ERIKA Enterprise Tutorial

for the dsPIC (R) DSC platform

version: 1.1.10 March 5, 2009



About Evidence S.r.l.

Evidence is a spin-off company of the ReTiS Lab of the Scuola Superiore S. Anna, Pisa, Italy. We are experts in the domain of embedded and real-time systems with a deep knowledge of the design and specification of embedded SW. We keep providing significant advances in the state of the art of real-time analysis and multiprocessor scheduling. Our methodologies and tools aim at bringing innovative solutions for next-generation embedded systems architectures and designs, such as multiprocessor-on-a-chip, reconfigurable hardware, dynamic scheduling and much more!

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1 RT-Druid and Erika Enterprise tutorial for dsPIC (R) DSC

This small tutorial describes a set of steps needed to compile a simple application that shows the main features of Erika Enterprise and RT-Druid for the dsPIC (R) DSC platform.

This tutorial has been tested on a FLEX board produced by Evidence and Embedded Solutions and on a Microchip Explorer 16 development board from Microchip.

We suppose the reader is familiar with the MPLAB IDE debug environment provided by Microchip.

2 Notes for Windows XP and Windows Vista users

If you are using Windows, and especially if you are using Windows Vista, please look carefully at the following warnings:

Warning: Do NOT install the Evidence package in a name containing spaces. c:/Evidence/Evidence works.

Warning: Do NOT install the Scilab package in a name containing spaces. c:/Evidence/scilab-4.1.2 works.

Warning: If using Vista, be aware that directories like c:/Programmi, c:/Users/Documenti are not REAL directories but are aliases. DO NOT USE THEM. Put your RT-Druid workspace under c:/Users/yourusername/workspace.

Warning: Please install cygwin into its default directory, c:/cygwin.

Warning: Also if from the Windows Vista Explorer your Microchip compiler seems to be installed under c:/Programmi/Microchip/..., please remind to specify the REAL pathmname. In particular, c:/Programmi DOES NOT EXISTS, whereas the correct name is c:/Program Files.

3 Installing Erika Enterprise and RT-Druid on Microsoft Windows

This chapter will guide the developer to the installation procedure of Erika Enterprise and RT-Druid for the dsPIC (R) DSC platform.

The installation of Erika Enterprise and RT-Druid is composed by the following packages:

- The Eclipse development environment, which is used by RT-Druid to provide the basic development environment for Erika Enterprise applications.
- The Eclipse environment is based on the Java platform, so that a working Java Runtime Environment must be present for using RT-Druid.
- The RT-Druid plugins, which provide the code generation for Erika Enterprise for Eclipse.
- The Erika Enterprise source code.
- The Microchip MPLAB IDE.
- The Microchip C30 Compiler.
- A version of the Microchip C30 compiler recompiled from the GCC sources, which enables basic C language compilation without the need to buy the full fledged Microchip C30 Compiler.
- A set of examples for the dsPIC (R) DSC Platform, which can be used to compile a first set of running examples for the Evidence/Embedded Solutions FLEX board, the Microchip Explorer 16 board, and others. These applications are organized in "templates", available at project creation.
- A subset of the Cygwin environment [1], including a set of utilities like make, gawk, and few others, which are used during the compilation process of an Erika Enterprise application.

To install the software, execute the following steps:

1. Install your favourite Java runtime environment, which is needed to run RT-Druid; in fact, RT-Druid is a plugin of the Eclipse editor, which requires Java to be executed.

- 2. Install the latest version of the Microchip MPLAB IDE; you can use the default install directory. At the end of the install process, accept the system reboot.
- 3. Install the Microchip C30 Compiler, available from the Microchip web site. Even in this case, you can use the default install directory. When it is asked to change the default environment, please do accept.
- 4. Run the Erika Enterprise and RT-Druid installer.
- 5. The installer will prompt a list of packages which can be installed. Select all the packages you wish to install and continue the installation procedure (see Figure 3.1).

😙 Erika Enterprise for dsPIC DSC Setup 📃 📼								
Choose Components Choose which features of Erika Enterprise for dsPIC DSC you want to install.								
Check the components you want to install and uncheck the components you don't want to install. Click Install to start the installation.								
Select components to install:	V Cyowin V Erika Enterprise	Description Position your mouse over a component to see its description.						
Space required: 287.1MB								
Erika Enterprise for dsPIC DSC —	< Back	Install Cancel						

Figure 3.1: This screenshot shows the dialog box with the available install packages.

Note: The Erika Enterprise install package provides a version of the Microchip C30 compiler recompiled from the GCC sources made available from Microchip. Although that compiler is able to compile Erika Enterprise applications, it does not include Microchip include files and libraries which are only distributed with the Microchip package.

- 6. The installer will ask for a destination directory. If possible, please use c:/Evidence/Evidence (see Figure 3.2).
- 7. At this point, please check the *first* line of the file evidencedir\bin\mymake_cygwin.bat (where evidencedir is the directory you chose during the installation). For example, if Cygwin is installed inside C:\cygwin, then the first line of the file should look like the following one:

@set EE_BASH_PATH=C:\cygwin\bin\bash

 $3\,$ Installing Erika Enterprise and RT-Druid on Microsoft Windows

🕞 Erika Enterprise for dsPIC DSC Setup	
Choose Install Location Choose the folder in which to install Erika Enterprise for dsPIC DSC.	
Setup will install Erika Enterprise for dsPIC DSC in the following folder. To insta folder, click Browse and select another folder. Click Install to start the installati	ll in a different ion.
Destination Folder C:\Evidence\Evidence Brc	owse
Space required: 110.8MB Space available: 8.4GB Erika Enterprise for dsPIC DSC	Cancel

Figure 3.2: This screenshot shows the preferred destination dir for installing Erika Enterprise.

...that is, the line contains the correct path to the bash.exe file in your Cygwin installation. If you accepted the default settings, the correct pathname should be C:\cygwin\bin\bash as specified in the example before.

Note: We ask to perform this check because it seems that on some Windows machines the Cygwin installer does not correctly set the registry keys used by the Erika Enterprise installer.

The rest of this tutorial supposes that the Microchip MPLAB IDE is installed within the C:\Programmi\Microchip directory and that, consequently, the GNU Assembler for dsPIC (R) DSC is installed within C:\Programmi\Microchip\MPLAB ASM30 Suite\bin. Please note that these values may be different from the settings you have chosen on your machine. Please also read the chapter with the Windows Vista recommendations.

After all the required packages have been installed, you are ready to start **RT-Druid** for the first time.

Please follow the next steps:

- 1. As the first step, run the Eclipse IDE from the Evidence menu inside the Start menu of your Windows machine, choosing Start/Programs/Evidence/RT-Druid.
- 2. A dialog box will appear, asking to choose the right workspace (see Figure 4.1). Leave the default workpackage directory as it is, and proceed by pressing "OK".

Workspace Launcher	
Select a workspace	
Eclipse Platform stores your projects in a folder cal Choose a workspace folder to use for this session.	led a workspace.
Workspace: C:\Users\pj\workspace	▼ Browse
Use this as the default and do not ask again	OK Cancel

Figure 4.1: This screenshot shows the dialog box for the choice of the current workspace directory.

Warning: The workspace pathname MUST NOT contain any blank space, otherwise Erika Enterprise and RT-Druid may not work properly.

Note: If you are using Windows Vista, then the workspace directory c:/Users/<username>/workspace works.

- 3. The Eclipse Welcome screen appears, like in Figure 4.2.
- 4. Before being able to correctly build your application, you should set the path to the Microchip C30 compiler and the MPLAB ASM30 assembler programs. For doing so, please go to the "Preference" menu, as shown in Figure 4.3, and find the "RT-Druid/Oil/PIC30 Configurator" form as depicted in Figure 4.4. The first textbox, labeled Gcc path, refers to the installation directory of the Microchip C30



Figure 4.2: The Eclipse Welcome screen.

compiler. The second textbox, labeled Asm path, refers to the installation directory of the ASM30 assembler provided with the MPLAB IDE.

Warning: The install directories specified in the two textboxes of Figure 4.4 does *not* include the bin directory!

That is, c:\Programmi\Microchip\MPLAB C30 is correct, wheras c:\Programmi\Microchip\MPLAB C30\bin is not.

Warning: The install directory of the assembler refers to the assembler provided with MPLAB IDE and *not* the assembler provided with the C30 compiler. The reason is that the directory is used to call the assembler and *also* to copy the crt0.s file, which has a different position in the two assemblers distributions made by Microchip.

Warning: If you are using a Student Editon of the Microchip C30 compiler which has an **expired license**, please check the "Use EE gcc to resolve dependencies" checkbox in Figure 4.4.

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	Customize Perspective Save Perspective As Reset Perspective Close Perspective Close All Perspectives				An outline is not a	wailable.
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Descriptio	n	Resource	Path	Locati	ion Type	
0 items selected					(a)	🤌 🕫 😵 🔶

Figure 4.3: Go to the "Preference" menu.

Preferences			
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General C/C + + Heip Install/Update RE-Druid Oil Erak Enterprise PEC30 Tasks Tasm Usage Data Collector	Gcc path Arm path Use EE gcc to resolve dependecies Use EE gcc to compile	c\Program File\Microchip\MPLAB C30 c\Program File\Microchip\MPLAB ASM30 Suite	Browse
3)			

Figure 4.4: Select paths for compiler and assembler.

5. Before creating and building your application, please deselect the "Build Automatically" flag inside the "Project" menu, as shown in Figure 4.5.



Figure 4.5: Deselect the "Build Automatically" flag in the "Project" menu.

You are now ready to compile your first Erika Enterprise demo. Please execute the following steps:

1. Please select "New Project", then "RT-Druid Oil and c/c++ Project" from the "File menu", as in Figure 5.1.

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	Close All	Ctrl+Shift+W			_			5° ~
	Save	Ctrl+S	Com	vert to a C/C++ Make Project			A	An outline is not available.
	Save As		Sour	ce Folder				
	Save All	Ctrl+Shift+S	Server	er File				
	Revert		G Suur	der File				
	Move		File f	from Template				
	Rename	F2	Clas	s				
	Refresh	F5	-					
	Convert Line Delimiters To	•	Uthe	er Utri+i	N			
3	Print	Ctrl + P						
	Switch Workspace Restart	۲						
2	Import							
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4		Alt+Enter						
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Figure 5.1: Select "New project" from the "File" menu.

- 2. A Dialog box appear. Please select a template for the new project, as in Figure 5.2.
- 3. Press "Next".
- 4. Insert the name of the new project. Please type taskdemo (you can choose other names of course). Please see Figure 5.3. Press the "Finish" button.



Figure 5.2: Select a template for your project.

New Project	
RT-Druid C/C++ Project	-6
Evidence RT-Druid will create and manage this project. The project will use the ERIKA Enterprise RT	TOS. The user have to create Altera system libraries manually.
Project name: taskdemo	
Use default location	
Location CAUperAppleontopace2RitaxAdemo	Brooz
Ø	<back next=""> Finish Cancel</back>

Figure 5.3: Type a name for the new project.

- 5. We are now ready to build the demo. Right click on the project name in the Eclipse navigation bar, and choose "Build Project"¹ (see Figure 5.4).
- 6. Then, the compilation process starts as depicted in Figure 5.5. Please note the message that appears when the compilation is successfull.

Note: If the error depicted in Figure 5.6 appears (meaning that mymake_cygwin.bat is unable to find a file), then please follow the instructions at the last point of Chapter 3.

¹ "Build Project" only appears if the "Build Automatically" flag is not selected in the "Project" menu.

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	25	Remove from Context Ctrl+Alt+Sh	ft+Down	plished by t	he Free Softw	are Foundation,			
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		Public Conformations		ependent mod	ule is a modu	le which is not	de		
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	Debug /	Debug As	,		Resource	Path	Location	Туре	
		Profile As	1						
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		Postore from Local History	,						
		Resole from cocal misory							
		Properties	Alt+Enter						

Figure 5.4: We are now able to build the project.

- 7. At the end of the compiling process you will be able to find a file named 'pic30.cof inside the Debug directory inside the project, as shown in Figure 5.7.
- 8. You are now ready to import the produced COFF file inside Microchip MPLAB IDE. To do that, open MPLAB IDE as in Figure 5.8.
- 9. Choose "Import..." from the "File" menu, as in Figure 5.9.
- 10. A dialog box appear. Please select the pic30.cof file that has been produced by the compilation process in Eclipse, as shown in Figure 5.10. You can find that file inside the Eclipse workspace you selected at the beginning in Figure 4.1. In this example, the file is stored inside the directory c:\Programmi\Evidence\eclipse\workspace\pic30_oo_mono\Debug.
- 11. You have now imported the COFF file inside MPLAB IDE. There is no need to create a MPLAB IDE Project, because the compilation process is handled by Eclipse. Figure 5.11 shows the "Disassembly Listing" and the "Program Memory" window. Please note that MPLAB IDE correctly recognizes the debug symbols of the source code produced inside Eclipse.
- 12. You can now start debugging the demo application using MPLAB IDE.

Figure 5.12 shows the Explorer 16 board with the running pic30\explorer16\Devices Demo demo application, which uses the Explorer 16 onboard devices to monitor and display the environment temperature.



Figure 5.5: The compilation process.

```
Note: If you get an MPLAB IDE error like the following:
ICDWarn0015: Program memory has changed since
last program operation?
Continue with Debug operation?
Running Target
ICD0083: Debug: Unable to enter debug mode.
Please double click this
message for more information.
```



Figure 5.6: An error that shows up on some Windows machines. Please check the mymake_cygwin.bat file as explained in the last point of Chapter 3.



Figure 5.7: The output file is ready to be programmed on the target board.

Please be sure that you entered the debug mode and programmed the device *from* the Debugger Mode and not from the Programmer Mode.

Note: If you are using a FLEX board, please remember to set the device correctly uinder the "Configure / Select device..." menu of MPLABIDE.

The correct settings for the dsPIC on the FLEX Full and the FLEX Light is shown in Figure 5.13. The correct settings for the PIC18 on the FLEX Full is shown in Figure 5.14.

MPLAB IDE v8.00				
File Edit View Project Deb	ugger Programmer Tool	s Configure Window Help	1	
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Untitled W				
Output				
Build Version Control Fin	d in Files			
	dsPIC33FJ256MC710	oab sab IP0 dc n	ovzc	ai

Figure 5.8: The Microchip MPLAB IDE.

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Add New File to Project Open Close	Ctrl+O			
iave iave As iave All	Ctrl+S			
Dpen Workspace Save Workspace Save Workspace As Close Workspace				
mport				
xport				
Print	Ctrl + P			
lecent Files lecent Workspaces	b			
bit				
Build Version Control Fir	nd in Files			

Figure 5.9: Choose "Import..." from the "File" menu to import the coff file produced in Eclipse.

MPLAB IDE V8.00	
Cerca in: 🔒 Debug 🔹 😨 😨 🐨	
Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbols Image: Symbo	<u></u>
Nome file: pic30.cof - Apri	
Tipo file: Al Load Files (",hex,",co(,",cod,",ell)	

Figure 5.10: Select the COFF file you want to import.

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1 Ourseemby Lining •••••••••••••••••••••••••	Untitled W				
<pre> /* Task: just call the ChristmasTree */ 100:11 ABO42 beet.b 0x0042,# 10:</pre>		Disassembly Listing			
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■ 00314 884.00 mev.w 0x0000,00056 181: (00322 A3042 b61x.b 0x002,65 10022 A3042 b61x.b 0x002,65 10022 A3042 b61x.b 0x0042,65 10023 A3042 b61x.b 0x0042,65 10034 RC299 inc.w 0x0986 10034 RC299 inc.w 0x0986 10034 RC299 inc.w 0x0986 10035 RC0000 mov.w 0001,00000 00338 00707C reall 0x00036 00380 0777C reall 0x00036 100100 mov.w 0004,00000 00338 200000 mov.w 004,00000 00338 200000 mov.w 004,00000 00338 200000 mov.w 004,00000 0034 200000 mov.w 004,00000 00342 200000 mov.w 004,00000		003E2 202D80	mow.w #0x2d8,0x0000		
Ist: 0010000000000000000000000000000000000		003E4 884AE0	mov.w 0x0000,0x095c		
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Image: image		00322 A9A042	bclr.b 0x0042,#5		
Image: The set of the s		182:	taskl_fired++;		
<pre>image: ************************************</pre>		00394 EC2998	inc.w 0x0998		
<pre>184: /* First balf of the christmas tree */ 185: 00396 20010 mov.w EDA, 0x0000 00098 00787C reall 0x00036 187: 1e4 biak(0x00) 00090 00787C reall 0x00036 187: 1e4 biak(0x00) 00000 00787C reall 0x00036 188: 187: 1e4 biak(0x00) 00000 00787C reall 0x00036 188: 188: 176 for monotor 189: 176 for monotor 189: 176 for monotor 199: 176 for monoto</pre>		183:			
<pre>ins: les: les_biak(cs0);</pre>		184:	/* First half of the chris	thas tree */	
File: 200356 200010 mev. w 0001,00000 00356 200010 mev. w 0001,00000 1000000 100352 100000 mev. w 0001,00000 100000 00356 200000 mev. w 0001,00000 100000 100350 200040 mev. w 0001,00000 100000 100350 200040 mev. w 0001,00000 100000 100350 200400 mev. w 0001,00000 100000 100350 200400 mev. w 0001,00000 100000 100350 1000000 mev. w 0001,00000 1000000 100351 /* Scond half of the christmas tree */ 136 195: 140,5100000 1000000 1000000 00342 000000 10000000 10000000 10000000 00345 000000 140,5100000 140,51000000 140,5100000		185:	<pre>led_blink(0x01);</pre>		
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Output 0035A 200200 mov.w #002_00000 100100 00356 20020 10000036 1801 00100 0797C real 0x0000 100000 1910 stifdef MYGOND01 10010 1901 stifdef MYGOND01 10010 1901 stifdef MYGOND01 10010 1901 stifdef MYGOND01 1001 1902 fendit 1001 1903 stifdef MYGOND01 100100 1904 y stifdef MYGOND01 1905 real black(0x00); 100100 1903 200000 mov.w stold,0x0000 00345 2001000 mov.w stold,0x00000 00345 2001000 10000026 10010000000 10000000 10000000 100100000000 10000000 10		186:	led_blink(0x02);		
Output		0039A 200020	mow.w #0x2,0x0000		
1001put 100352 20040 mov w 004,00000 100300 07970 x reall 0x000034 185 10031 516441705017013 and 4: we put an additional 5chedule() here! */ 193 1301 516441755017013 and 4: we put an additional 5chedule() here! */ 1301 516441755017013 and 4: we put an additional 5chedule() here! */ 1301 56640140(): 193: 1302: femitic 193: 1303: 200800 mov we 80.8,00000 00342 200800 mov we 80.8,00000 00342 200800 mov we 80.8,00000 00342 200800 mov we 80.8,00000 00345 200800 mov we 80.8,00000 00345 200800 mov we 80.8,00000 00346 007976 reall 0x00036 00345 007976 reall 0x00036 00345 007976 reall 0x00036		0039C 07FFCC	rcall 0x000336		
I Output 0035E 200400 mov.w 0034,00000 Budd Version 00350 // CONFLATION 3 and 4; we put an additional Schedule() here! */ Budd Version 51.64 // SCHNULE 190: 1.90: 190: 1.90: 190: 1.90: 190: 51.64 // SCHNULE 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 190: 1.90: 191: 1.90: 192: 1.90: 193: 1.90: 194: // * Scend half of the christmas tree */ 195: 1.90: 196: 1.90: 196: 1.90: 196: 1.90: 196: 1.90: 197: 1.90: 197: 1.90: <t< td=""><td></td><td>187:</td><td><pre>led_blink(0x04);</pre></td><td></td><td></td></t<>		187:	<pre>led_blink(0x04);</pre>		
Output 003A0 0797CA reall 0:00036 Bad Venion 100 / fifth output of the christmas tree the put an additional Schedule() here! */ 139: fifth output of the christmas tree the put of the christmas tree t		0039E 200040	mov.w #0x4,0x0000		
Budd Venion 100: 100: 100: 100: 100: 100: 100: 100:	Cutput	003A0 07FFCA	rcall 0x000336		
Bud Vemon /* CONTECTORATION 3 and 4: we put an additional Schedule() here! */ 190: stife(TMSCHEDUL); 191: Schedule(); 193: senit 194: /* Second half of the christmas tree */ 195: 194: /* Second half of the christmas tree */ 195: 194: 195: 195: 195: 195: 195: 195: 195: 195		188:			
190: #ide HYSCHUDUE 191: Bickedle(); 192: #endit 193: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 194: // F Scond hall of the christmas tree */ 195: // F Scond hall of the christmas tree */ 003A4 079760 reall of 00036 003A8 079766 reall of 00036 // H Scond A 079766 reall of 00036 /	Build Version	189:	/* CONFIGURATION 3 and 4:	we put an additional Schedule() he	re! */
191: Schedic(); 192: fmdif 193: /* Scond half of the christmas tree */ 194: /* Scond half of the christmas tree */ 195: led_bink(0x00); 003A2 Z00000 mov.* #DDR_0x0000 003A5 Z00100 mov.* #DDR_0x0000 196: led_bink(0x00); 196: led_bink(0x00); 003A5 Z00100 mov.* #DDR_0x000 003A5 Z00100 mov.* #DDR_0x000 003A5 Z00100 mov.* #DDR_0x000 003A5 Z00100 mov.* #DDR_0x000 003A6 Z00100 mov.* #DDR_0x000 003A6 Z00100 mov.* #DDR_0x000		190:	fifdef HYSCHEDULE		
192: fendit 193: /* Second half of the christmas tree */ 194: /* Second half of the christmas tree */ 195: i=0.0000 / 1000000 00344 079760 reall chronolog 00345 200100 mov.* 00010,00000 00345 200100 mov.* 0000000 00345 200100 mov.* 000000 00345 200100 mov.* 0000000 00345 200100 mov.* 0000000 0000000 0000000 0000000 000000		191:	Schedule();		
199: 199: 194: /* Second half of the christmas tree */ 195: led_bink(0000); 00342 20000 mov.w 000000000000000000000000000000000000		192:	#endif		14
194: 7 Second half of the christmas tree */ 195: 00342 20000 de Julnik (006) 00342 20000 mev. w Sold, 50000 00345 200100 mev. w Sold, 50000 00345 20000 mev. w Sold, 500000 00000 mev. w Sold, 500000 0000 mev. w Sold,		193:			
195: led_bink(0000); 00342 20000 mov.w 0000(00000) 00344 079706 reall 0:0000366 196: led_bink(0010); 00386 200100 mov.w 0:010.0:0000 00386 079706 reall 0:000036 100: reall 0:000036		194:	/* Second half of the chri	stmas tree */	
00342 200660 mov. w 50.8 (0.0000 00344 0079760 reall (0.0003) 195346 200100 mov. w 50.8 (0.0000) 00348 079766 reall (0.00038 4 ************************************		195:	<pre>led_blink(0x08);</pre>		
0034 079768 reall 0:00036 196: 1ed_bink(0:010); 0036 200100 mov.w 0:010.0:0000 00386 079765 reall 0:000036 + m + + + + + + + + + + + + + + + + + +		003A2 200080	mow.w #0x8,0x0000		
Lassi Ladjini (kalo) 00336 200100 movin 10130,50000 remaining of the second s		003A4 07FFC8	rcall 0x000336		
U03A6 200100 Nov. * 101210.000000 003A6 200100 Nov. * 101210.000036 (196:	led_blank(0x10);		
VUSAS UTAPUS KCALL UKUUUSAS		00346 200100	mov.w BUX10,0x0000		
		003A8 07FFC6	rcall 0x000336		-
		m			P

Figure 5.11: Debug symbols are correctly recognized.



Figure 5.12: The Explorer 16 board with the running demo program.

Select Device						
Device: Device Family: dsPIC33FJ256MC710	•					
Microchip Tool Sup	port					
Programmers						
PICSTART Plus MPLAB ICD 2 PRO MATE II PICkit 1 MPLAB PM3 MPLAB REAL ICE	PICkit 2					
Language and Design Tools						
ASSEMBLER O COMPILER O V2.02	VDI					
Debuggers						
 MPLAB SIM MPLAB ICD 2 MPLAB REAL ICE 	PICkit 2					
MPLABICE 2000 MPLABICE 400	0 ICE/ICD Headers					
No Module No Module	ONO Header					
OK Cancel Help						

Figure 5.13: Selecting the dsPIC MCU mounted on the FLEX boards.



Figure 5.14: Selecting the PIC18 MCU mounted on the FLEX Full boards.

6 History

Version	Comment	
1.0.0	Initial revision.	
1.1.0	Updated with information and screenshots about Erika Enterprise	
	version 1.4.	
1.1.3	Updated with new screenshots about configuration; added warn-	
	ings about blanks in pathnames.	
1.1.4	Added some changes to the install instructions from comments by	
	Simone Mannori.	
1.1.5	Added Cygwin error workaround when the installer can not find	
	the cygwin registry value.	
1.1.6	Typos found when translating the document in italian.	
1.1.7	Updated some figures Figure, added a few warning boxes.	
1.1.8	Added notes about MPLAB IDE.	
1.1.9	Added recommendations for Windows Vista.	
1.1.10	Updated screenshots for EE 1.4.3. Erika Enterprise Basic renamed	
	to Erika Enterprise.	

Bibliography

[1] Cygwin. The cygwin project. http://www.cygwin.com, 2005.