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THIS SPEC IS OBSOLETE

Spec No: 002-06026

Spec Title: AN206026 - FM4 Family Processor in the Loop Simulation

Replaced by: None

AN206026

FM4 Family Processor in the Loop Simulation

Associated Part Family: See Section 2

This application note describes the operating method of Processor in the Loop Simulation (PIL) by using the sample model.

Contents

1 Introduction

1.1 About Document

This application note describes the operating method of Processor in the Loop Simulation (PIL) by using the sample model. Normally, user designs the model according to their application, and simulates it with personal computer in Simulink environment before code generation. This kind of simulation is called Model In the Loop Simulation (MIL). User generates the program of the controlling algorithm evaluated with MIL, and builds it for target Microcontroller (MCU). However, the calculation accuracy is different between MCU and CPU of personal computer.

User can evaluate the difference by PIL framework easily.

1.2 About MATLAB/Simulink

PIL is developed under MATLAB R2013b. The following tools are necessary:

- MATLAB and MATLAB Coder
- Simulink and Simulink Coder
- Embedded Coder

MATLAB and Simulink are registered trademarks of The MathWorks Inc.

1.3 About PIL

PIL runs simulation on both Simulink and FM4 Evaluation Board for check the difference between the two platforms for user's algorithm model. The license of PIL conforms to use permission (AGREEMENT) of Peripheral Driver Library for FM4 (PDL). Please refer Readme.txt in details.

PIL toolset are stored in the folder of FM4_TSP-VxxLxx\PIL.

(VxxLxx is a version number. Hereafter, version number will be omitted.)

The following folders are offered.

- utils Tools for PIL process
- toolchain Configuration and template files of MDK-ARM
- pil PIL frameworks, rtIOStream API, profiler timer and tools supporting them
- doc Manual
- fm4target System target files and tools supporting it.
- demo PIL demo model(one floating data type, one fixed data type)

1.4 Operating Environment

PIL executed confirming the operation in the following environments.

- Support MATLAB MATLAB/Simulink R2013b&R2014a
- Support OS Windows 7 32bit/64bit
- Support Toolchain (IDE/ICE) MDK-ARM uVision ver 5.10.0.2 / J-LINK ver 9.1, Ulink2
  EWARM Version 7.10.1.6735/ J-LINK ver 9.1, I-jet
- Evaluation board FM4-120SD1NQ
- MCU MB9BF568R

2 Target Products

This application note is described about below products;

Series	Product Number (not included Package suffix)
MB9B560R	MB9BF566M, MB9BF566N, MB9BF566R MB9BF567M, MB9BF567N, MB9BF567R MB9BF568M, MB9BF568N, MB9BF568R
MB9B460R	MB9BF466M, MB9BF466N, MB9BF466R MB9BF467M, MB9BF467N, MB9BF467R MB9BF468M, MB9BF468N, MB9BF468R
MB9B360R	MB9BF366M, MB9BF366N, MB9BF366R MB9BF367M, MB9BF367N, MB9BF367R MB9BF368M, MB9BF368N, MB9BF368R
MB9B160R	MB9BF166M, MB9BF166N, MB9BF166R MB9BF167M, MB9BF167N, MB9BF167R MB9BF168M, MB9BF168N, MB9BF168R

3 Limitations

3.1 Notes on Operation

- PIL has the possibility that the error occurs when using it excluding operating environment of 1.4.
- PIL uses Pin Name: SIN0_0 and SOT0_0 of MCU.
- User must prepare the environment for serial communication between PC and MCU board.
- PIL does not offer the available COM port automatically detection function now. User should input the correct COM port number.
- When using PIL, user should create a top level model containing a reference model to refer the algorithm model.
- When user creates his own top model and reference model in a folder not added to FM4_TSP, there is a risk to generate errors, path of the folder should be added into MATLAB search path to avoid this.
- As for PIL, all the processes are automated from the code generation to the PIL simulation execution.
- When the error occurs during this process, user should correct the problem, and do the process over again from the beginning.
- When two or more versions of Toolchain are installed, user can use only the version installed at the end.
- Debugger: Now J-Link and ULink2 are supported for MDK-ARM, J-Link and I-jet are supported for EWARM.
- PIL and Peripherals Simulink Library (PSL) for FM4 should not be used at the same time.
- The name and path of TSP root folder must not include blank because PIL Toolset does not support it.

4 How to use PIL

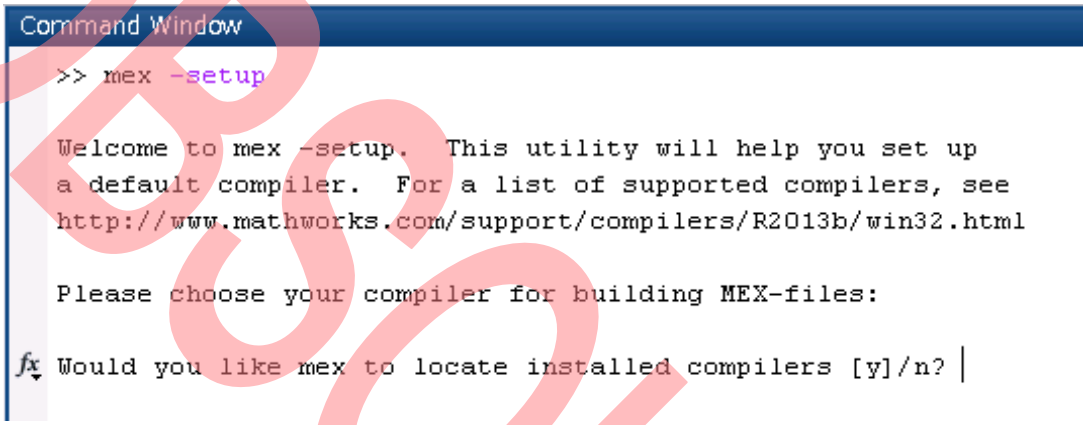
This section explains how to use PIL by using the demonstration model.

4.1 Compiler Configuration

First user has to make sure the PC contains a correctly installed complier to build mex files for Simulink models. Double-clicks MATLAB.exe and input “mex –setup” in the command window to configure a compiler. (Figure 1) Please refer the details to HP of the following MathWorks Ltd.

http://www.mathworks.com/support/compilers/

Figure 1. Mex Setup



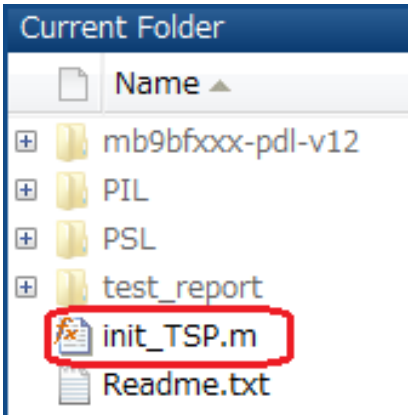
4.2 Path Setting and Demo Introduction

Before trying PIL toolset, if necessary (just clean or some unexpected error occurs) user can use command to clear memory, screen and close all models has been loaded as below:

- clear all; %clear memory
- bdclose all; %close all models has been loaded
- clc; % clear the screen

At first, user run init_TSP.m and paths below are added into MATLAB search path. (Figure 2)

Figure 2. Run init_TSP



- FM4_TSP¥PSL¥systool
- FM 4_TSP¥PSL¥helpfiles¥html
- FM 4_TSP¥PSL¥cmex_tlc
- FM 4_TSP¥PSL¥callbacks
- FM 4_TSP¥PSL¥blocks
- FM 4_TSP¥PSL¥CodeGen
- FM 4_TSP¥PIL¥utils
- FM 4_TSP¥PIL¥pil
- FM 4_TSP¥PIL¥fm4target
- FM 4_TSP¥PIL¥demo

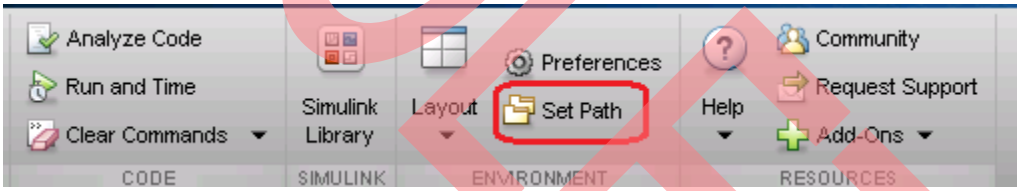
Wait several seconds and message will be displayed in Command Window. (Figure 3)

Figure 3. Message displayed by init_TSP.m

```
>> init_TSP
### FM4_TSP initialization complete.
```

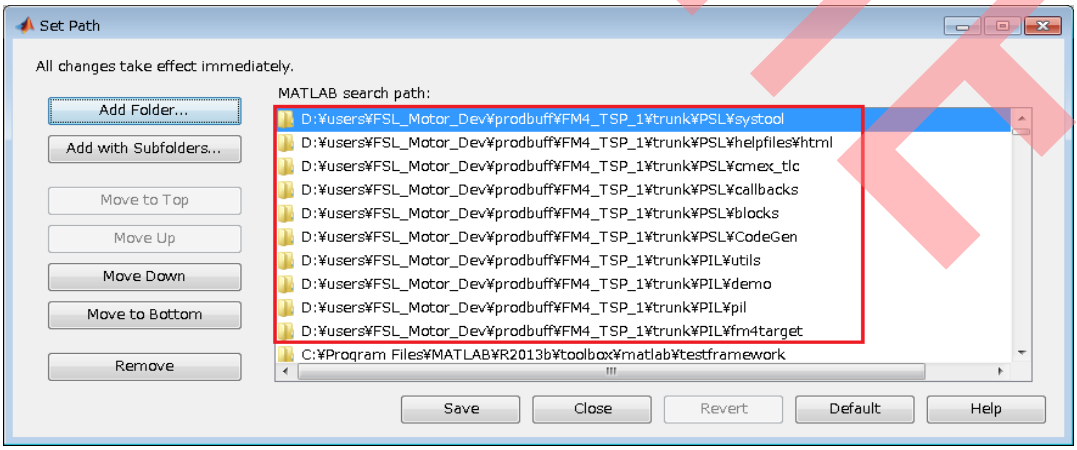
Set path can be opened by toolbar menu. (Figure 4)

Figure 4. Set Path Toolbar



Paths above have been stored here and it is called group paths for FM4_TSP. (Figure 5)

Figure 5. Group paths that are added by init_TSP.m



Group paths are stored in the configuration dialog of the path.

Next time, user does not need to run the init_TSP.m.

If user stops using FM4_TSP and changes to work in other folders, user should delete group paths by selecting Group paths and pressing “Removing” in Figure 5. Later, if user needs to use FM4_TSP again, user should run init_TSP.m again to add group paths into MATLAB search path.

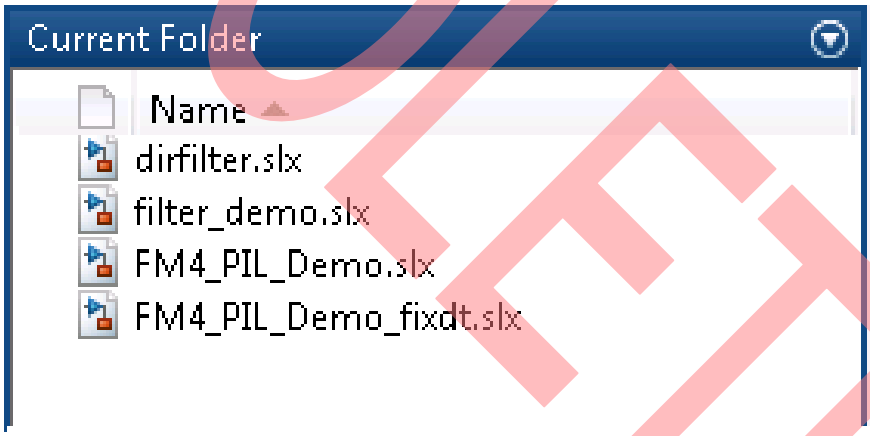
What’s more, user should make sure there are only one group paths that FM4 TSP used in MATLAB search path. If two or more groups of them exist at the same time, there will be risk to generate a trouble for Simulink to identify system target file and other files correctly.

Now, with all TSP paths set done, please change Matlab current path to “\FM4_PIL\demo” to check the demo model for pil.

There are 4 files under current path. (Figure 6)

- dirfilter.slx: PIL block referred by FM4_PIL_Demo.slx.
- filter_demo.slx: PIL block referred by FM4_PIL_Demo_fixdt.slx.
- FM4_PIL_Demo.slx: PIL demo model with floating point data type.
- FM4_PIL_Demo_fixdt.slx: PIL demo model with fixed point data type.

Figure 6. Structure of Files



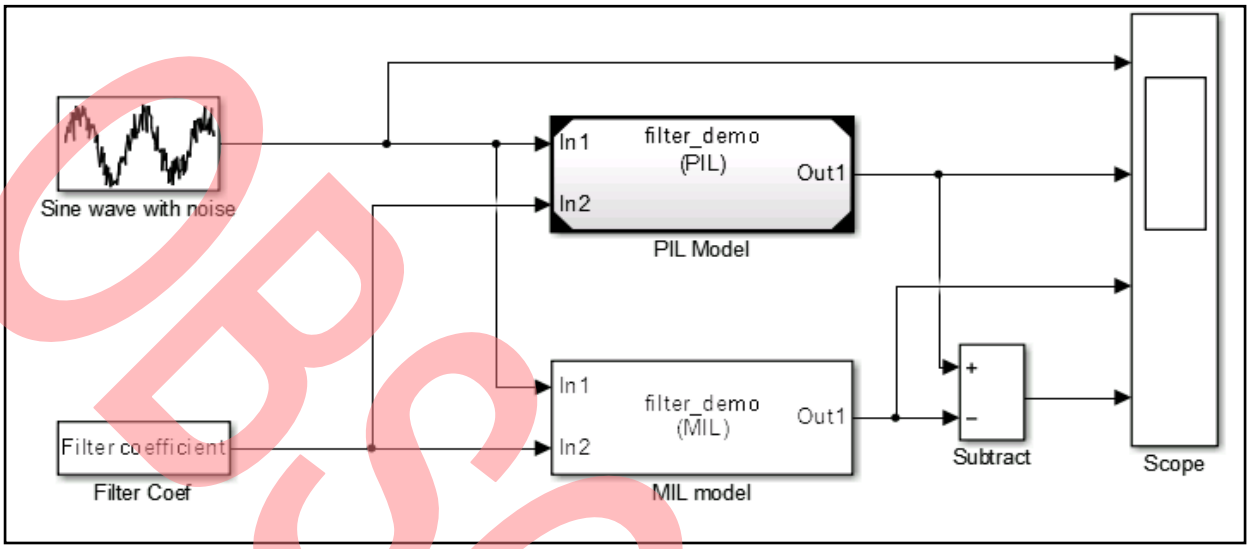
Let’s start with FM4_PIL_Demo.slx.

Double-click “FM4_PIL_Demo.slx” to open it, it is a model to show how FM4 PIL works. Sine wave with noise is a signal generator and Filter Coef is a constant. There two inputs are transferred to PIL Model and MIL Model, when co-simulation is run, scope will display four outputs. The four signals connected to the scope are (from up to down)

- Sine wave with noise
- result from PIL model
- result from MIL model
- difference between PIL and MIL model.

The demo provides is low pass filter as below. (Figure 7)

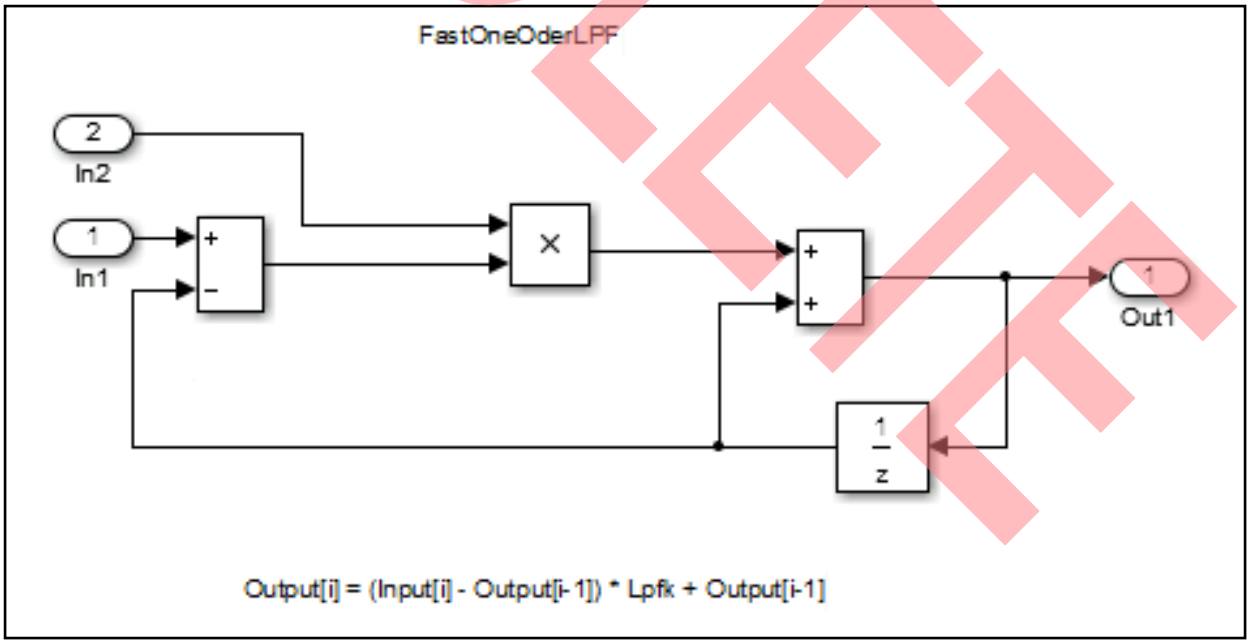
Figure 7. Model of FM4 PIL



The content inside PIL model and MIL model is the same as shown below. (Figure 8)

This demo is a filter with two inputs and one output.

Figure 8. filter_demo



4.3 Model Configuration

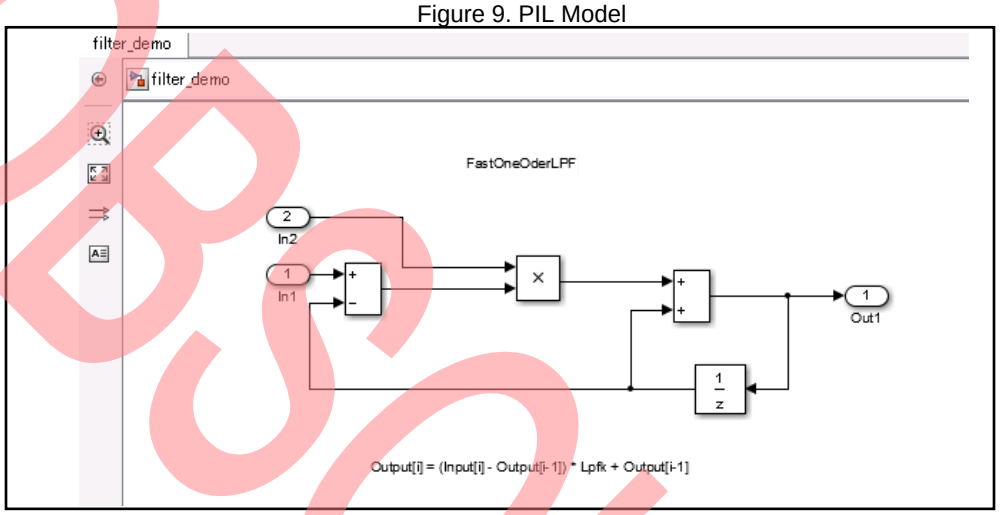
Before run PIL for this model, user should configure parameters in both top level model and PIL model.

- filter_demo.slx

  Double click PIL Model to open it. (Figure 9)

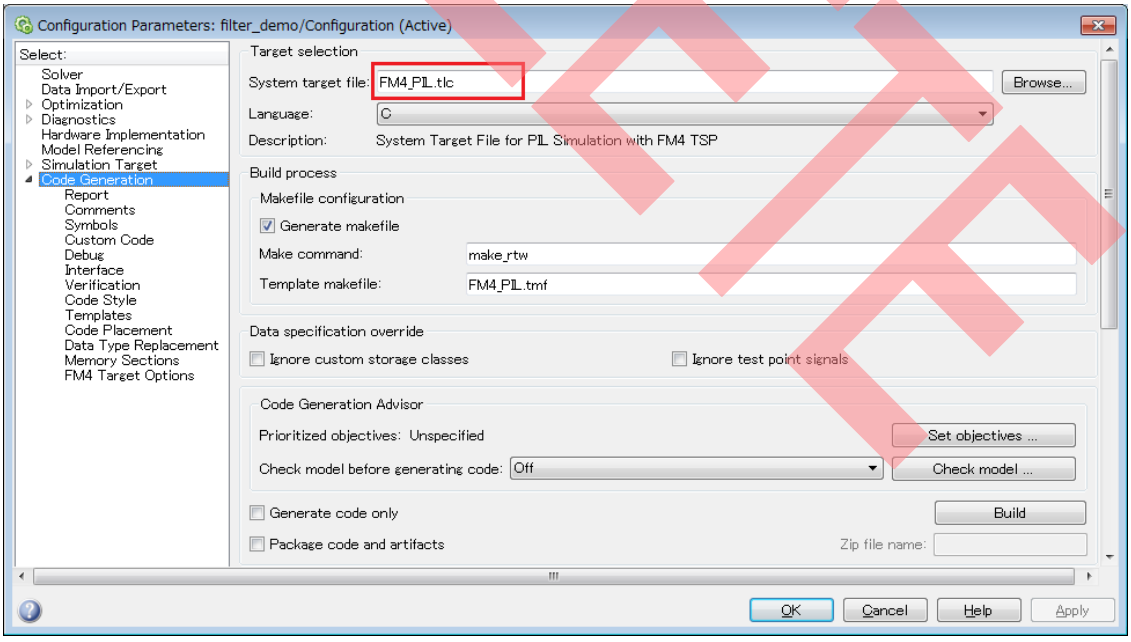
  It has the same content with MIL model.

Figure 9. PIL Model



As for the PIL model, Ctrl + E to open the Configuration parameters to set parameters in Code Generation Tab. System target file here should choose FM4_PIL.tlc. And configuration like makefile and others will be set automatically so user has no need to change them. (Figure 10)

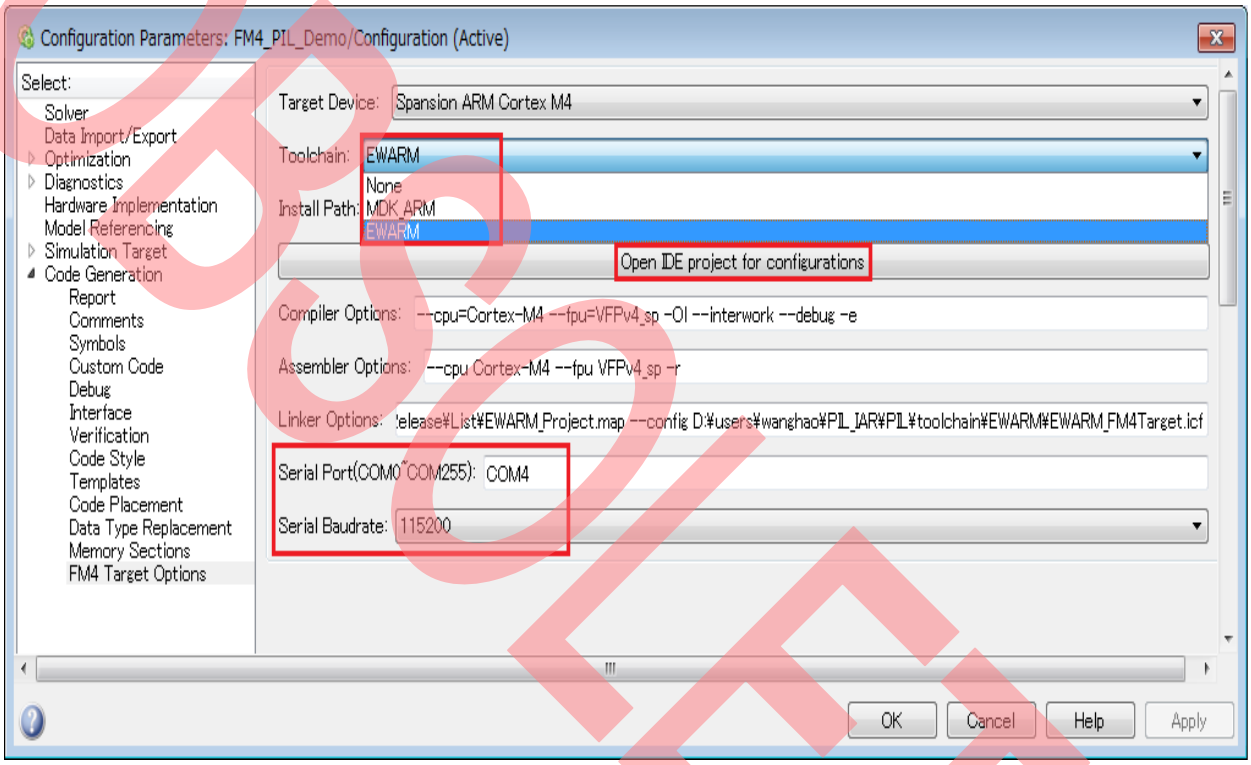
Figure 10. Model Configuration



Then user need to select Toolchain he wants to use and if need, press “Open IDE project for configurations” to configure IDE project file. For the configuration of project file, please refer to 4.4. Template File Configuration for details.

After Toolchain is selected, Compiler Options, Assembler Options, Linker Options are displayed automatically. User has no need to modify these options. What’s more, user needs to set serial port and baud rate according to the hardware connection of user’s environment. Press OK when you finish your configurations. (Figure 11)

Figure 11 Set Serial Communication



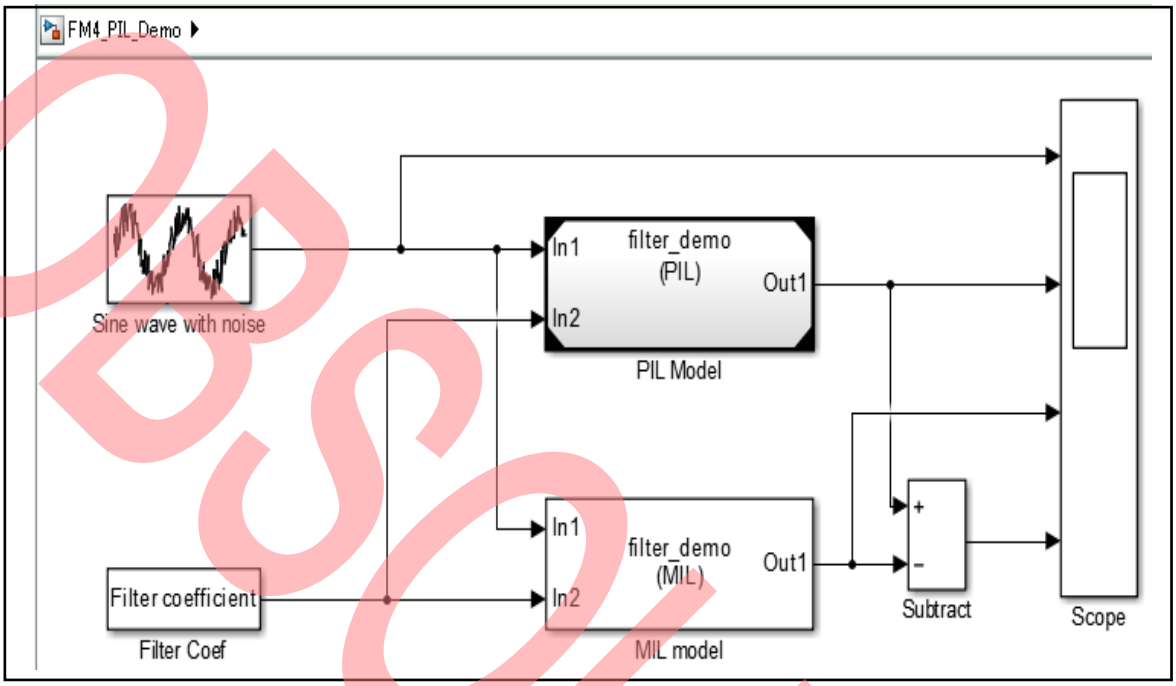
- Toolchain: MDK-ARM and EWARM are supported for PIL.
- Install Path: Install path of Toolchain selected is displayed.
- Open IDE project for configurations: Open corresponding project file to configure options.
- Compiler Options, Assembler Options, Linker Options: default value is OK, no need to change it.
- Serial Port: The COM port of PC connected with RS232 is specified.
- Serial Baudrate: The baud rate of serial communications is selected.

Please make sure you save this PIL model before running PIL. Otherwise, the error will occurs as Figure 61.

- FM4_PIL_Demo.slx

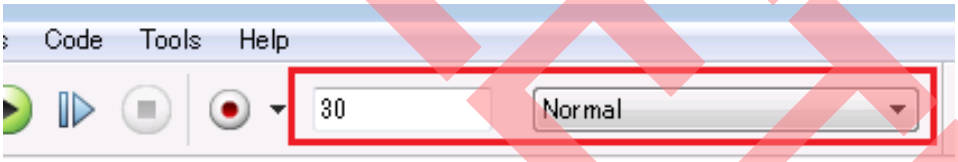
  Set the configuration of top level model. (Figure 12)

Figure 12 Top Level Model



User should set simulation time here and set its simulation mode as “Normal”. (Figure 13)

Figure 13 Simulation time and mode of Top Level Model



Ctrl + E to open the Configuration parameters of top-model to set parameters in Code Generation Tab. System target file here should also choose FM4_PIL.tlc which is the same as the setting in PIL model.

Then user need to select toolchain in FM4 Target Options Tab and it should be the same as that selected in PIL model. Other settings in the FM4 Target Options Tab could be ignored for top-model. Only set them in PIL model is OK.

Note:

Pressing pushbutton of “Open IDE project for configurations” on the top-model and PIL model starts up the same IDE project file.

Before trying PIL, please confirm FM4 Evaluation board and RS232 cable and ICE is connected together with your PC. What's more, make sure COM port you configured is correct. (Figure 14)

Figure 14 Hardware Connection

4.4 Template File Configuration

This section describes the template file configuration of MDK-ARM and EWARM.

Please set the option of the IDE project according to the debug environment.

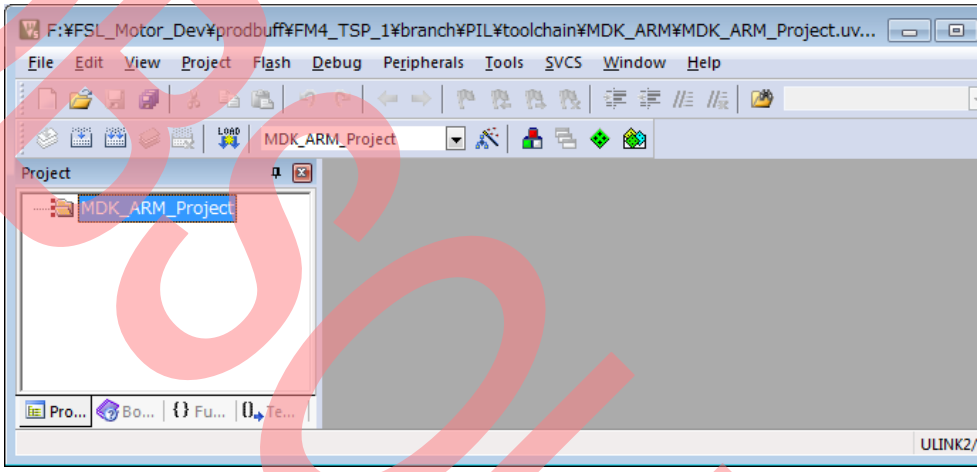
- Project file of MDK-ARM

  The device information file is installed in MDK_ARM. (Keil.FM4_DFP.1.0.1.pack)

  Template project file of the following folders should be opened to configure the options. (Figure 15)

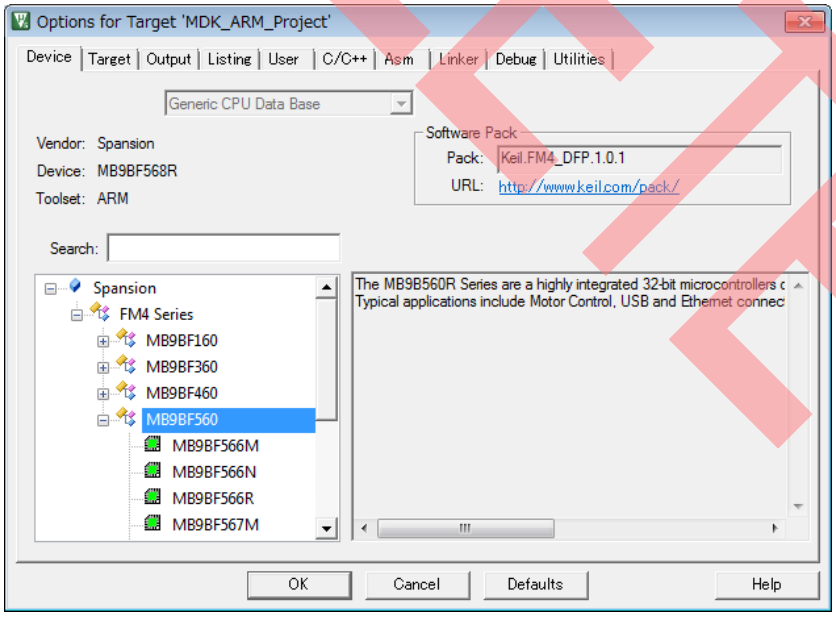
  FM4_TSP¥PIL¥toolchain¥MDK_ARM¥MDK_ARM_Project.uvproj

Figure 15 Template project



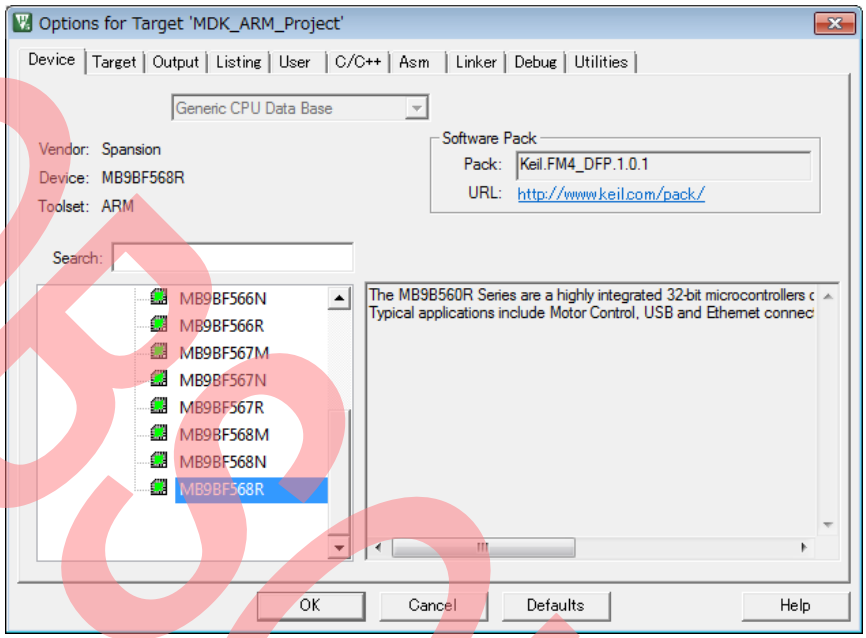
1. Open the Options for Target dialog, FM4 series is selected on Device Tab. (Figure 16)

Figure 16 Options for Target



The target device is MB9BF568R. (Figure 17)

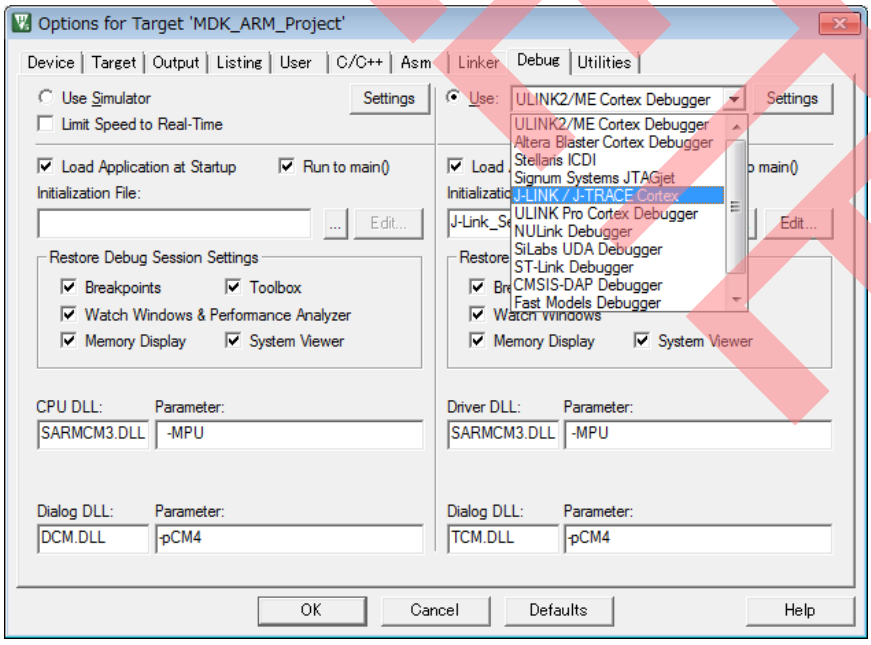
Figure 17 Select MB9BF568R



2. Pressing OK, then settings on tabs of “Debug” and “Utilities” are reset. Now user has to configure them one by one.

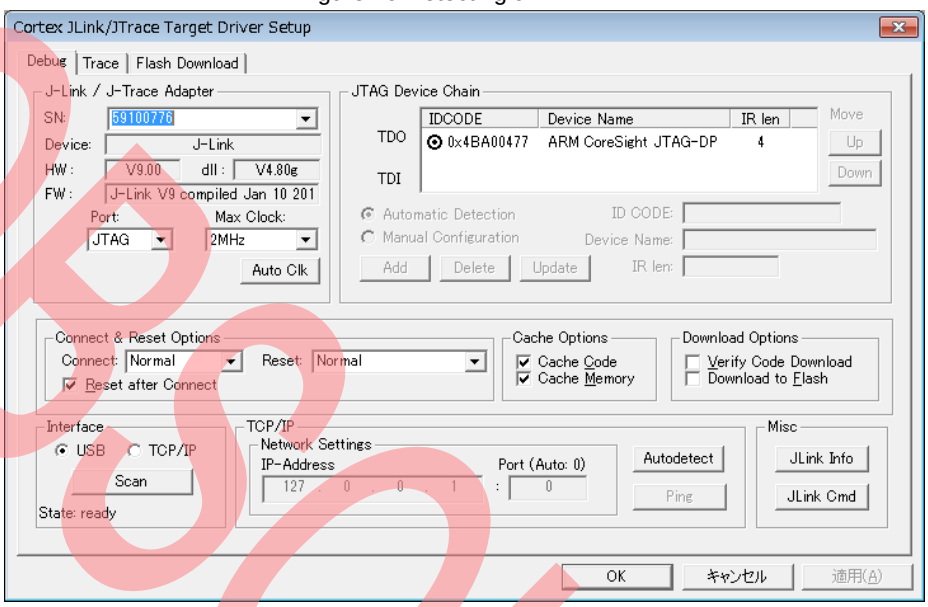
   On tab “Debug”, the Debugger “ULINK2/ME Cortex Debugger” and “J-LINK/J-TRACE Cortex” are supported. User can select one and connect PC with the selected ICE. Then press “Settings” on the right. (Figure 18)

Figure 18 Debug options



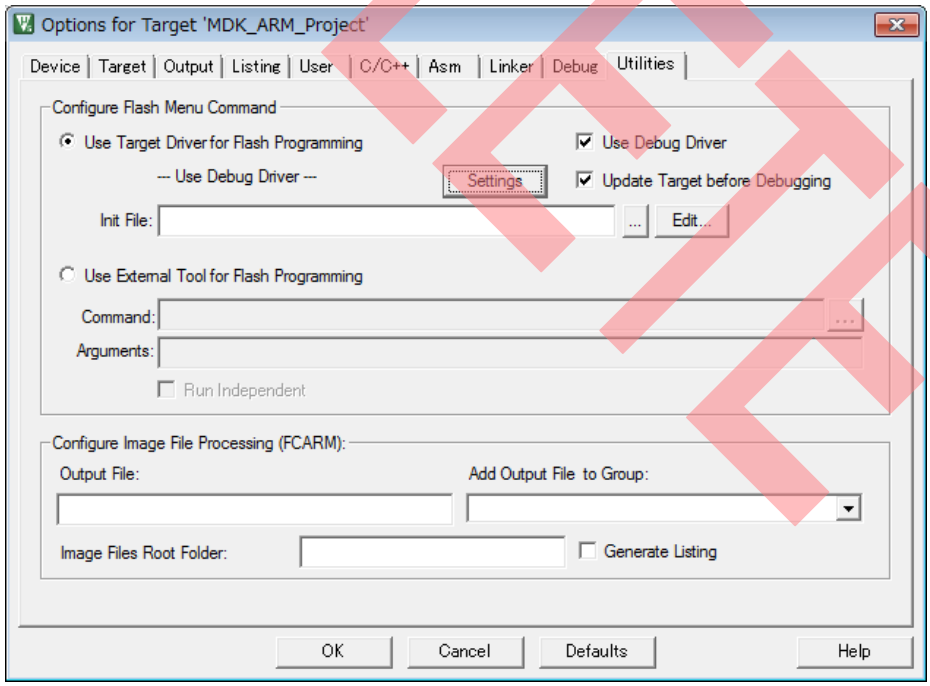
Wait a moment, the ICE can be detected and all values can be input automatically if ICE connection is correct. Then press “OK” to finish this check. For example, the JLink connection information is shown as following Figure 19:

Figure 19 Detecting JLink



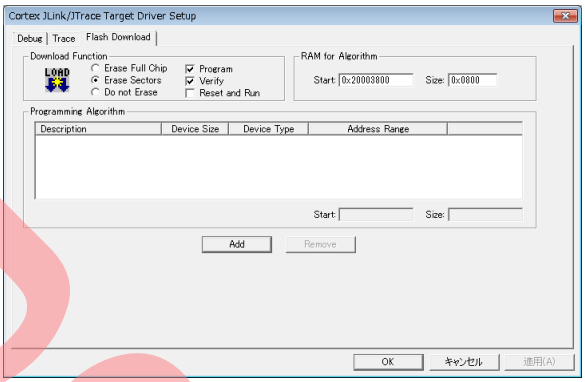
3. On tab “Utilities”, User has to press “Settings”. (Figure 20)

Figure 20 Utilities Setting



Then Cortex Jlink/JTrace Target Driver Setup dialog can be opened and press “Add”. (Figure 21)

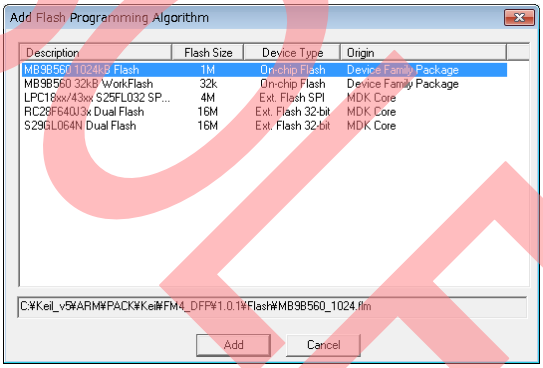
Figure 21 Cortex JLink Setup



Flash Programming Algorithm dialog can be opened.

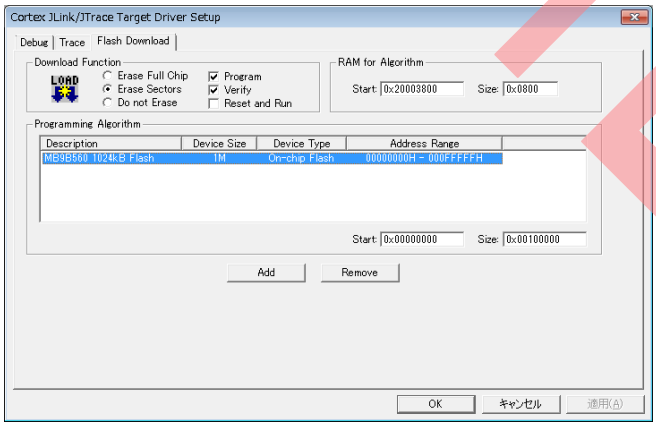
Select MB9B560 1024kB Flash and press “Add”. (Figure 22)

Figure 22 Flash Programming Algorithm selection



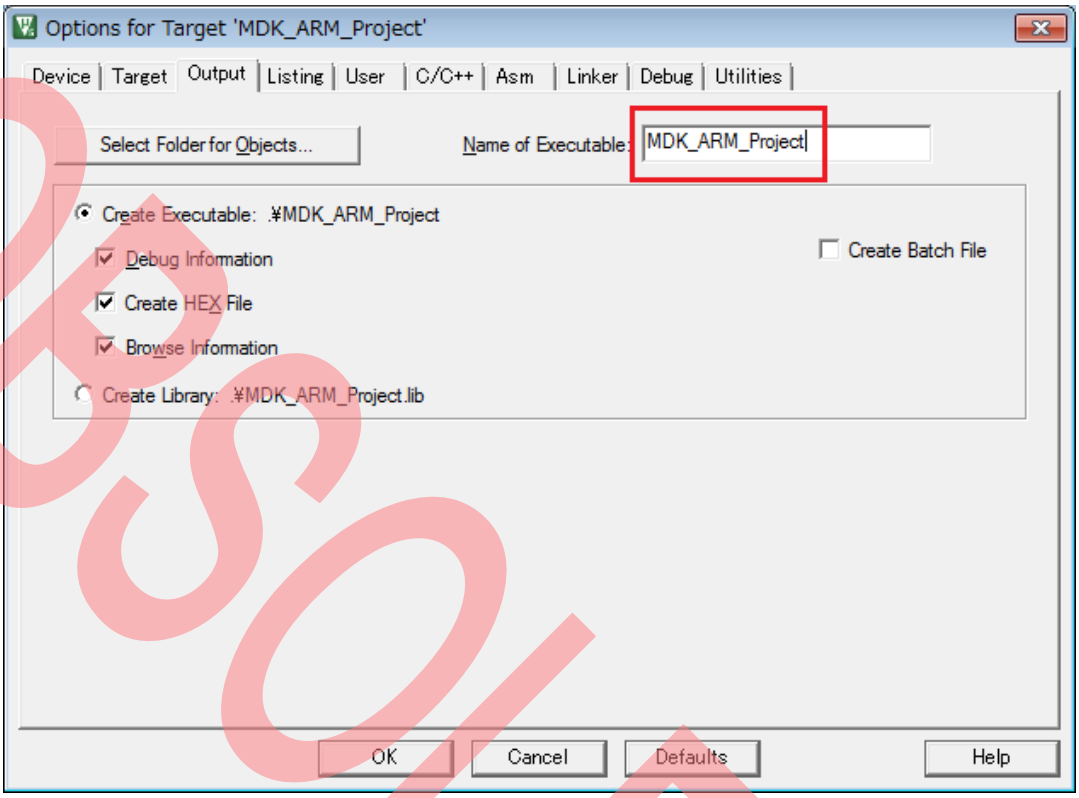
Flash programming algorithm in the Cortex Jlink/JTrace Target Driver Setup can be configured as Figure 23:

Figure 23 Flash Programming Algorithm configured



4. On tab “Output”, Name of Executable should be “MDK_ARM_Project”. (Figure 24)

Figure 24 Output setting of project file



5. Press “OK” to finish the configuration and close the MDK_ARM_Project.uvproj after saving. The following files are updated.
   - FM4_TSP¥PIL¥toolchain¥MDK_ARM\MDK_ARM_Project.uvproj
   - FM4_TSP\PIL¥toolchain¥MDK_ARM¥MDK_ARM_Project.uvopt

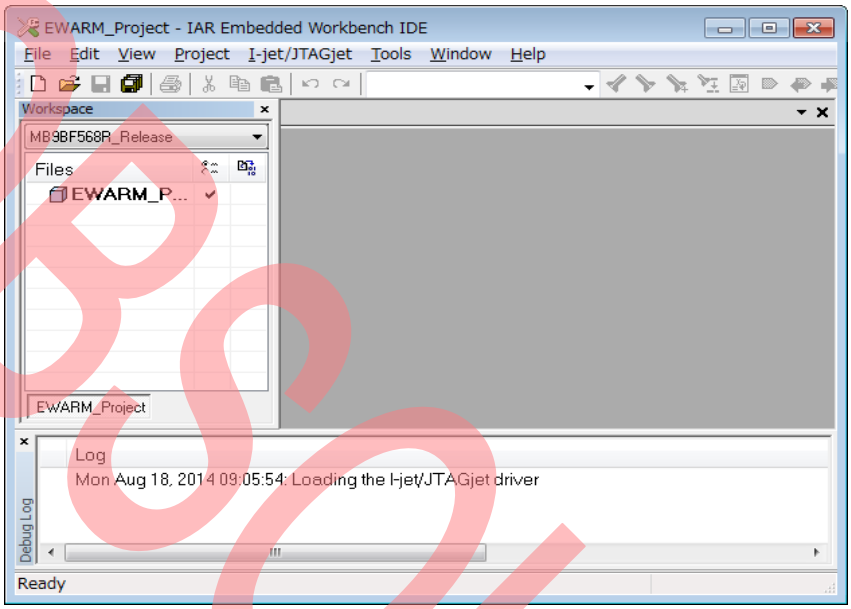
   Note:
   User need to close the project file after saving the configuration parameters changing, otherwise the PILS cannot be continued.

- Project file of EWARM

  Template project file of the following folders should be opened to configure the options. (Figure 25)

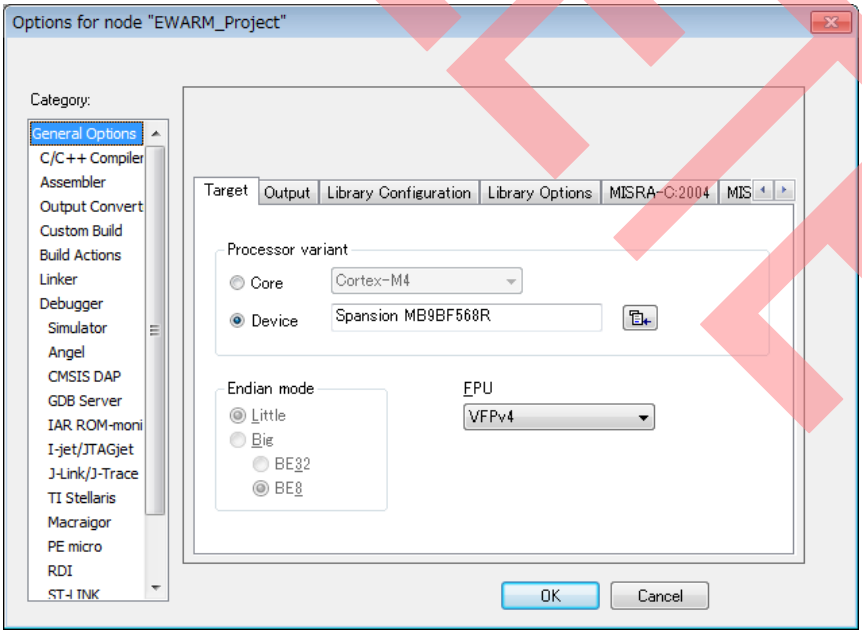
  - FM4_TSP¥PIL¥toolchain¥EWARM¥EWARM_Project.eww

Figure 25 Template project



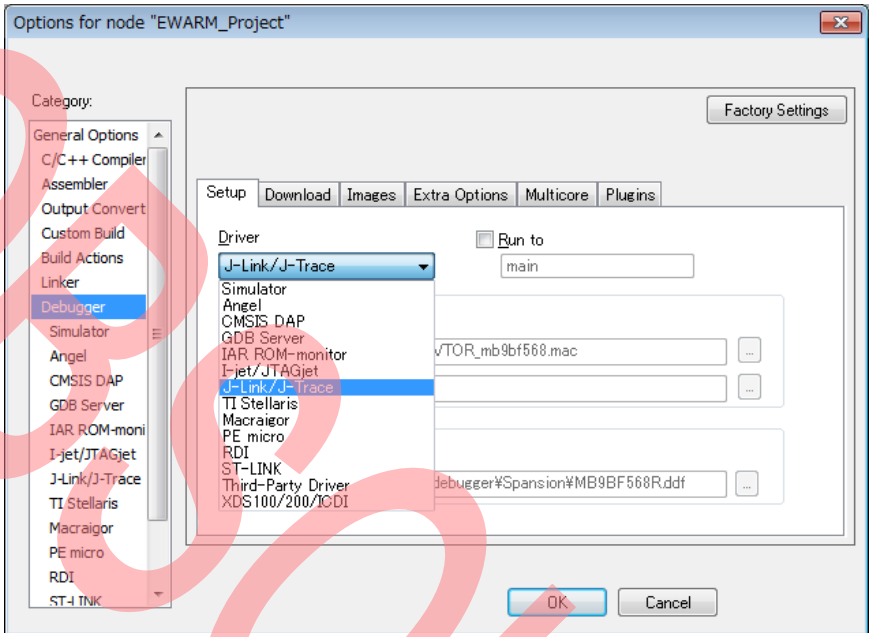
1. Open the Options for node “EWARM_Project” dialog, and select the General Options item.
   For the Device, select "Cypress-> MB9B560-> Cypress MB9BF568R". And select FPU as VFPv4. (Figure 26)

Figure 26 General Options for Target



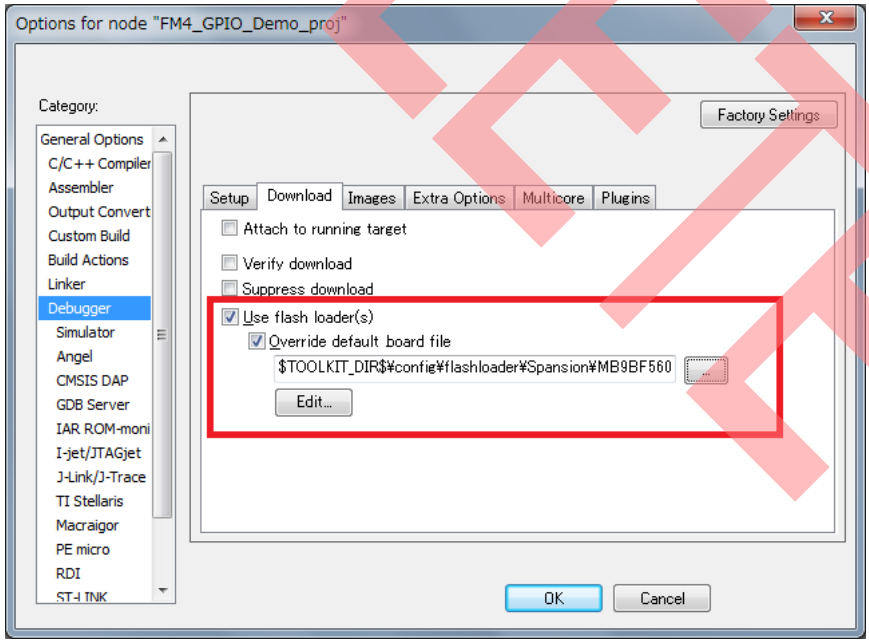
2. Select the Debugger item. The Debugger “I-jet/JTAGjet” and “J-LINK/J-TRACE” are supported. (Figure 27) User can select one according to the connected debugger.

Figure 27 Debugger Options for Target



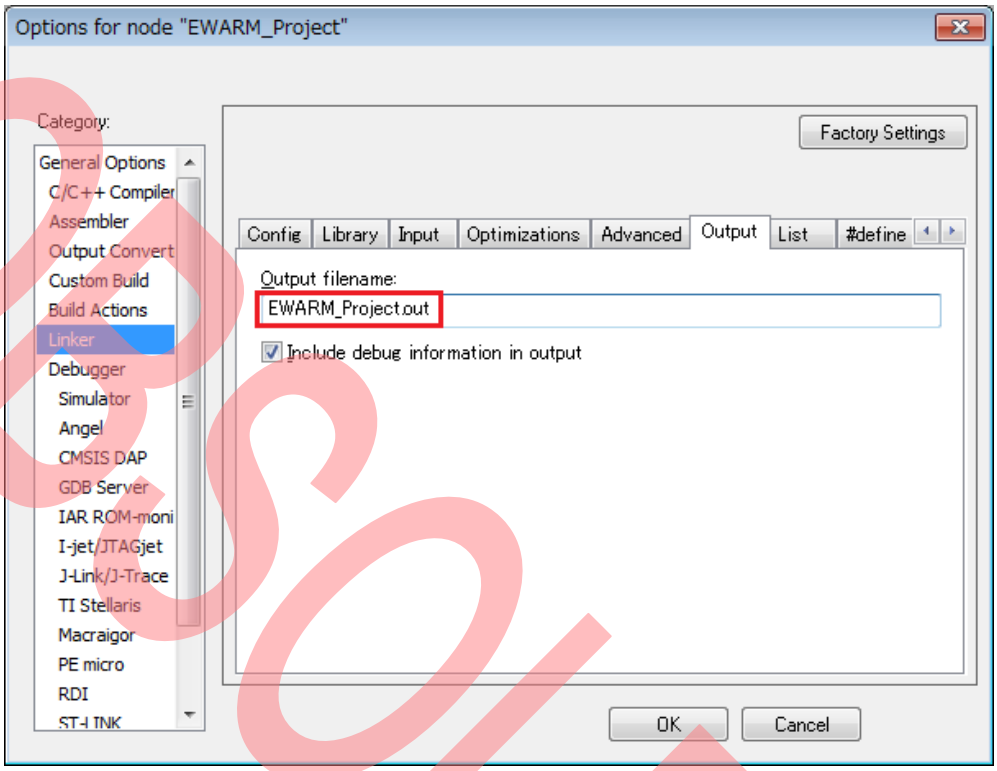
3. Use flash loader(s) is a must. User should check it and select “Cypress\MB9BF560” on the tab of Download. (Figure 28)

Figure 28 Use flash loaders



4. On tab “Output”, Name of Output file should be “EWARM_Project.out”. (Figure 29)

Figure 29 Output setting of project file



5. Press “OK” to finish the configuration and close the EWARM_Project.eww after saving. The following files are updated.
   - FM4_TSP¥PIL¥toolchain¥EMARM¥EWARM_Project.ewd
   - FM4_TSP¥PIL¥toolchain¥EMARM¥EWARM_Project.ewp

Note:

User need to close the project file after saving the configuration parameters changing, otherwise the PILS cannot be continued.

4.5 Process of PIL

Press “run” button  on the top level model (FM4_PIL_Demo.slx), PIL will be started. Messages displays as Figure 30:

Figure 30 PIL Messages

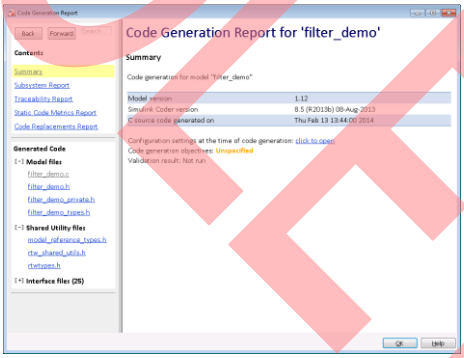
```
### Writing header file filter_demo.h
.
### Writing header file filter_demo_types.h
### Writing header file rtwtypes.h
.
### Writing source file filter_demo.c
### Writing header file filter_demo_private.h
.
### Writing header file rtmodel.h
### TLC code generation complete.
### Creating HTML report file filter_demo_codegen_rpt.html
### Creating project marker file: rtw_proj.tmw
.
### Processing Template Makefile: F:¥FSL_Motor_Dev¥prodbuff¥FM4_TSP_1¥branch¥PIL¥fm4target¥FM4_PIL.tmf
### Wrapping unrecognized make command (angle brackets added)
###     <"D:¥Program Files¥MATLAB¥R2013b¥bin¥win32¥gmake">
### in default batch file
### Creating filter_demo.mk from F:¥FSL_Motor_Dev¥prodbuff¥FM4_TSP_1¥branch¥PIL¥fm4target¥FM4_PIL.tmf
### Building filter_demo: .¥filter_demo.bat

F:¥FSL_Motor_Dev¥prodbuff¥FM4_TSP_1¥branch¥PIL¥demo¥filter_demo_FM4_TSP>set MATLAB=D:¥Program Files¥MATLAB¥R2013b

F:¥FSL_Motor_Dev¥prodbuff¥FM4_TSP_1¥branch¥PIL¥demo¥filter_demo_FM4_TSP>"D:¥Program Files¥MATLAB¥R2013b¥bin¥win32¥gmake" -f filte
###Makefile for KEIL
###BuildMode : pil_prebuild MODELREF_TARGET_TYPE=NONE SIMULATION_MODE_RP= MAKEFILEBUILDER_TGT=0 STANDALONE_SUPPRESS_EXE=1
### Start compile source filter_demo.c
### Successfully compiled source filter_demo.c
"### BUILD_MODE pil_prebuild"
"### Created ObjectModules"
"### Created ObjectModules successfully (or it was already up to date)"
### Exit the make hook process!
### Building done!
### Preparing to start PIL simulation ...
```

Then code generation report is opened. (Figure 31)

Figure 31 Code Report



Before the selected IDE opened, messages below can be found in the Matlab command window. (Figure 32)

Figure 32 Downloading messages

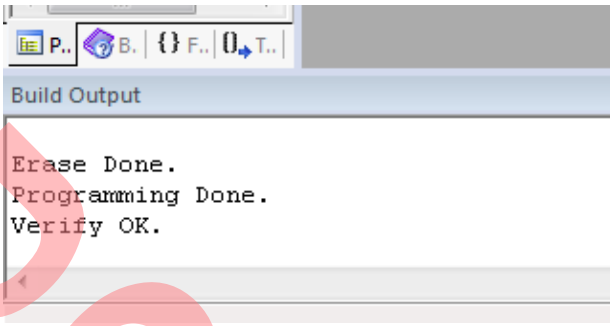
```
"### Generated filter_demo.out pil_application"
"### Created filter_demo.out successfully (or it was already up to date)"
### Updating code generation report with PIL files ...
### Starting application: slprj¥FM4_PIL¥filter_demo¥pil¥filter_demo.out
### Downloading application is F:¥FM4_TSP¥PIL¥demo¥slprj¥FM4_PIL¥filter_demo¥pil¥filter_demo.out
```

Then the selected IDE can be launched automatically, the PIL running process after pressing button of starting simulation in MDK-ARM and EWARM is different.

- PIL Running in MDK-ARM

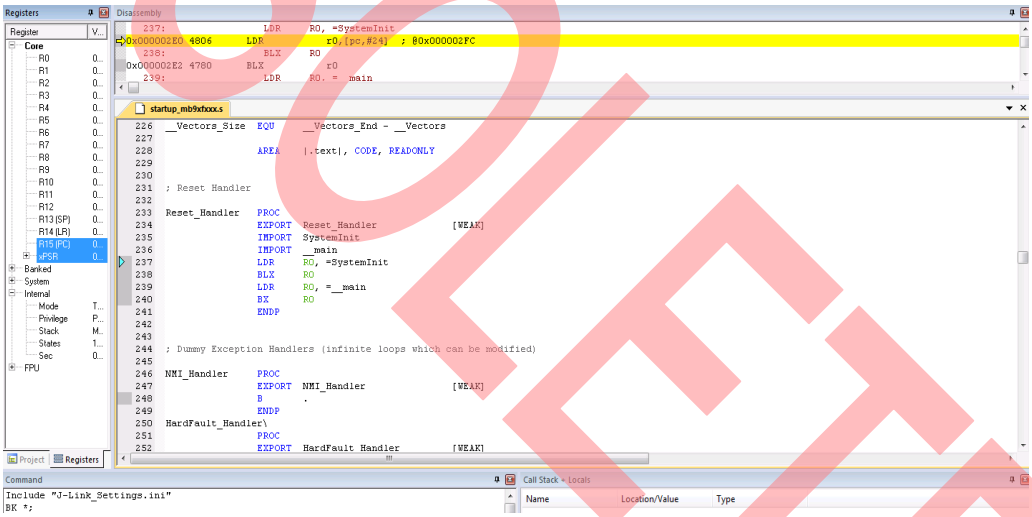
1. After MDK-ARM started, downloading the code to target board can be executed automatically. Then the message will show after downloading is finished. (Figure 33)

Figure 33 MDK-ARM GUI



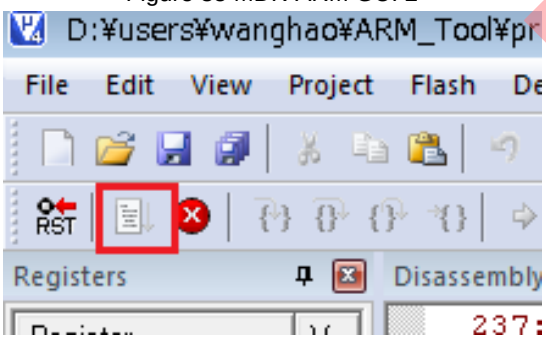
2. Then MDK-ARM opens its start-up files automatically and begins to run in the hardware. (Figure 34)

Figure 34 Startup File



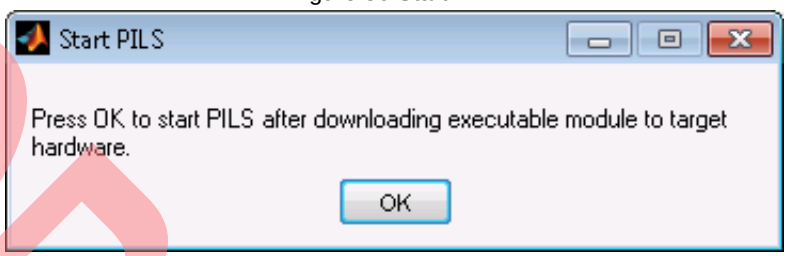
The project runs automatically in MDK-ARM and the run button is under pressed state. (Figure 35)

Figure 35 MDK-ARM GUI 2



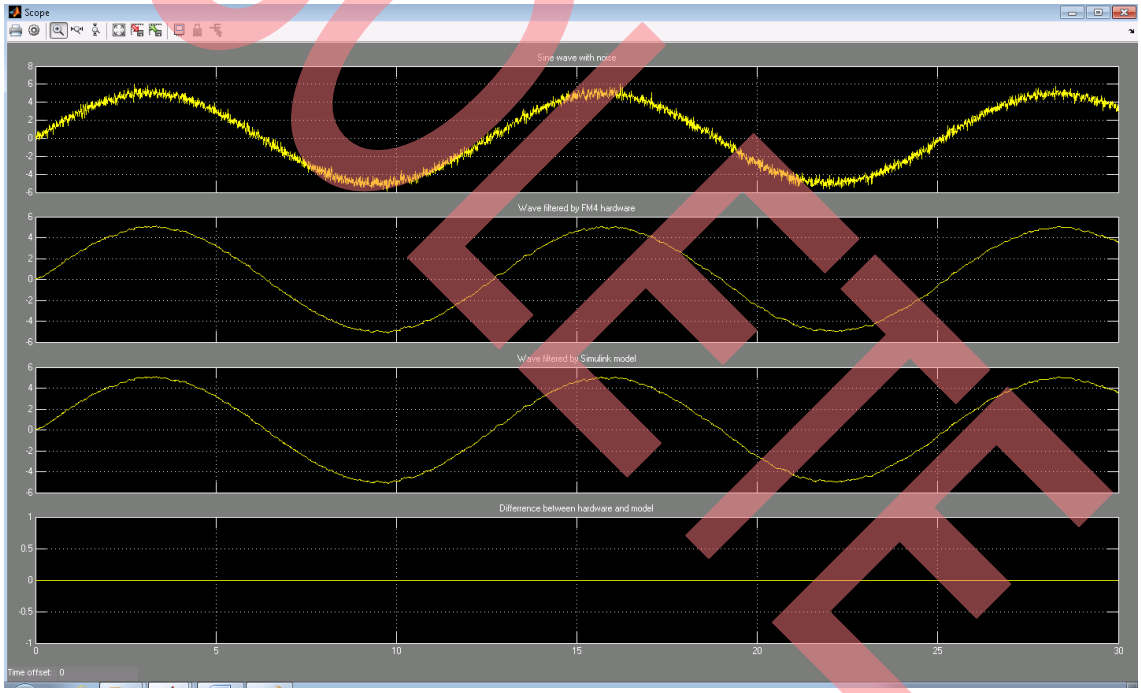
3. User can find that another dialog has been opened at the same time with MDK-ARM running (Figure 36). Please press OK to start PILS here after download confirmed. If press OK before downloading done, error will occur as Figure 62.

Figure 36 Start PIL



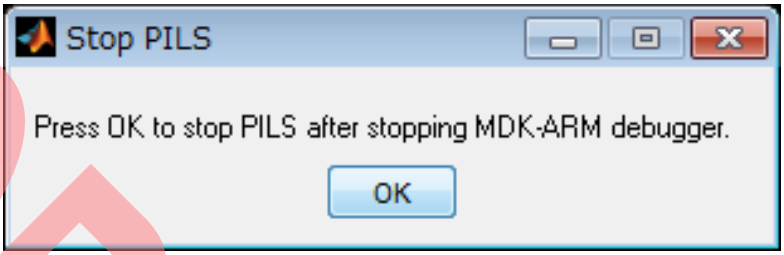
4. After pressing OK here, FM4_PIL_Demo begins its PIL simulation. User can double click the Scope to observe its simulation process at any time. There are four sub scope here. (Figure 37)
   - Sine wave with noise as the first input for PIL model and MIL model
   - Output of the PIL model which is running in FM4 Hardware.
   - Output of the MIL model which is running in Simulink.
   - Difference of the simulation result between PIL and MIL model.

Figure 37 Results of PIL Simulation



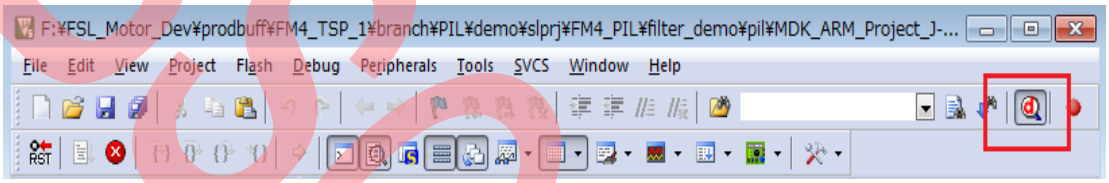
5. At the end of PIL simulation, the following dialog (Figure 38) will be displayed to prompt user to stop MDK-ARM debugger.

Figure 38 Stop PIL Simulation



Then user needs to stop MDK-ARM debugger manually by clicking “Start/Stop Debug Session”. (Figure 39)

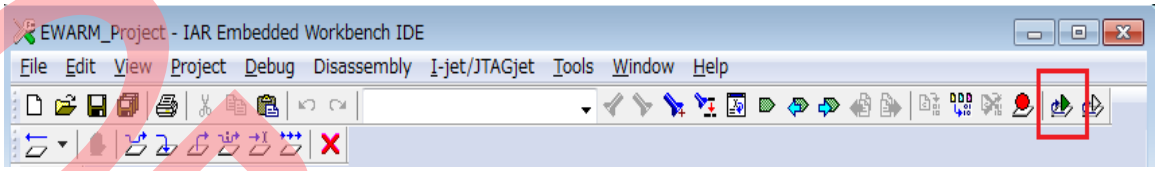
Figure 39 Stop Debug in MDK-ARM



6. At last, user presses OK in the Figure 38 to stop PIL simulation.
   When the error occurs during this process, user should correct the problem, and does the process over again from the beginning.

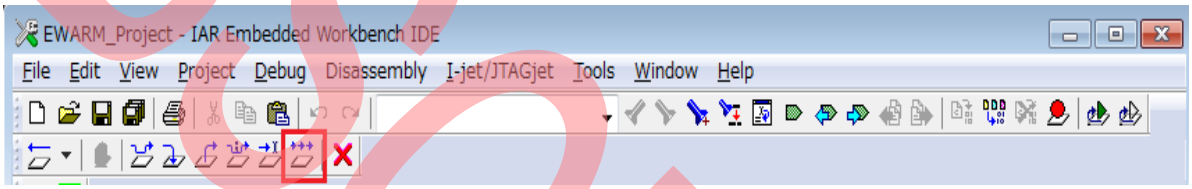
- PIL Running in EWARM
  1. After EWARM started, use need to download the code to target board manually by clicking the “Download and Debug” button. (Figure 40)

Figure 40 Download code to target board



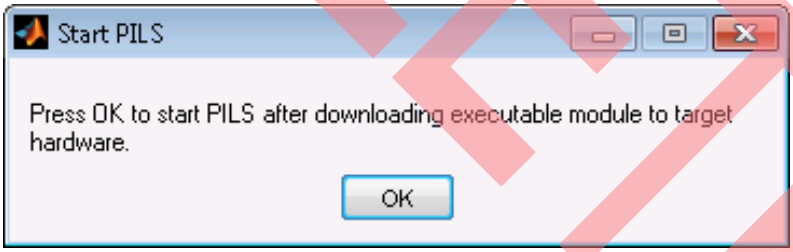
  2. Press the “Go” button to run the code. (Figure 41)

Figure 41 Run the code



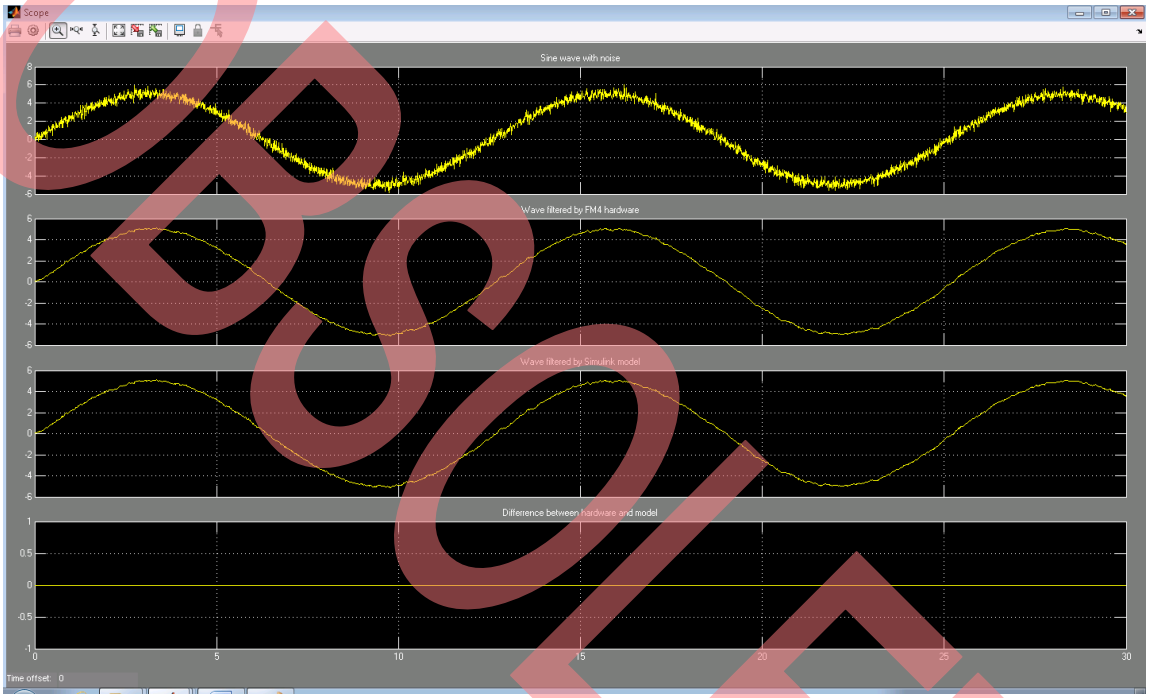
  3. User can find that another dialog has been opened after EWARM launched. (Figure 42)
     Please press OK to start PILS here after you have done 1 and 2.

Figure 42 Start PIL



4. After pressing OK here, FM4_PIL_Demo begins its PIL simulation. User can double click the Scope to observe its simulation process at any time. There are four sub scope here. (Figure 43)
   - Sine wave with noise as the first input for PIL model and MIL model
   - Output of the PIL model which is running in FM4 Hardware.
   - Output of the MIL model which is running in Simulink.
   - Difference of the simulation result between PIL and MIL model.

Figure 43 Results of PIL Simulation

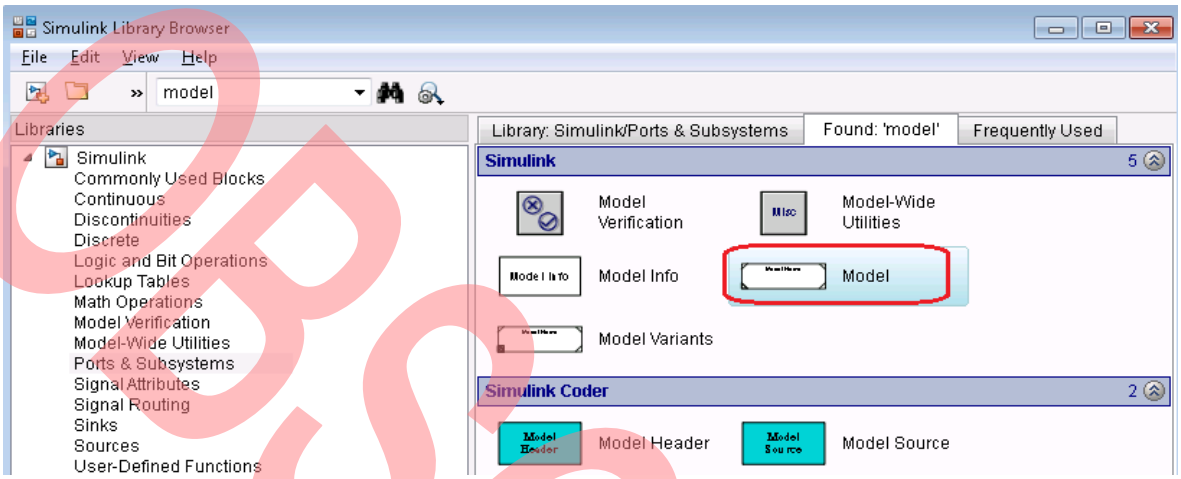


5. At the end of PIL simulation, the EWARM can be closed automatically.

4.6 How to Create a PIL Model

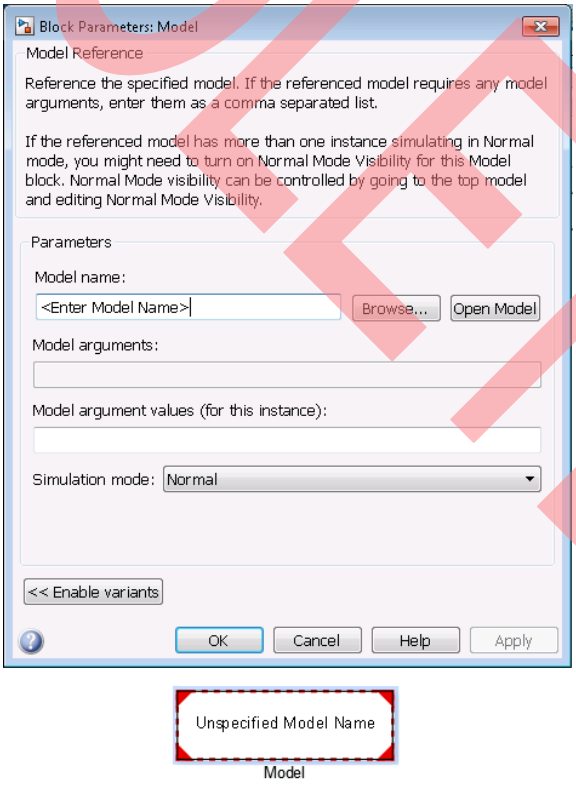
If user wants to create his own model for PIL simulation, user should read this part. A PIL model here is an mdl or slx files referred by a “Model” block, which you can find in Simulink Browser: (Figure 44)

Figure 44 Search Model Block



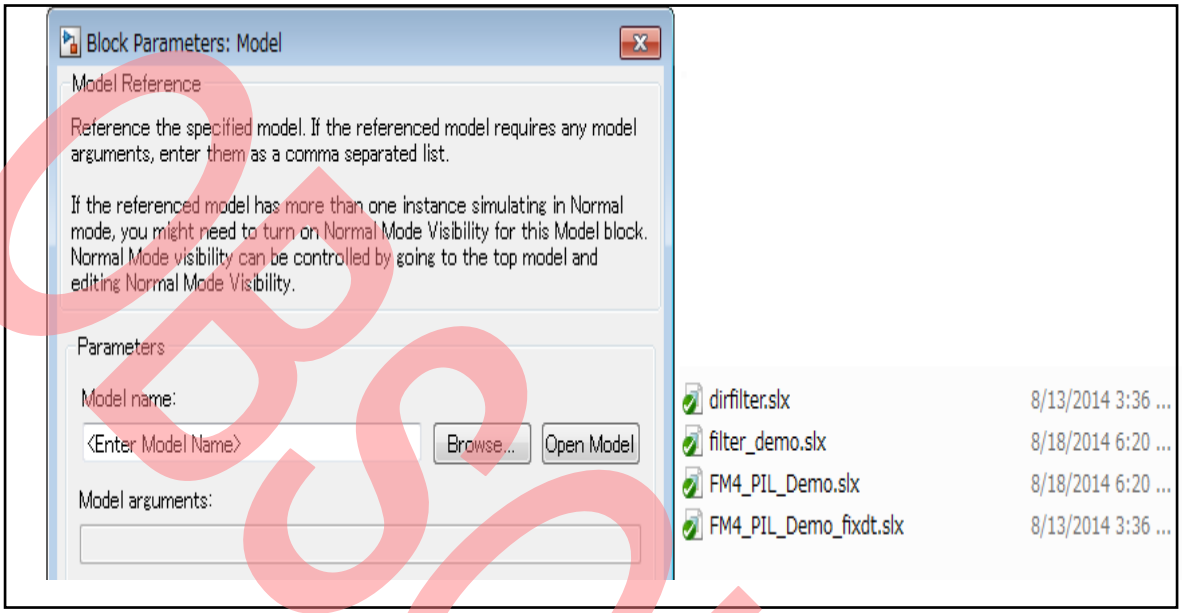
Drag it into your model and double click the block to open its dialog, then press Browse button to choose the model file you want to refer. Before referring, Model block is with no input and no output. (Figure 45)

Figure 45 Model Reference Setting



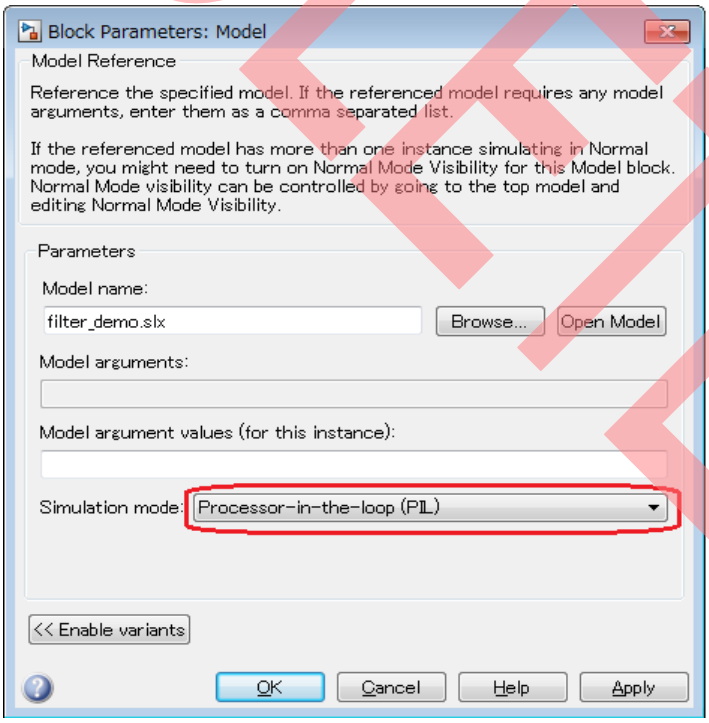
Now you surely that MIL model such as filter_demo.slx have prepared before. Press “Browse” and select your MIL model created before here. (Figure 46)

Figure 46 Refer your MIL model file



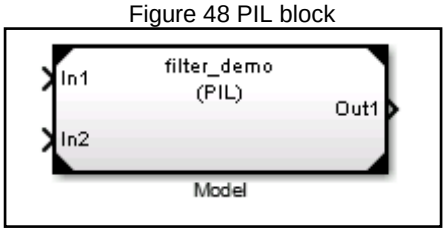
Press “OK” then select Simulation mode for PIL. (Figure 47)

Figure 47 Setting for Reference



Press OK to get your PIL block. (Figure 48)

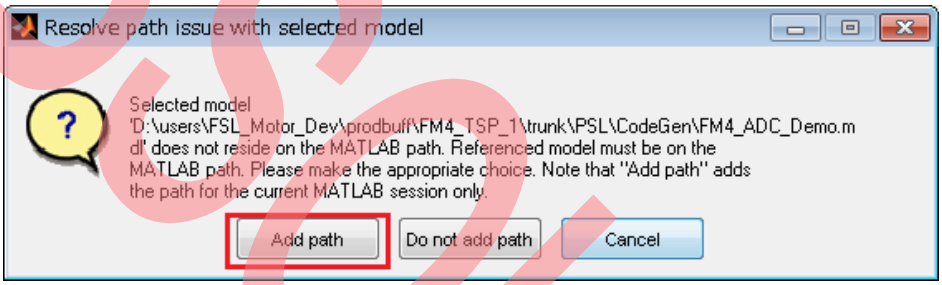
Figure 48 PIL block



This PIL block can be connected with user's source signal and scope as MIL block now.

If the model referred stores in a folder that has not been added into MATLAB search path, there will be a dialog to warn user to add path into MATLAB. Select add path is OK. (Figure 49)

Figure 49 Add path for referred model

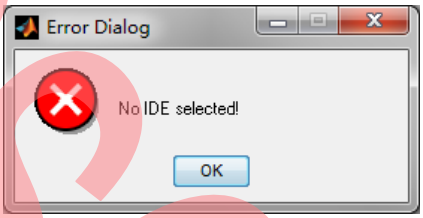


5 Appendix

In this section, the error information and the corresponding handling operation during user using PIL, will be introduced.

1. Ctrl + E to open the Configuration parameters, user selects “none” in the toolchain.
   Then press the pushbutton “Open IDE project for configurations” to open IDE project file, error dialog will be displayed as following. (Figure 50)
   User need to select MDK-ARM or EWARM in the toolchain to avoid the error.

Figure 50 No toolchain selected

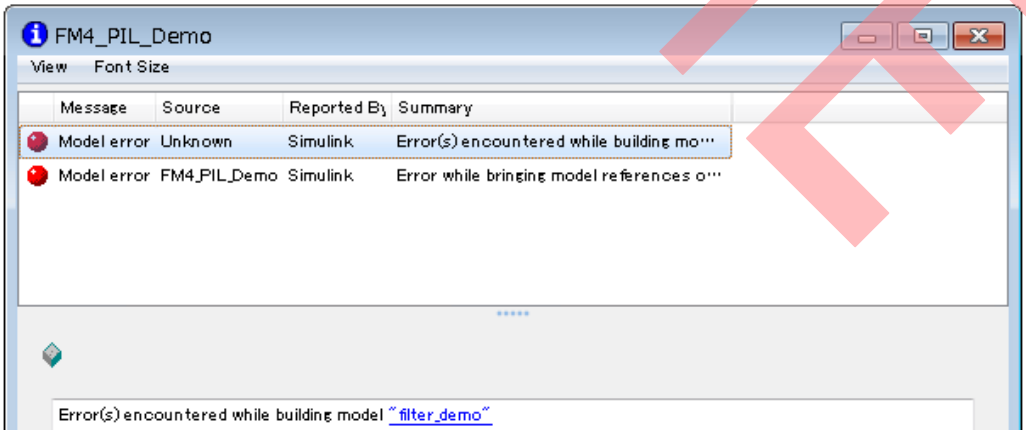


2. Ctrl + E to open the Configuration parameters, user selects “none” in the toolchain.
   then warning dialog will be shown when pressing OK or Apply. (Figure 51)

Figure 51 Press OK or Apply after No toolchain selected

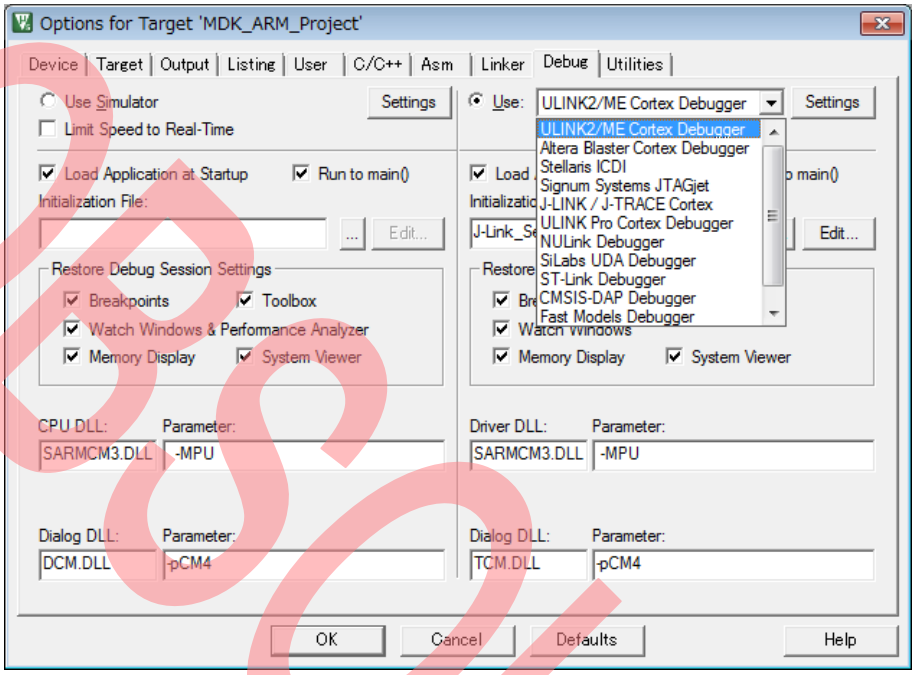
Then press “run” button to start pil simulation, error dialog will be displayed. (Figure 52)
User need to select MDK-ARM or EWARM in the toolchain to avoid the error.

Figure 52 Running with No toolchain selected



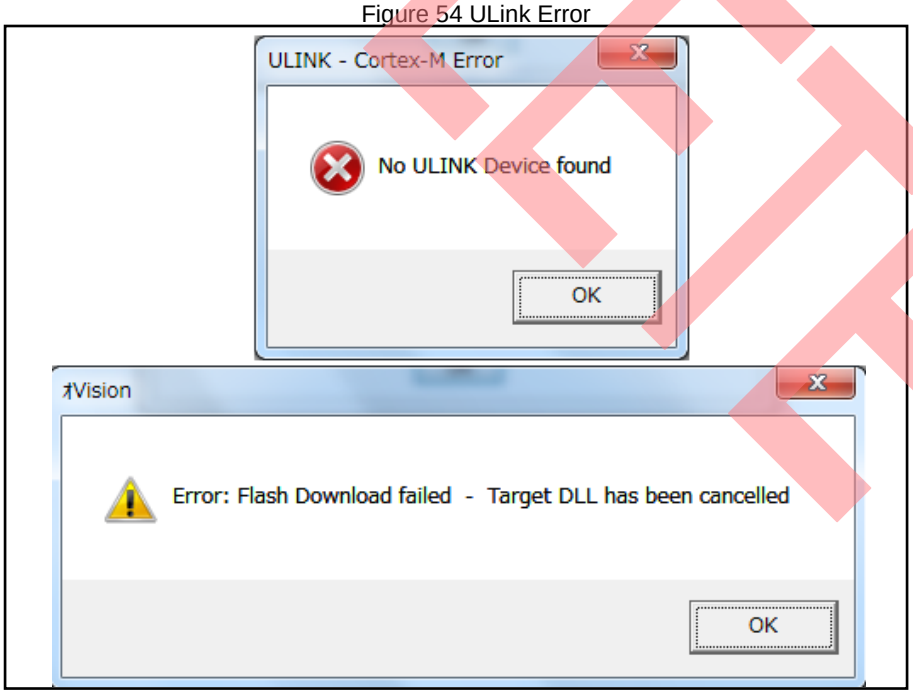
3. PC and FM4 hardware are connected by JLINK.
   However project file of MDK-ARM sets ULINK2/ME Cortex Debugger. (Figure 53)

Figure 53 Debug selected



Press “run” button to start pil simulation, error dialog will be displayed one by one as following. (Figure 54)

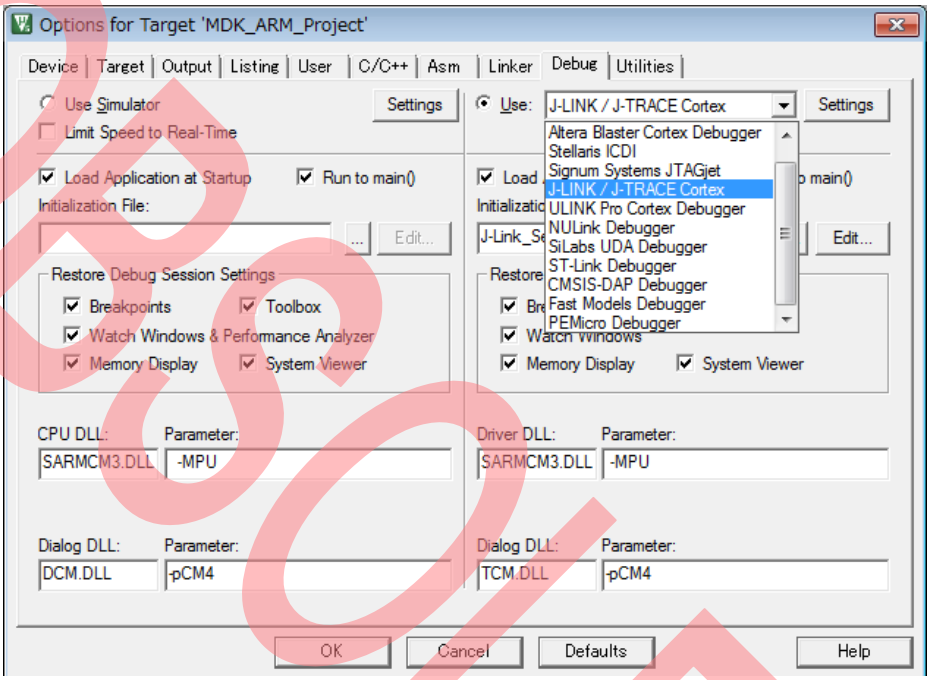
Figure 54 ULink Error



User need to select debugger as J-LINK/J-TRACE Cortex in Figure 53.

4. PC and FM4 hardware are connected by ULINK2/ME.
   However project file of MDK-ARM sets J-LINK/J-TRACE Cortex. (Figure 55)

Figure 55 Debug selected



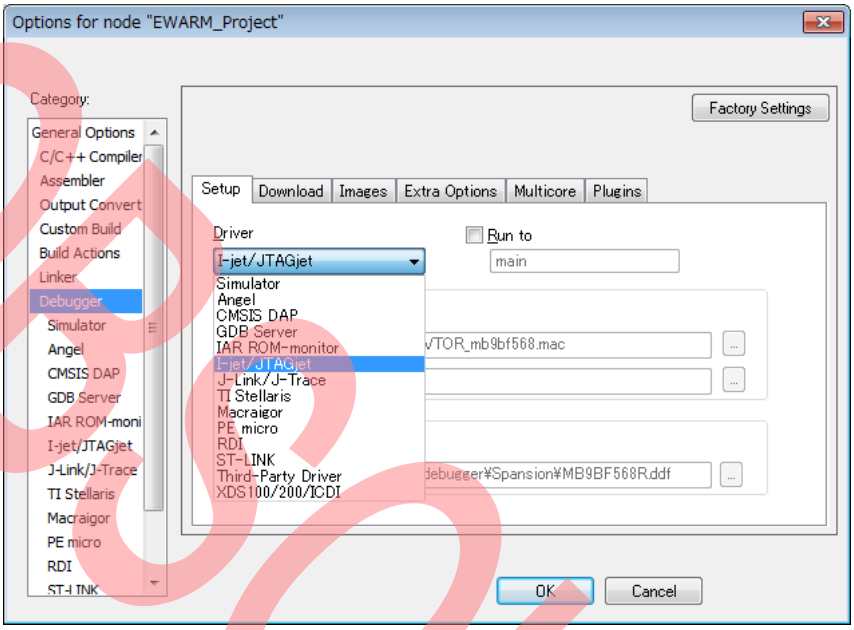
Press “run” button to start pil simulation, error dialog will be displayed as following. (Figure 56)

Figure 56 JLink Error

User need to select debugger as ULINK2/ME Cortex Debugger in Figure 55.

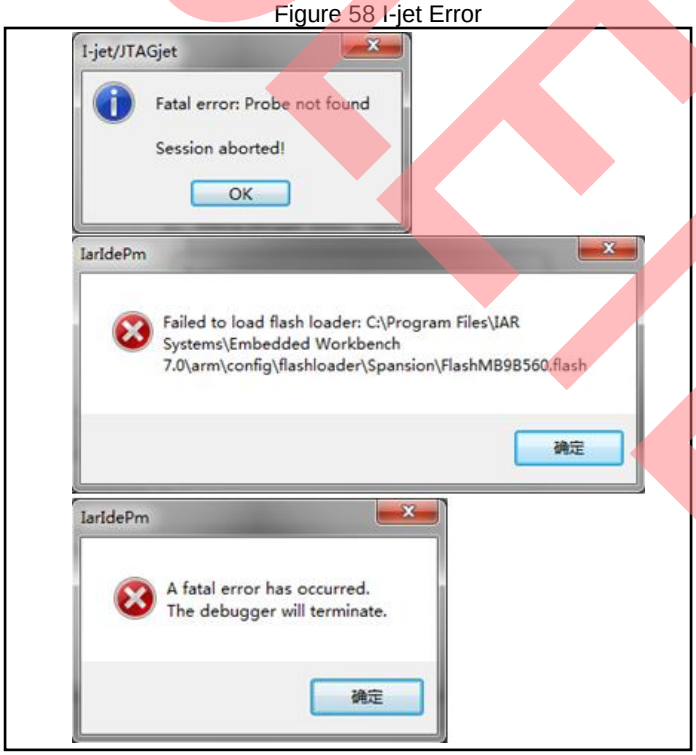
5. PC and FM4 hardware are connected by JLINK.
   However project file of EWARM sets I-jet/JATGjet. (Figure 57)

Figure 57 Debugger selected



Press “run” button to start pil simulation, error dialog will be displayed one by one as following. (Figure 58)

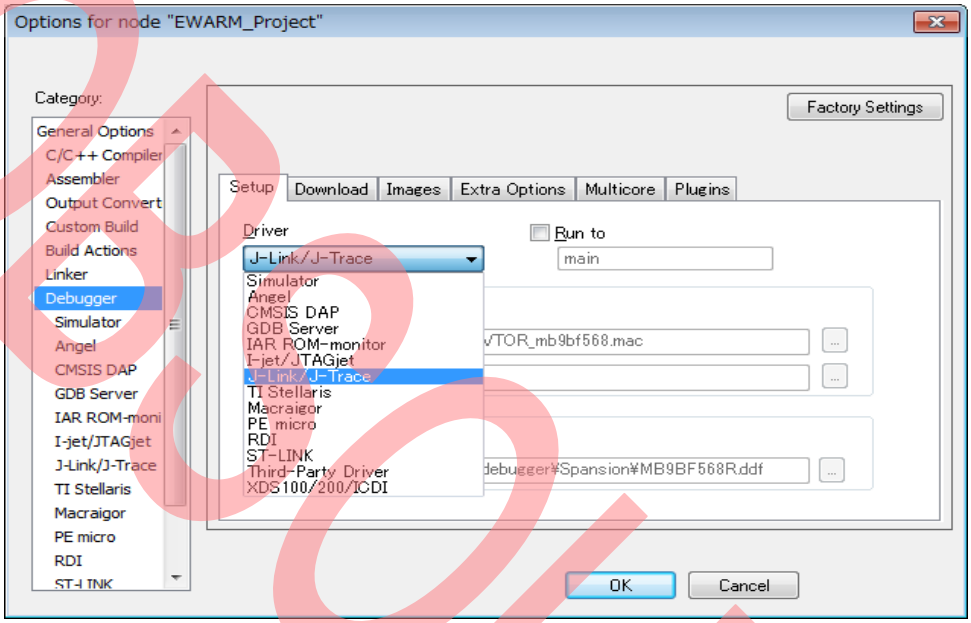
Figure 58 I-jet Error



User need to select debugger as J-Link/J-Trace in Figure 57.

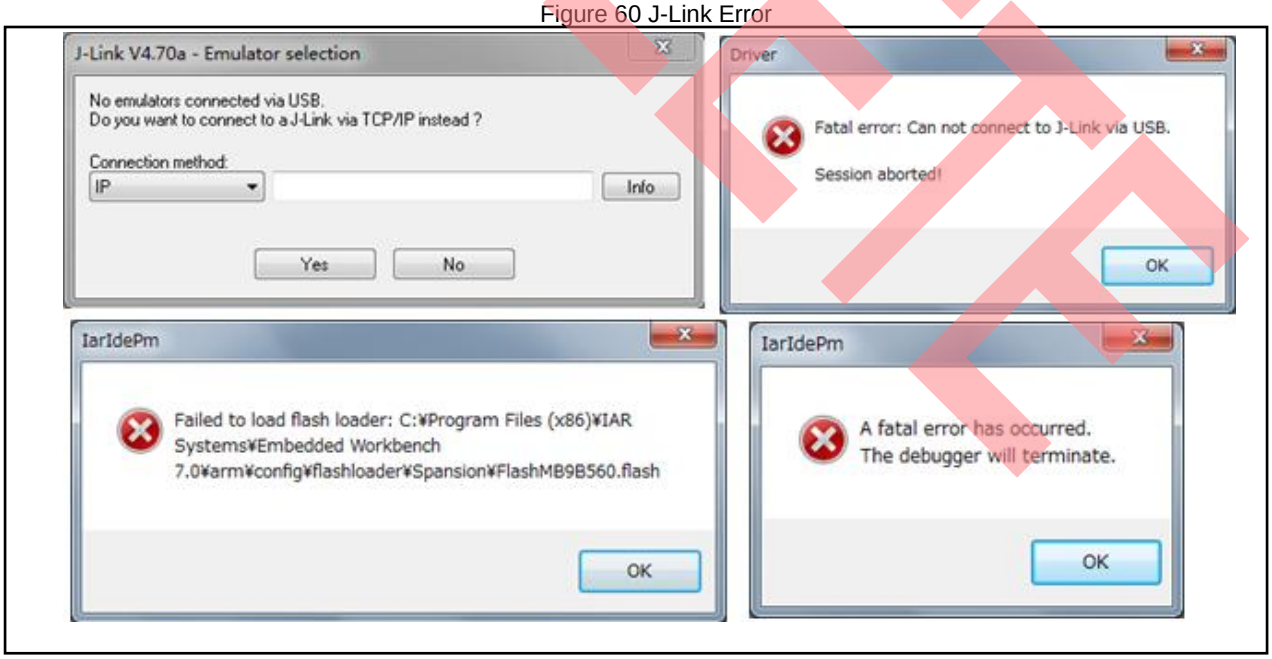
6. PC and FM4 hardware are connected by I-jet.
   However project file of EWARM sets J-LINK/J-TRACE. (Figure 59)

Figure 59 Debugger selected



Press “run” button to start pil simulation, error dialog will be displayed one by one as following. (Figure 60)

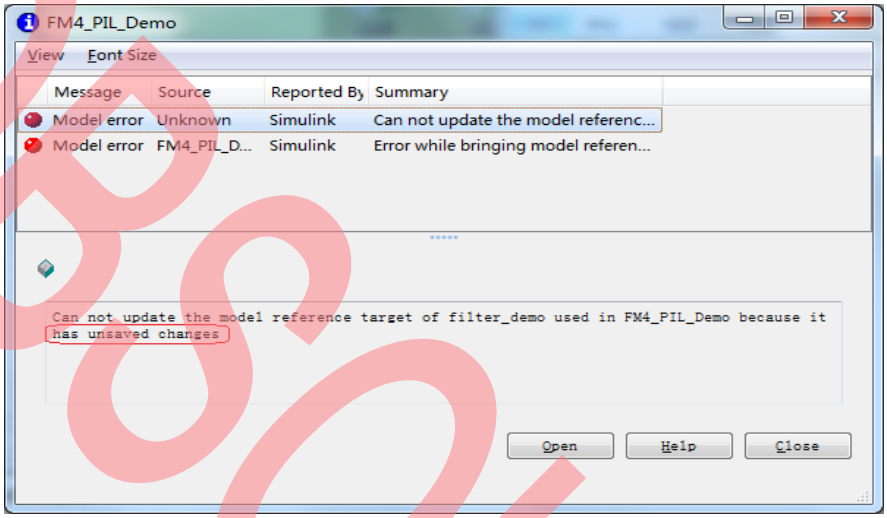
Figure 60 J-Link Error



User need to select debugger as I-jet/JTAGjet in Figure 59.

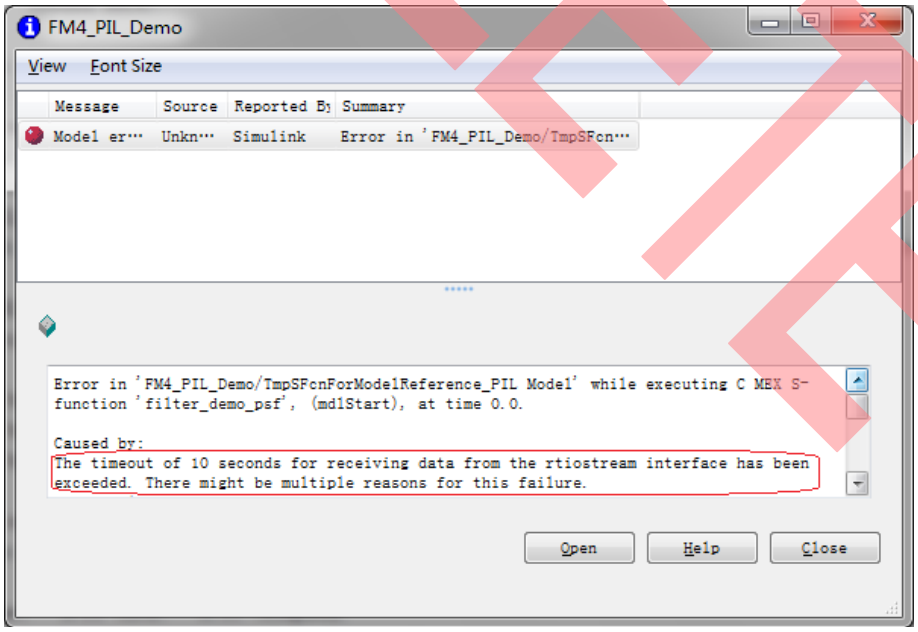
7. Open a PIL model and do some changes on the model.
   Then press “run” button to start pil simulation without saving, error dialog will be displayed as following.
   User need to save the model after doing some changes on the model. (Figure 61)

Figure 61 Unsaved Changes



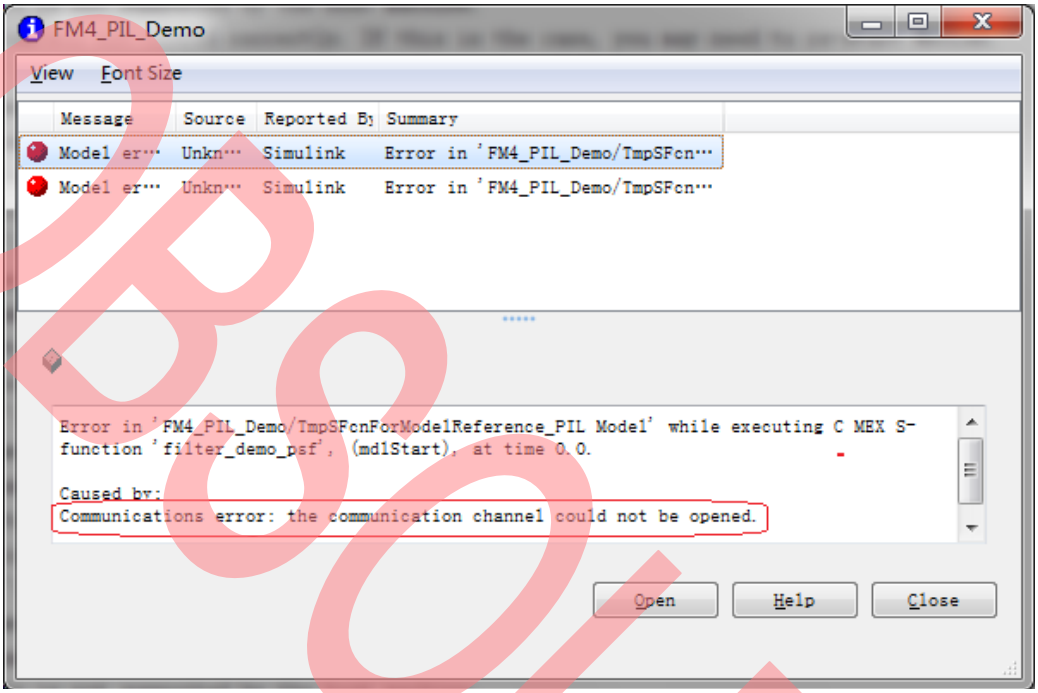
8. Configuration parameters of PIL model set the COM port number that other devices have used.
   Then press “run” button to start pil simulation, error dialog will be displayed as following.
   User need to input the right COM port on the Configuration parameters GUI. (Figure 62)

Figure 62 Wrong COM port1



9. Connect PC and FM4 Hardware with direct RS232 and IDE. Open a PIL Demo, ctrl+E to open configuration parameter GUI, input a wrong COM port number which has not been used by any device.
   Then press run button to start pil simulation, error dialog will be displayed as following. (Figure 63)

Figure 63 Wrong COM port2



6 Major Changes

Page	Section	Change Results
Revision 1.0		
-	-	Initial release
Revision 2.0		
6	1.4 Operating environment	Revised the Support Toolchain (IDE/ICE).
7	2.1 Notes on Operation	Revised notes of Debugger and TSP root folder
13	3.3 Model configuration	Revised method of operation
21-23	3.4 Template File Configuration	Added how to set EWARM project
27-29	3.5 Process of PIL	Revised method of operation
33-39	4. Appendix	Added Appendix

Document History

Document Title: AN206026 – FM4 Family Processor in the Loop Simulation

Document Number: 002-06026

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	-	YUIS	10/03/2014	Initial release
*A	5304129	YUIS	06/14/2016	Migrated Spansion Application Note “AN709-00001-2v0-E” to Cypress format. Document obsoleted.

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