Freescale Semiconductor
Application Note

Document Number: AN4913

Building and Debugging a project using Keil MDK-ARM Eclipse plug-in

Processor Expert Microcontrollers Driver Suite

Contents

1. Introduction

Processor Expert Microcontrollers Driver Suite is an Eclipse based application for the rapid embedded application development. Processor Expert Microcontrollers Driver Suite does not contain any build tool chains installed by default. It is expected that the user will install appropriate Eclipse plug-ins or will use generated code in 3-rd party development tools. This application note provides steps to configure Keil MDK-ARM Eclipse plug-in and using Processor Expert together with Keil build tool chain.

It is expected that Processor Expert Microcontrollers Driver Suite is already installed.

2. Installing the Keil MDK-ARM tool chain

2.1. Installing of MDK-ARM Microcontroller Development Kit

1. Install the MDK-ARM Microcontroller Development Kit from ARM web site (http://www.keil.com/arm/mdk.asp).

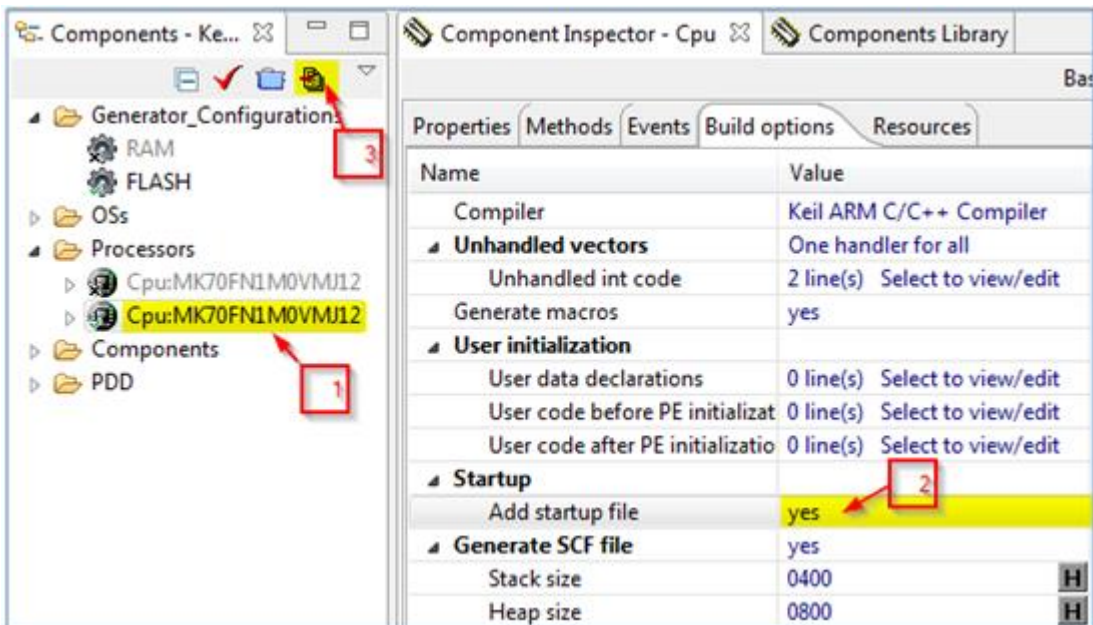# 3. Creating Processor Expert Project for Keil MDK-ARM

To create Processor Expert project:

1. Select **File > New > Processor Expert Project**
2. Choose any project name, for example, *myapp*
3. Click **Next**.
4. Choose the required **Device**, for example, **Kinetis > MK70 > MK70F > MK70FN1M0xxx12**
5. Click **Next**.
6. If present, select project mode (Linked/Standalone).
6. Click **Next**.
6. Select compiler **Keil ARM C/C++ Compiler**.
7. Click **Finish**.

3.1.   Checking the startup code is generated into project

1. Select active Cpu component in the project.
2. In **Component Inspector** view, select **Build options** tab.
3. The property **Add startup file** should be set to **yes**. If it is set to no, set it to yes.
4. Generate Processor Expert code.

Figure 1. Generate Processor Expert code and startup file

4. Exporting Processor Expert project into MDK-ARM Development Kit

There are two possibilities.

1. Check the *[Keil_Installation]* folder. If there is subfolder Eclipse with file *MDKEclipsePlugIn.zip* inside you can go to step **4.1. Exporting using MDK-ARM Plug-in**.
2. Otherwise go to step **4.2. Exporting using external tool configuration**.

4.1. Exporting using MDK-ARM Plug-in

4.1.1. Installing of Keil MDK-ARM Eclipse plug-in

1. In Processor Expert Driver Suite environment, select **Help > Install New Software**
2. Click **Add** and select path to Keil Eclipse plugin:
   [Keil_Installation]/Eclipse/MDKEclipsePlugIn.zip

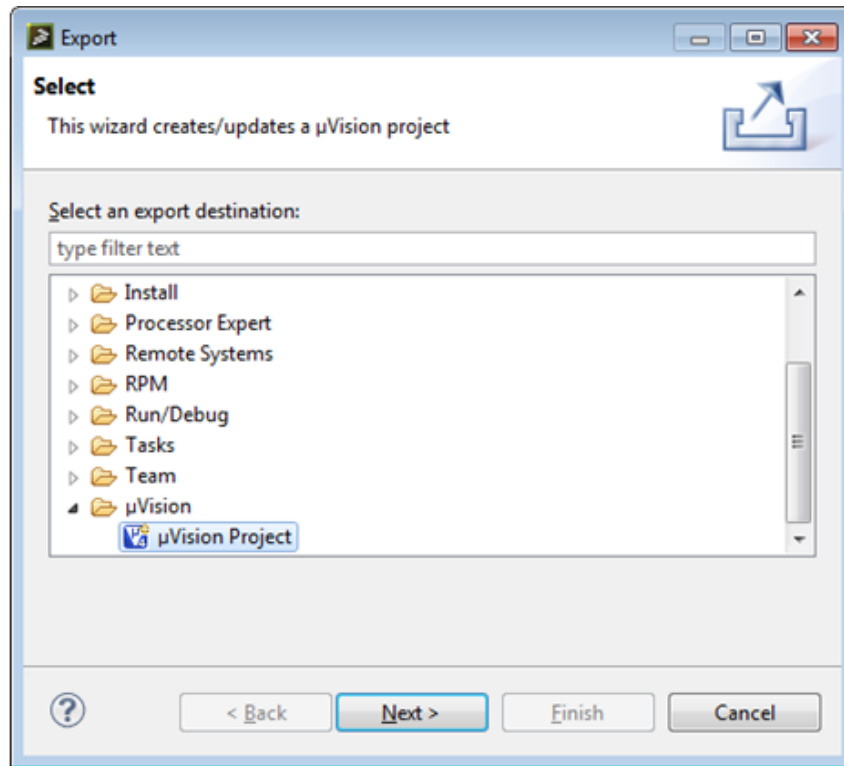**Figure 2. Add Repository**
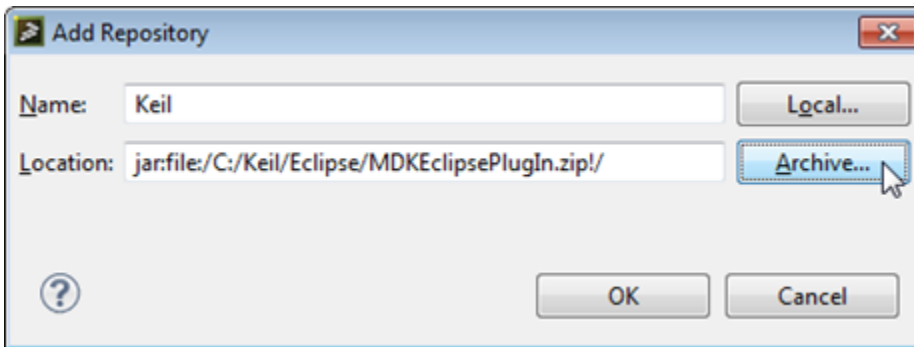
3. Click **OK** to select plugin to install.
4. Click **Next > Finish**.

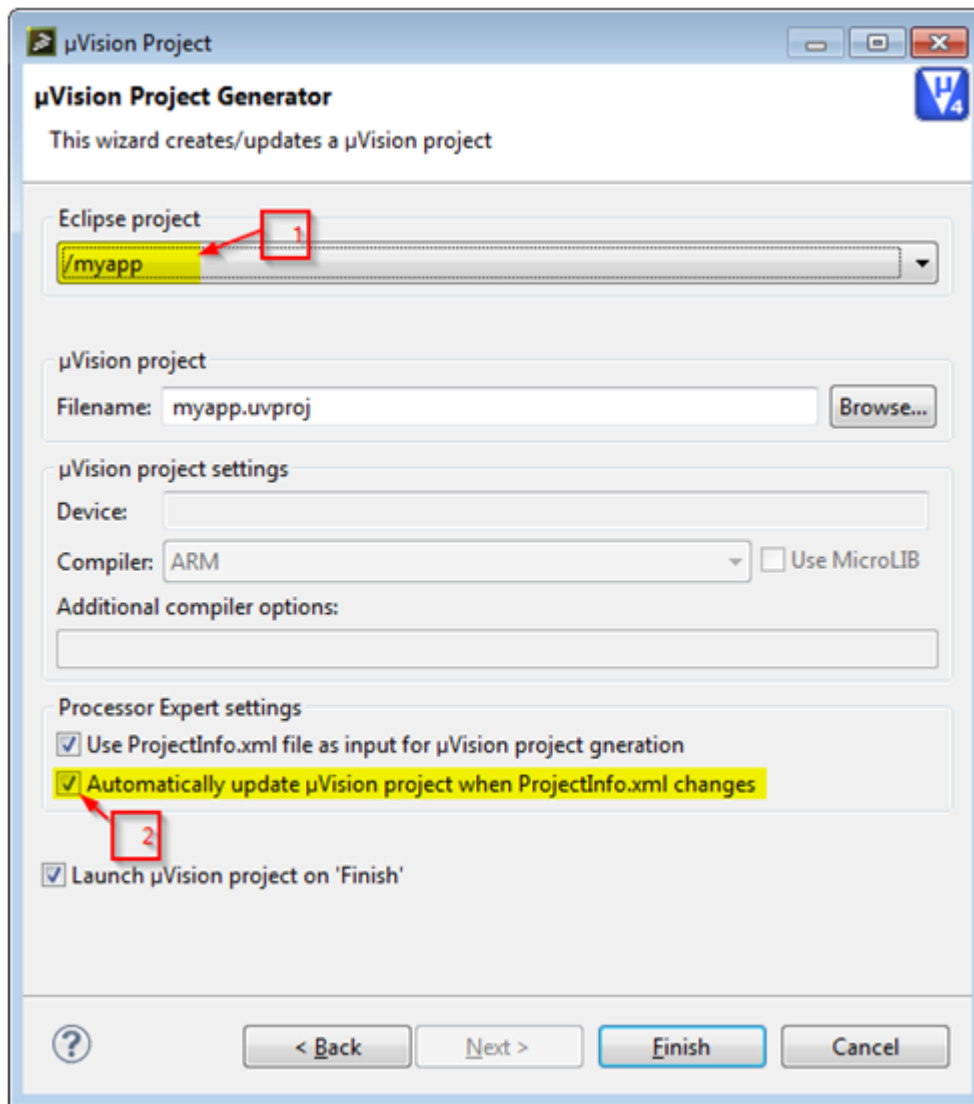### 4.1.2. Exporting Processor Expert project

1. To export created project into MDK, select **File > Export**.
2. Select **uVision > uVision Project**.

Figure 3. Export Processor Expert project as uVision project

3. Click **Next**.

4. Select project created in chapter 3. Select the **Automatically update uVision project when ProjectInfo.xml changes** checkbox.

Figure 4. Export settings

5. Click **Finish.**
6. File with extension .uvproj (or .uvprojx in MDK-ARM version 5.12 and higher) is created in project and MDK-ARM uVision tool starts automatically.

4.2. Exporting using external tool configuration

If there is no MDK-ARM plug-in delivered with the environment, it is needed to set external tool in Eclipse for exporting of the project.

4.2.1. Configuration of external tool

1. In main menu of Eclipse click **Run > External Tools > External Tools Configurations.**

2. Select **Program** and click **New launch configuration** button.

3. Fill the following boxes:

   a. Type name of the configuration. For example uVision.

   b. Location: "*[Keil_Installation]/UV4/UV4.exe*"

   c. Working Directory: *"${workspace_loc:/${project_path}}"*

   d. Arguments: either "*-i ProjectInfo.xml ${project_name}.uvproj*" *(*for MDK-ARM version 5.11 of lower*) or* "*-i ProjectInfo.xml ${project_name}.uvprojx*" *(*for MDK-ARM version 5.12 and higher)

External tool configuration
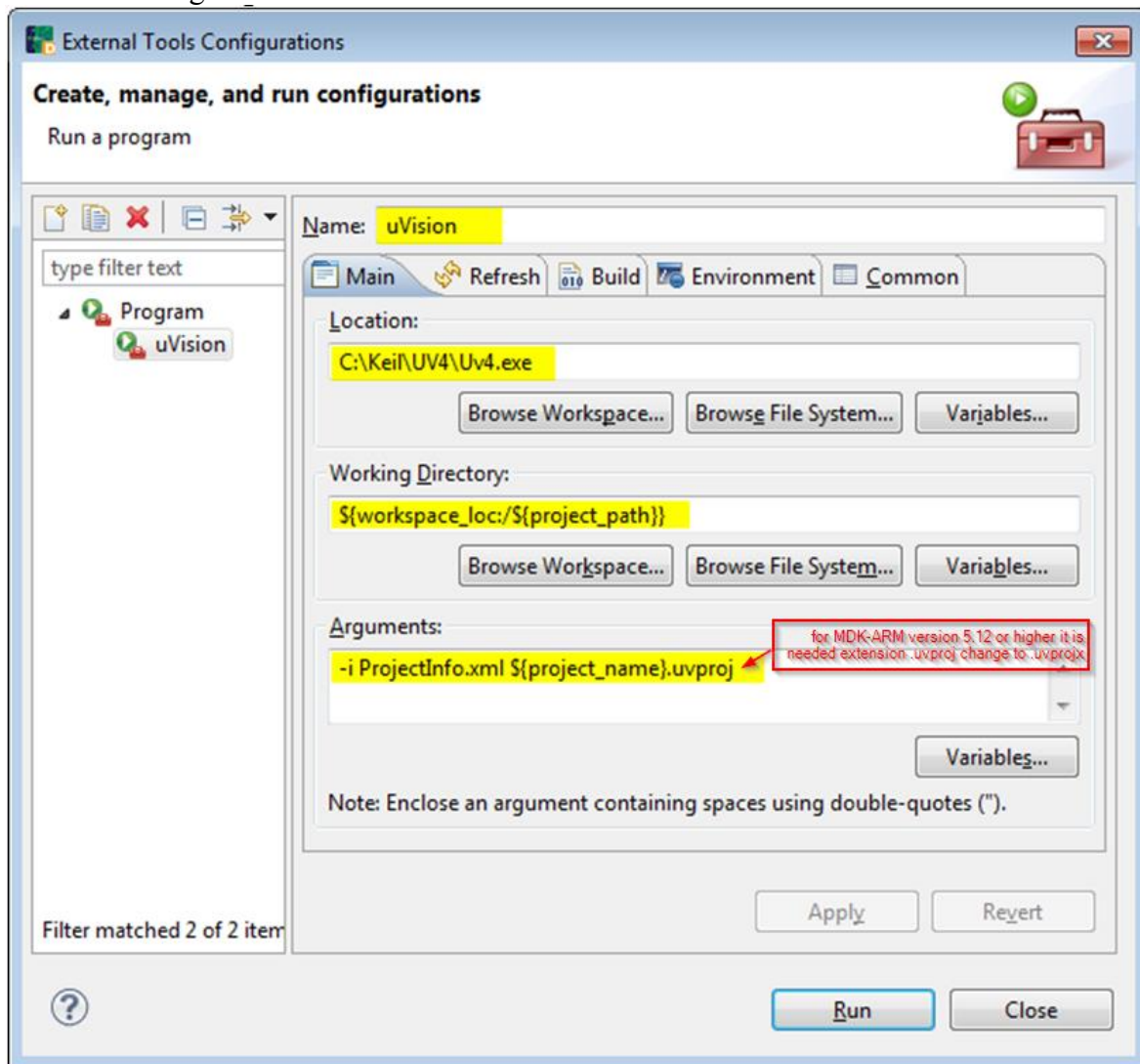
4. *Click **Apply**, then **Close***.

4.2.2. Export Processor Expert project

1. In Project Explorer open the project created in chapter 3. Click on ProcessorExpert.pe. The file ProcessorExpert.pe must be highlighted, otherwise the export ends with error.
2. In main menu click **Run > External Tools > External Tools Configurations**
3. Select the configuration created in step 4.2.1. and click **Run**.

5. Building Processor Expert Project in uVision

1. Select the imported project in uVision tool and click the **Build** icon on Build Toolbar.

Figure 5. Build the project in uVision tool
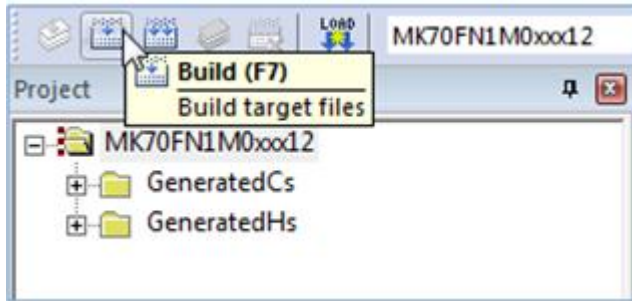
2. After updating Processor Expert project, uVision will ask you to accept the changes and then update the project automatically.

6. Debugging Processor Expert Project in uVision

After successful build you can download the project to hardware and run the debug session in uVision tool. First it is needed to set properly debug configuration as follows:
1. In main menu click **Project > Options for Target <name of your device>** or click the **Target Options…** icon on Build Toolbar.
2. Select tab **Debug**. In this tab select debugger which will be used for connecting to device.

Debug settings
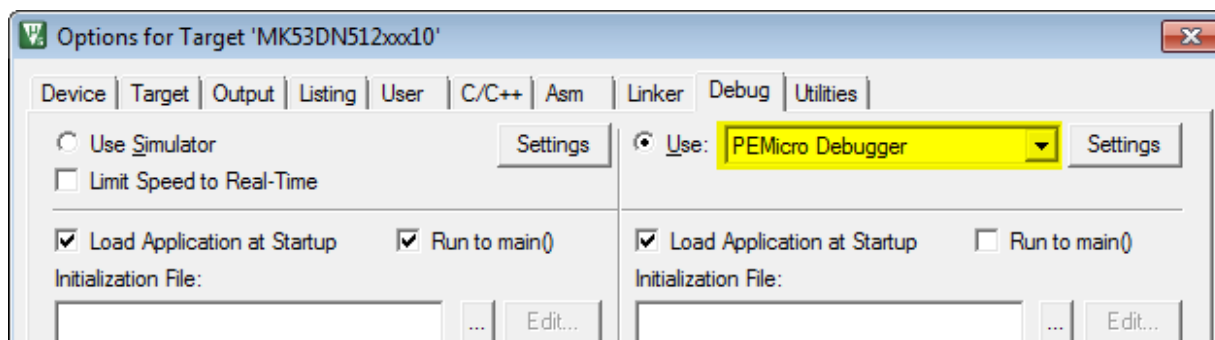
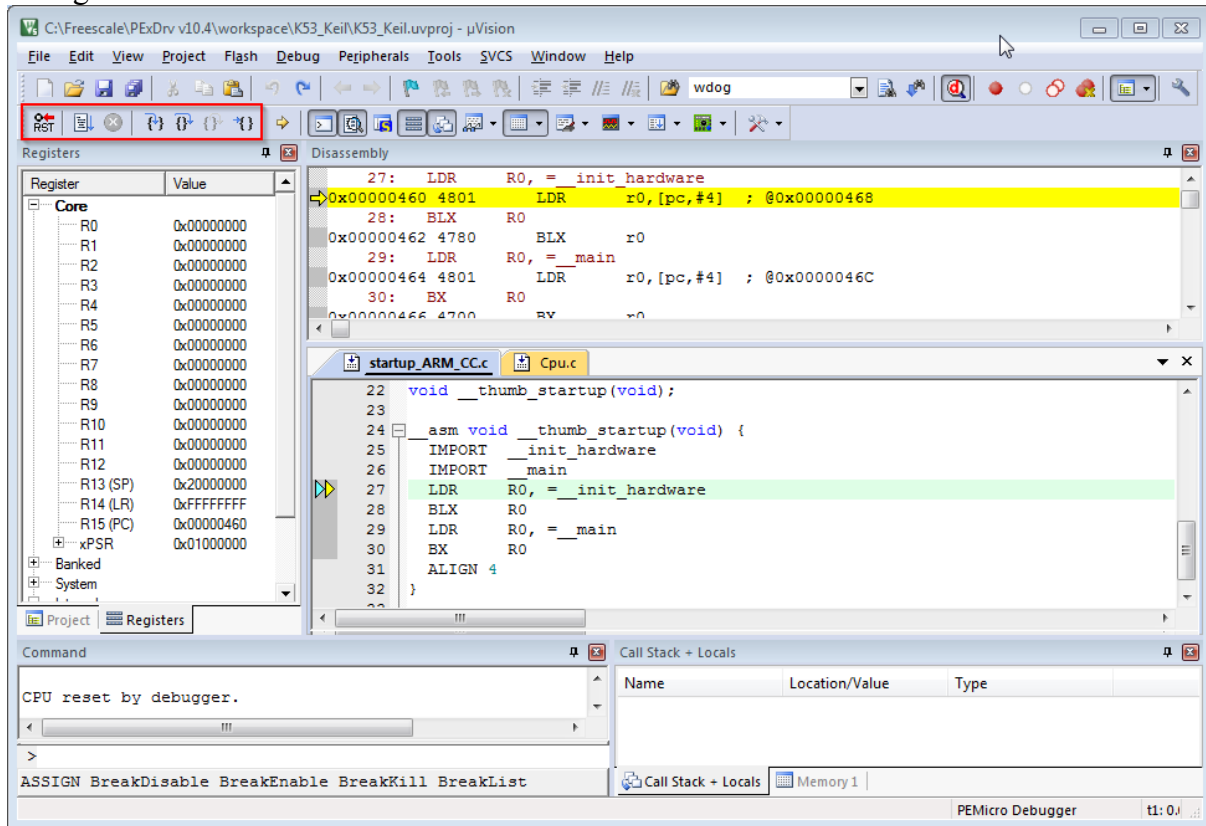3. In tab **Utilities** select the same debugger as in step 2 for Target Driver for Flash Programming.

Utilities settings
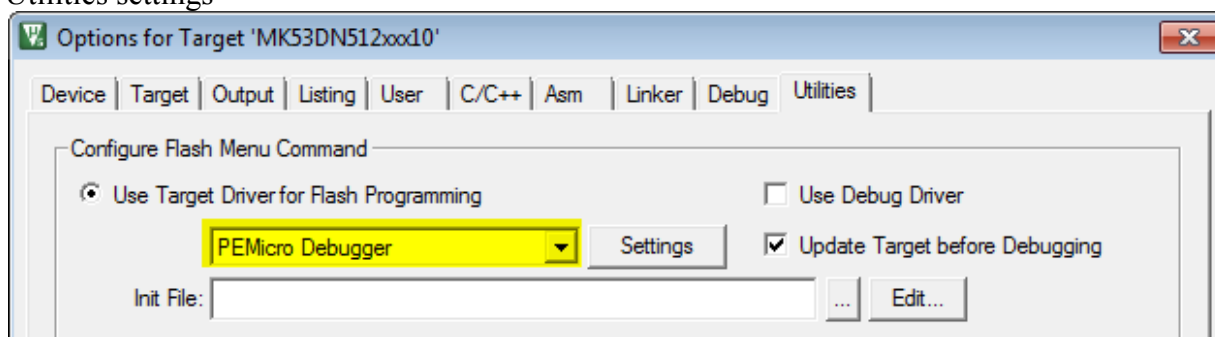
6.1. Starting the debug

1. In main menu click **Debug > Start/Stop Debug Session** or click icon with the same name on File Toolbar.
2. The debug environment appears. You can run or step through the code using the icons on Debug Toolbar.

Debug session

3. To end the debug session click again **Start/Stop Debug Session**.

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