Getting started with IAR EWARM Development Tool for phyCORE-LPC2294

Installation

Depending on whether you install the full version, the evaluation version or the KickStart version of the software there are different limitations. The full version is fully functional without any limitation. The evaluation version is fully functional but it can only be used during a time period of 30 days, starting with the day you registered your software on the IAR Systems web site. The KickStart version is not time-limited but it can only generate a maximum of 32 Kbytes of code. All versions require a license number and a license key to be able to install the software.

1. For the full version, please contact your IAR sales representative for the ordering information.

2. For the evaluation version or the KickStart version, please register on the IAR Systems web site in order to receive a license number and a license key. The autorun program provides a link to the IAR Systems online registration. The license number and the license key will be sent to you via email. Otherwise, please contact license@iar.com.

3. Install IAR Embedded Workbench for ARM. Detailed information about the installation process is available on the installation CD under *QuickStart installation informatio*n.

4. If the autorun program provides the additional link for Phytec phyCORE-2294 specific information:

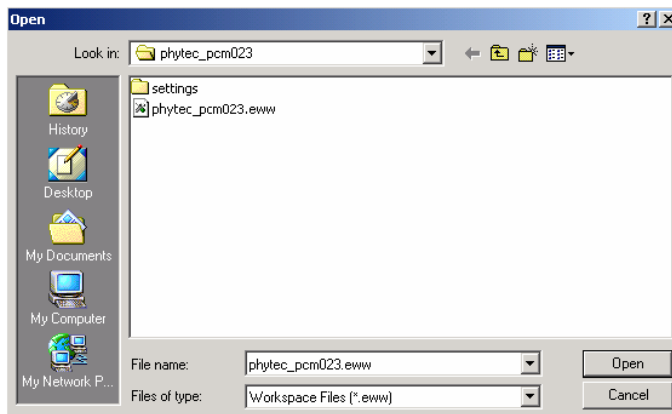| **PHYTEC phyCORE-LPC229x specific Information** | **Displays product information for Philips LPC2294 Development Kickstart Kit.** |
| **Unzip PHYTEC phyCORE-LPC229x specific Files** | **Unzip the Update files into your newly installed workbench directory. Eg:** |
| Phytec phyCORE-LPC2292/94 Hardware Manual | **C:\Program Files\IAR Systems\Embedded Workbench 4.0\"** |

Please proceed to unzip the additional files into your newly installed EWARM directory. For example,

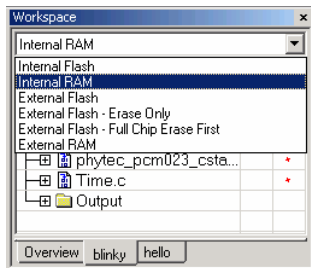C:\Program Files\IAR Systems\Embedded Workbench 4.0\

Workspace/Project description

The provided projects are organized into a single workspace.

1. Launch IAR Embedded Workbench for ARM from the **IAR Systems** programs folder on the Windows **Start** menu.

2. Choose **File>Open Workspace** and browse to the example workspace *phytec_pcm023.eww* located in the directory *\ARM\src\examples\Philips\LPC22xx\Phytec-PCM023*

Each of these projects contains 6 different configurations:

| Configuration	Purpose
Internal Flash	LPC2294 will boot and run the sample code from its internal 256KB flash
Internal RAM	EWARM debugger will download the sample code into the LPC2294's internal 16KB sram for source level debugging
External RAM	EWARM debugger will download the sample code into the Phytec PCM023's onboard 512KB sram chip for source level debugging
External Flash	LPC2294 will boot and run the sample code from the Phytec PCM023's onboard Am29LV800B flash chip. In this configuration, only those sectors/pages of Am29LV800B to be programmed will be erased, i.e. Other sectors/pages originally with data will be preserved
External Flash – Full Chip Erase First	LPC2294 will boot and run the sample code from the Phytec PCM023's onboard Am29LV800B flash chip. In this configuration, all sectors/pages of Am29LV800B will be erased before the sample code is downloaded, i.e. Other sectors/pages with original data won't be preserved. Erasing the whole chip takes around 30 seconds.
External Flash –Erase Only	EWARM debugger will erase all the sectors/pages of Am29LV800B without downloading any sample code. This configuration is mainly for the maintenance use

Project configuration

The provided project is already configured to work together with the phyCORE-LPC2294 board. This section has been included in order to point out some of the most important project options.

Choose menu **Project>Options** or right click the mouse at the project window to open up the **Options** dialog box
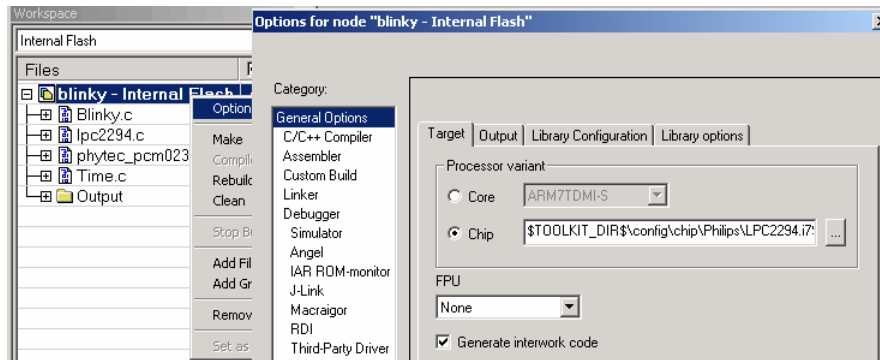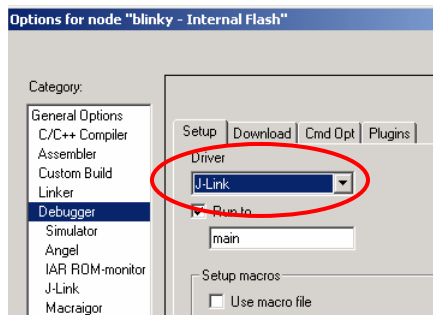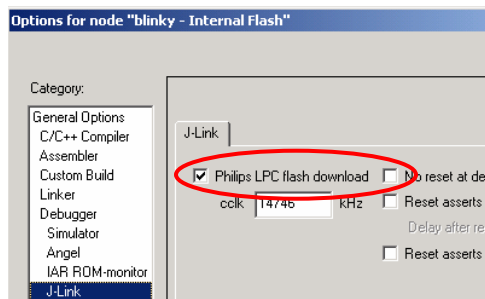
Internal Flash

1. Choose the **Config** page in the **Linker** category and verify that the **Linker command file** is set to *$PROJ_DIR$\phytec_pcm023_iflash.xcl*. This file provides the necessary command to map the code into the internal flash memory of LPC2294 chip.
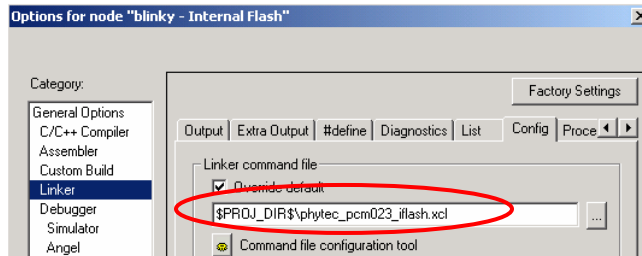
2. Choose the **Setup** page in the **Debugger** category to verify that the **Driver** is set to *J-Link.*

3. Choose the **J-Link** page in the **J-Link** category to verify that the **Philips LPC flash download** is enabled.

4. Close the **Options** dialog box.
5. Click the **Make** button and check the result in the **Build** window.
6. Click the **Debug** button to start the debugger. The debugger will download the sample code into the internal 256KB flash memory of LPC2294 with the internal Philips LPC flash loader.
7. Click the **Go** button to run the sample code from the internal flash.
8. Click the **Break** icon to halt the application.
9. Click on **Stop Debugging** icon to exit from the debugger
10. Recycle the power of phyCORE-LPC2294 board and now the sample is running standalone from the internal flash of LPC2294.

Internal RAM

1. Choose the **Config** page in the **Linker** category and verify that the **Linker command file** is set to *$PROJ_DIR$\phytec_pcm023_iram.xcl*. This file provides the necessary command to map the code into the internal 16KB sram memory of LPC2294 chip for the purpose of debugging with unlimited breakpoints.
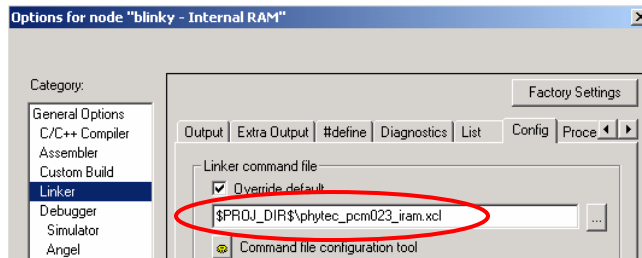

2. Choose the **J-Link** page in the **J-Link** category to verify that the **Philips LPC flash download** is NOT enabled.
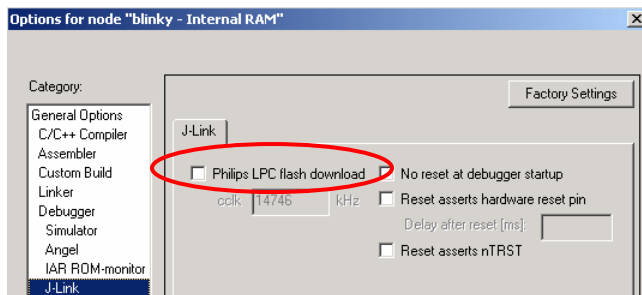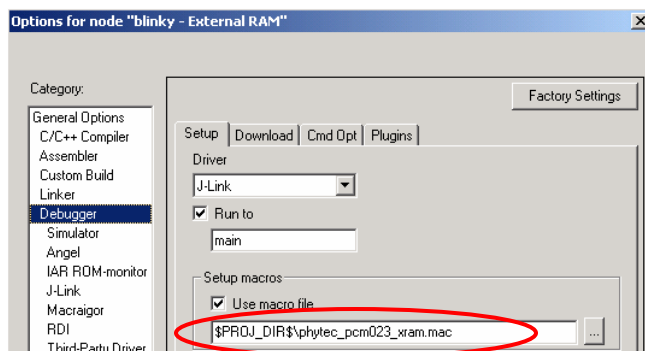

3. Close the **Options** dialog box.
4. Click the **Make** button and check the result in the **Build** window.
5. Click the **Debug** button to start the debugger. The debugger will download the sample code into the internal 16KB sram memory of LPC2294.
6. Click the **Go** button to run the sample code from the sram.
7. Click the **Break** icon to halt the application.
8. Press **F9** to set breakpoints at any source line.
9. Click on **Stop Debugging** icon to exit from the debugger.

External RAM

1. Choose the **Config** page in the **Linker** category and verify that the **Linker command file** is set to *$PROJ_DIR$\phytec_pcm023_xram.xcl*. This file provides the necessary command to map the code into the onboard 512KB sram memory of the Phytec PCM023 of phyCORE-LPC2294 for the purpose of debugging with unlimited breakpoints.
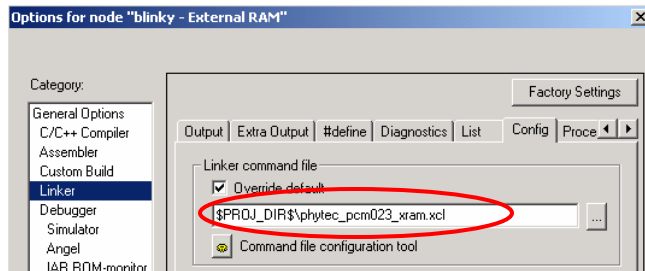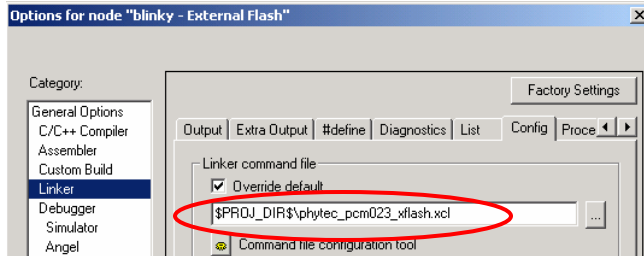

2. Choose the **Setup** page in the **Debugger** category and verify the Setup macros is set to *$PROJ_DIR$\phytec_pcm023_xram.mac*. This file provides the necessary command to configure the various BCFGx and PINSEL2 registers to set up the external sram interface before downloading the sample code into it.
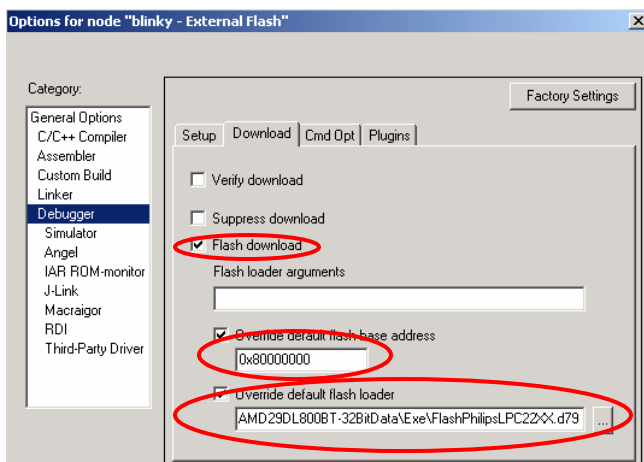

3. Close the **Options** dialog box.
4. Click the **Make** button and check the result in the **Build** window.
5. Click the **Debug** button to start the debugger. The debugger will download the sample code into the onboard 512KB sram memory.
6. Click the **Go** button to run the sample code from the sram.
7. Click the **Break** icon to halt the application.
8. Press **F9** to set breakpoints at any source line.
9. Click on **Stop Debugging** icon to exit from the debugger.

External Flash

1. Choose the **Config** page in the **Linker** category and verify that the **Linker command file** is set to *$PROJ_DIR$\phytec_pcm023_xflash.xcl*. This file provides the necessary command to map the code into the onboard Am29LV800B flash of the Phytec PCM023.


2. Choose the **Download** page in the **Debugger** category and verify that:
   - **Flash download** is enabled,
   - **Flash base address** is set to *0x80000000*
   - **Flash loader** is set *to $PROJ_DIR$\flashloader\ AMD29DL800BT-32BitData\Exe\FlashPhytecPCM023.d79*

3. Close the **Options** dialog box.
4. Click the **Make** button [icon] and check the result in the **Build** window.
5. Click the **Debug** button [icon] to start the debugger. The debugger will download the sample code into the onboard Am29LV800B flash with the external Am29LV800B flash loader, which needs to be built first and will be discussed in the next section.
6. Click the **Go** button [icon] to run the sample code from the internal flash.
7. Click the **Break** icon [icon] to halt the application.
8. Click on **Stop Debugging** icon [icon] to exit from the debugger
9. Recycle the power of phyCORE-LPC2294 board and now the sample is running standalone from the onboard Am29LV800B flash.

External Flash Loader

Choose **File>Open Workspace** and browse to the workspace *FlashPhytecPCM023.eww* located in the directory \
ARM\src\examples\Philips\LPC22xx\Phytec-PCM023\flashloader
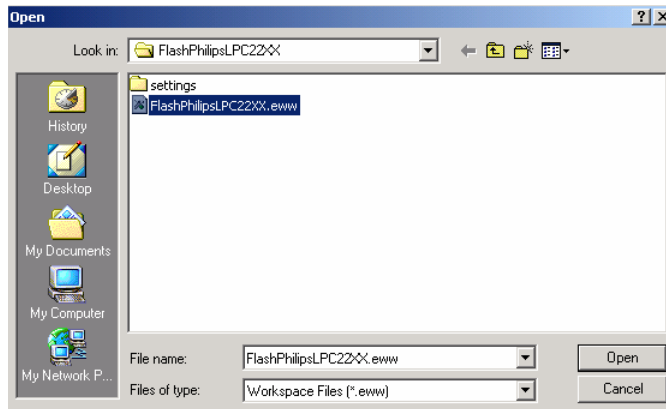
The provided project contains various configurations for different flash chips in different hardware connection.
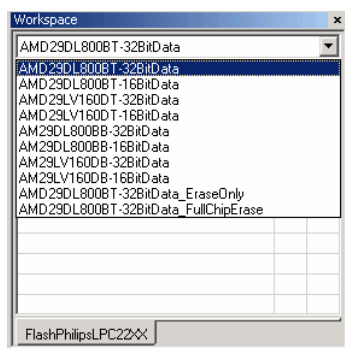
Choose menu **Project>Batch build** or press **F8** to rebuild all the configurations.