box appears:
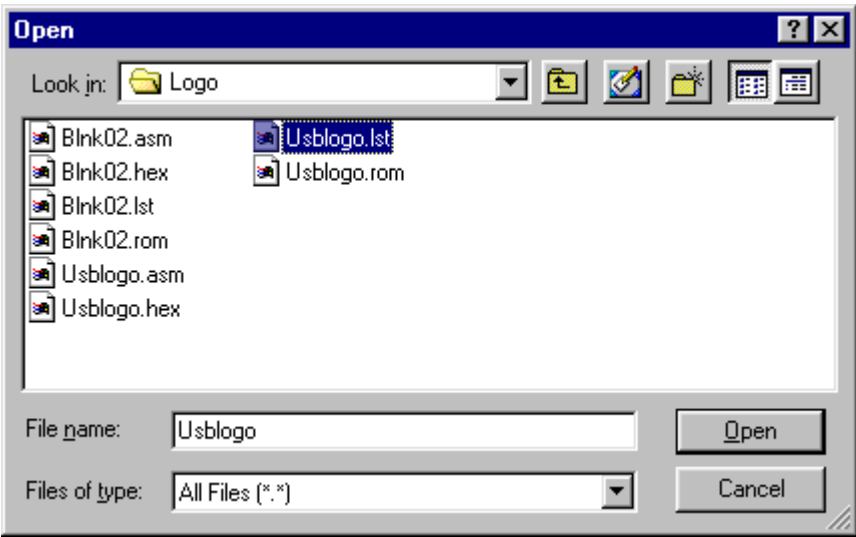
Figure 15 – Open Dialog Box

Usblogo.lst File name: Usblogo	Select the file you want to download.
Open	Click **Open** to open the file.
Cancel	Click **Cancel** to exit without selecting a file.

2.5.10 **Open Workspace**

The Open Workspace dialog box allows you to open your customized workspace.

- From the **<u>F</u>ile** menu, click **Open Workspace**. The open Workspace dialog box appears:
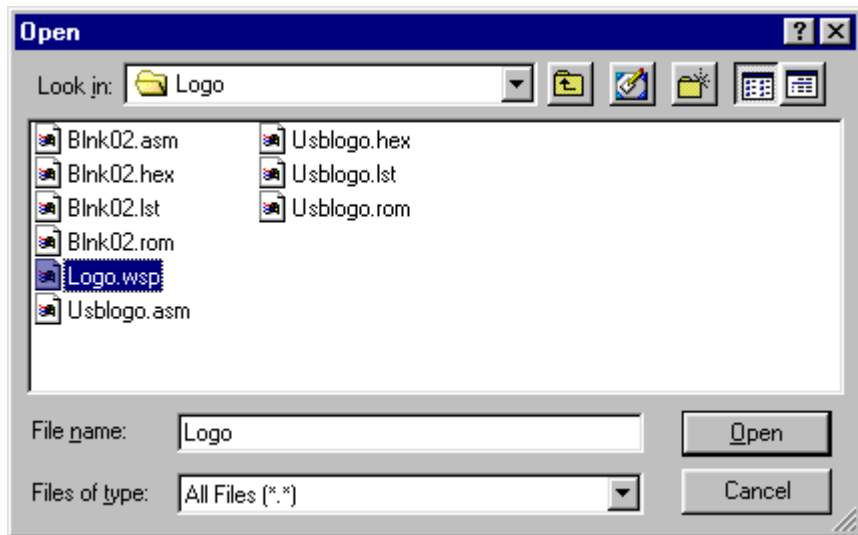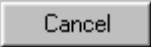
Figure 16 – Open Workspace Dialog box

![Usblogo.wsp] File <u>n</u>ame: Usblogo	Select the workspace you want to open.
<u>O</u>pen	Click **<u>O</u>pen**. The attributes of the saved workspace are applied to the CYDB Main Window.
Cancel	Click **Cancel** to exit the Open Workspace dialog box without selecting a workspace.

2.5.11   Save Workspace

The Save Workspace dialog box allows you to save your customized workspace as a .WSP file.

- From the **File** menu, click **Save Workspace As**. The Save Workspace dialog box appears:
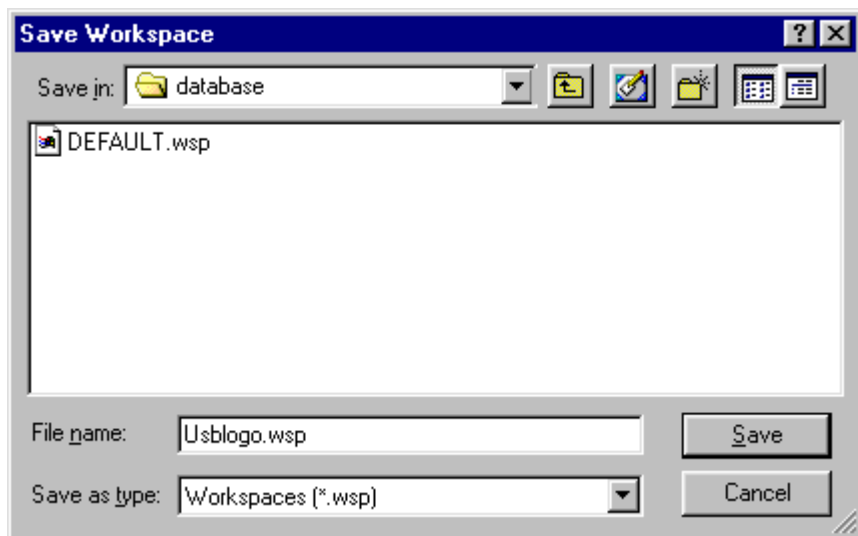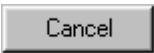
Figure 17 – Save Workspace Dialog Box

File name: Usblogo.wsp	Select a .WSP file or type the name you want to give the workspace.
	NOTE: DEFAULT.WSP is the default workspace file. Do not select this filename unless you want to make the current workspace your default workspace.

Save	Click **Save** to save the workspace.
Cancel	Click **Cancel** to close the Save Workspace dialog box without saving the file.

2.5.12   **Workspace Options**

The Workspace Options dialog box allows you two options: Connect on start and Load Last Workspace.

- From the **Workspace** sub-menu, click **Options**. The Workspace Options dialog box appears:
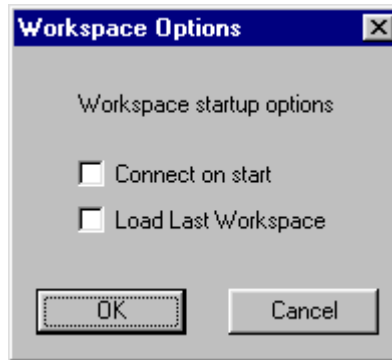
Figure 18 – Workspace Options Dialog Box

☑ Connect on start	Select **Connect on start** to automatically connect to the development board upon opening the CYDB Main Window.
☑ Load Last Workspace	Select **Load Last Workspace** to automatically open the workspace you last used before closing the CYDB Main Window.
OK	Click **OK** to apply the options.
Cancel	Click **Cancel** to exit the Workspace Options dialog box without selecting an option.
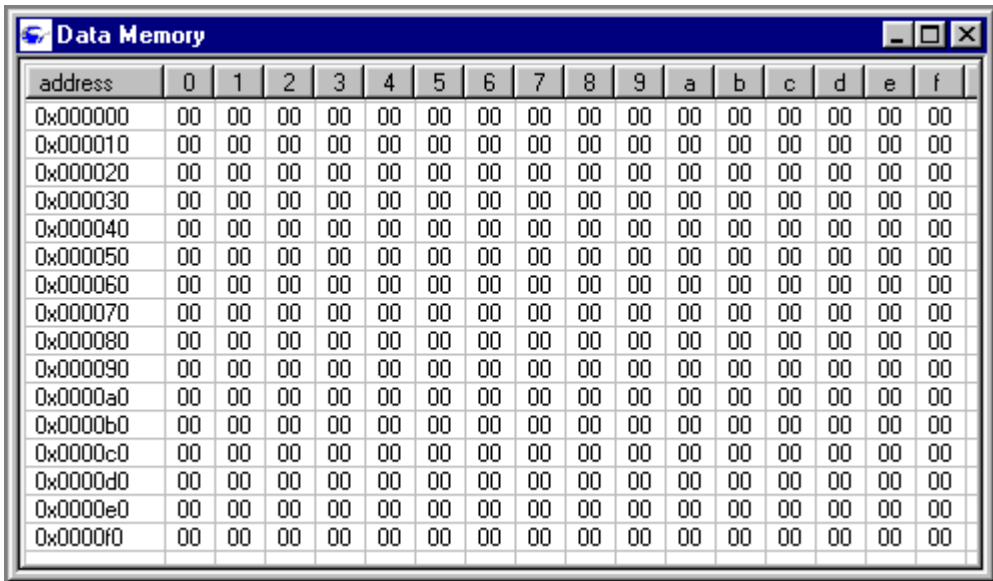
2.6 Windows

This section describes the seven windows used in the CYDB Main Window. Each window is accessed via the **View** menu except the .LST File Window.

2.6.1 Data Memory Window
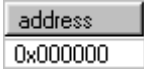
The Data Memory window displays the contents of the RAM.

- From the **View** menu, select **Memory**. The Data Memory window appears.

address	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
0x000000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000a0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000b0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000c0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000d0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000e0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000f0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Figure 19 – Data Memory Window

address 0x000000	You can not modify data in the **address** field. Each address represents a different group of programming lines.
2 00	Each value field (**0** – **f**) represents a different line of programming. For example, the cell in row 0x000090 and column 2 contains the program code for line 0x000092.
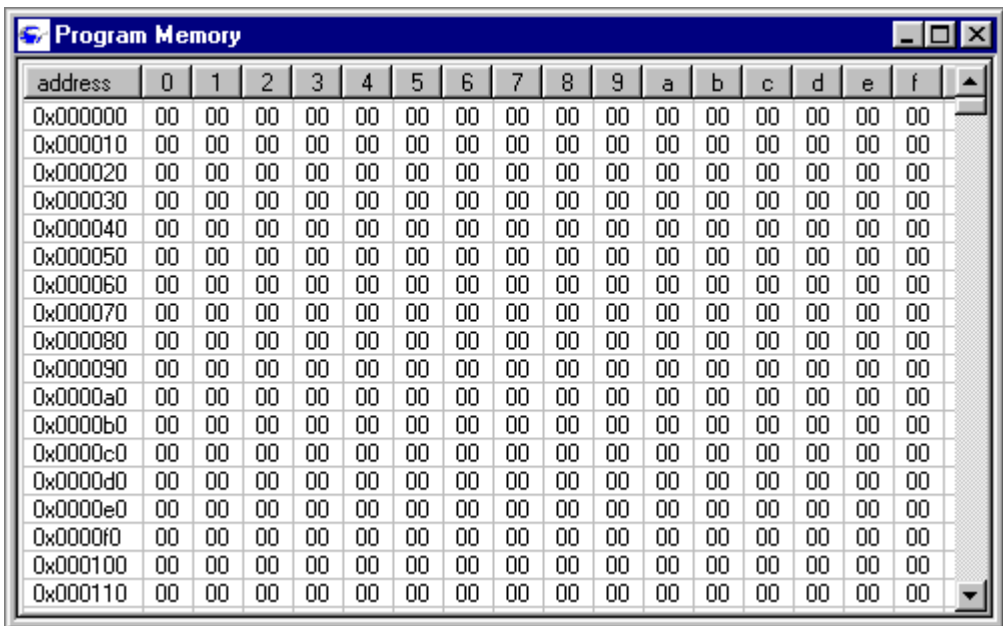
You can only modify data in the **Value** fields. You can not modify data in the **Address** field. To make a change to the RAM program:

- Double click the cell you want to change.
- Type the new value in that field.
  - ➢ Press [Enter] to save the change.
  - ➢ Press [Esc] to cancel the change.

2.6.2 Program Memory Window

The Program Memory window displays the contents of the ROM.

- From the **View** menu, select **Program**. The Program Memory window appears.

Figure 20 – Program Memory Window

address	You can not modify data in the **address** field. Each address represents a different group of programming lines.
0x000000	

2 00	Each value field (**0** – **f**) represents a different line of programming. For example, the cell in row 0x000090 and column 2 contains the program code for line 0x000092.

You can only modify data in the **Value** fields. You can not modify data in the **Address** field. To make a change to the ROM program:

- Double click the cell you want to change.

- Type the new value in that field.

  ➢ Press [Enter] to save the change.

  ➢ Press [Esc] to cancel the change.

2.6.3   CPU Registers Window

The CPU Registers window allows you to view and modify the value for each register on the processor.

- From the **View** menu, select **Registers**. The Data Memory window appears.
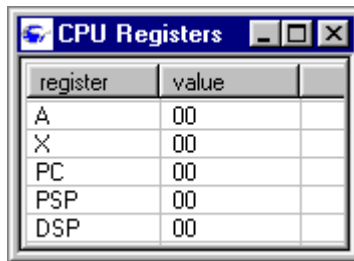
Figure 21 – CPU Registers Window

register A	You can not modify data in the r**egister** field.
value 00	You can only modify data in the **value** field. For information pertaining to the definition of and the possible values for each register, refer to the *Cypress USB Development Kit Assembler Guide*.

You can only modify data in the **Value** field. You can not modify data in the **Register** field. To make a change to a CPU register:

- Double click the value you want to change.

- Type the new value in that field.

    ➢ Press [Enter] to save the change.

    ➢ Press [Esc] to cancel the change.

Note

For information pertaining to the definition of and the possible values for each register, refer to the specific microcontroller's data sheet.

2.6.4　IO Registers Window

The IO Registers window allows you to view and modify the value for each IO port.

- From the **View** menu, select **IO Registers**. The IO Registers window appears.

Port	address	value	type	
Port 0 Data	0x00	0x00	R/W	
Port 1 Data	0x01	0x00	R/W	
Port 2 Data	0x02	0x00	R	
Port 0 Interrupt Enable	0x04	0x00	W	
Port 1 Interrupt Enable	0x05	0x00	W	
Port 0 Interrupt Polarity	0x06	0x00	W	
Port 3 Interrupt Polarity	0x07	0x00	W	
Port 0 Mode0	0x0a	0x00	W	
Port 0 Mode1	0x0b	0x00	W	
Port 1 Mode0	0x0c	0x00	W	
Port 1 Mode1	0x0d	0x00	W	
USB Device Address	0x10	0x00	R/W	
EP 0 Counter Register	0x11	0x00	R/W	
EP 0 Mode Register	0x12	0x00	R/W	

Figure 22 – IO Registers Window

Port Port 0 Data	You can not modify data in the **Port** field.
address 0x00	You can not modify data in the **address** field.

value 0x00	You can only modify data in the **value** field. For information pertaining to the definition of and the possible values for each register, refer to the *Cypress USB Development Kit Assembler Guide*.
type R/W	You can not modify data in the **Type** field. Possible entries for this field are R (read only), W (write only), and R/W (read/write). Write only values do not reflect the last value written. Certain IO ports are changed when read. These IO ports are marked with an asterisk (*). The value does not reflect the next or previous value read from the port.

2.6.5   Memory FIFO Window

The Memory FIFO window displays the contents of the FIFO.

- From the **View** menu, select **FIFO**. The IO Registers window appears.

Note

Not all supported devices have FIFOs.

address	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
0x000000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x000090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000a0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000b0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0000c0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Figure 23 – Memory FIFO Window

address 0x000000	You can not modify data in the **Address** field.
2 00	You can only modify data in the value fields (**0** – **f**). Once a value is modified, you must refresh the FIFO to affect the changes to the FIFO.

2.6.6   **Breakpoints Window**

Breakpoints stop your program at strategic points so you can then look at the current state of your target. Most debugging activities either directly or indirectly use breakpoints.

The Breakpoints window contains only the **address** field. This field shows the address of each existing breakpoint to be planted in memory and triggered when executed.

- From the **View** menu, select **Breakpoints**. The Breakpoints window appears.
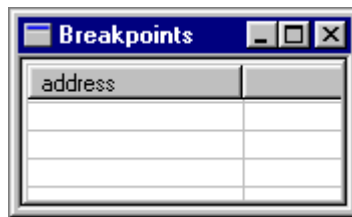
Figure 24 – Breakpoints Window

There are two ways to modify the data in the **address** field. You can set or clear the breakpoint in the program's .LST file (see ".LST File Window") or you can set or clear the breakpoint in the Breakpoints window:

- Double click the address you want to change or click in an empty cell.

- Delete the address to clear the breakpoint or type the address of the new breakpoint.

  ➢ When you add, change, or delete an address in the Breakpoints window, the modification is reflected in the program's .LST file.

Once an address is modified, you must either run or refresh the program to plant the breakpoint in memory and be able to trigger the breakpoint.

2.6.7   .LST File Window

Breakpoints stop your program at strategic points so you can then look at the current state of your target. Most debugging activities either directly or indirectly use breakpoints. There are two ways to set or clear a breakpoint. You can add, change, or delete the address of the breakpoint in the Breakpoints window (see section 2.6.6, "Breakpoints Window") or you can perform the following:

- From the Open dialog box, open the .LST file of the program you want to work with.

Figure 25 – .LST File Window
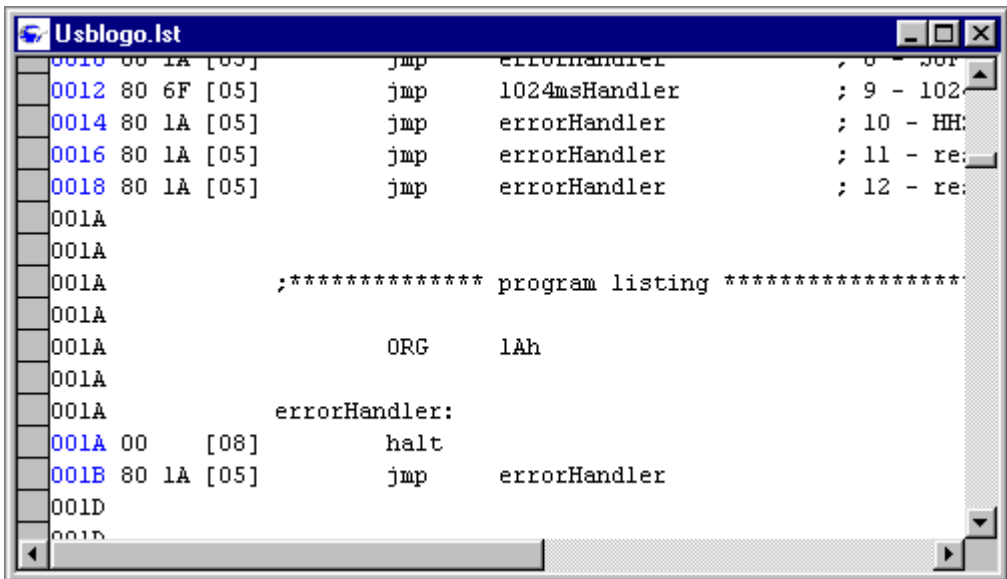
- To set a breakpoint, double-click on the margin to the left of the instruction where you want the program to stop. Breakable addresses appear in blue.

- To clear a breakpoint, double click on the instruction where you set the breakpoint you want to clear.

  ➢ When you set or clear a breakpoint, the change is also reflected in the Breakpoints window.

Chapter 3

Appendices

Contents

Appendix A   Acronyms and Abbreviations

The following is an alphabetical list of acronyms and abbreviations found in this document and their definitions.

Term	Definition
CD	Compact Disc
CD-ROM	Compact Disc Read-Only Memory
COM	Communications
CPU	Central Processing Unit.
FIFO	First In First Out
HEX	Hexidecimal
I/O	Input/Output
ITTS	Intelligent Tracing Trigger System
K	Kilo- (one thousand)
M	Mega- (one million)
PC	Personal Computer
PDF	Portable Document Format
RAM	Random Access Memory
ROM	Read Only Memory
USB	Universal Serial Bus
VGA	Video Graphics Adapter
www	World Wide Web

Appendix B Detailed Hardware Description

Platform Board

The following diagram is an approximation of the components on the CY3654
Platform Board. Each component is described in the table on the following page.
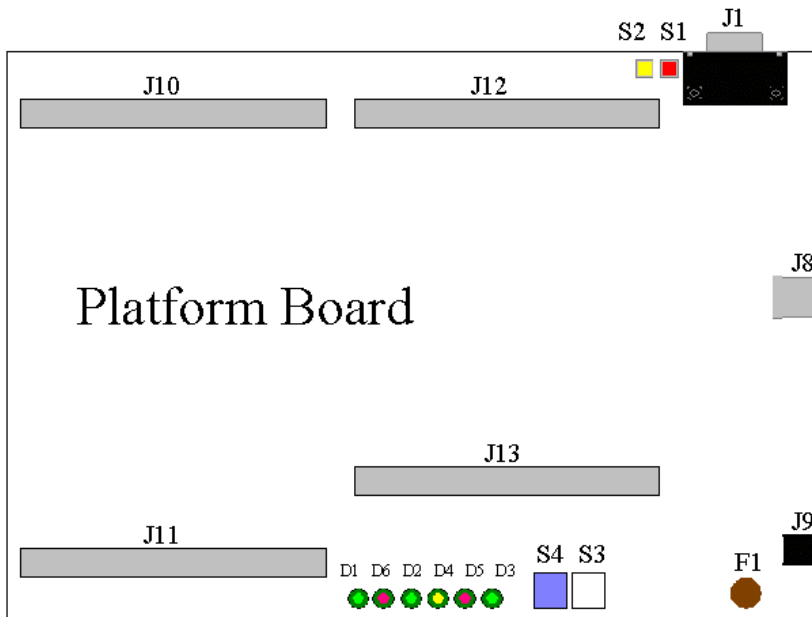
Item	Board #	Description
Jumpers	J1	Serial Port
	J8	USB Connector (not used)
	J9	Power Connector
	J10/J11	Personality Board Connectors
	J12/J13	ITTS Option Board Connectors (future option)
Switches	S1	Emulator Reset
	S2	Flash Mode
	S3	M8 Reset
	S4	Not used
LEDs	D1	Power – on when power is supplied
	D2	Busy – on when executing host command or board init.
	D3	Run – on when user program is running
	D4	Suspend – on when M8 processor is in suspend mode
	D5	Halt – on when user program is halted
	D6	Active – blinks when board is active
Misc.	F1	1 Amp Fuse