



# **TITechSH2 Tiny Controller**

## **TITechSH2 Universal Serial Programmer**

Start Tutorial

Version 3.0



## Index

Preface.....	3
Downloading the tools.....	4
KPIT Cummins Infosystems Limited User registration .....	4
Downloading of the compiler and of the IDE .....	5
Installation of the device driver for the use of HiBot TITechSH2 Universal Serial Programmer.....	7
Download of the FLASH programming tool .....	7
Tools installation procedure .....	8
Compiler and IDE installation .....	8
Device driver installation for the HiBot TITechSH2 Universal Serial Programmer .....	10
Installation of the FLASH Development Toolkit (FTDI) .....	13
Importing, compiling and executing HiBot sample programs .....	15
Download of the sample program .....	15
Setting the workspace folder .....	15
Importing a project file into KPIT Eclipse.....	16
Compiling the project.....	19
Writing the program into the FLASH memory of theSH2Tiny Controller .....	24
Creating a new project file with KPIT Eclipse.....	28
Setting the working area.....	28
Making a project using the wizard option .....	28
Automatic generation of the files .....	32
Project settings .....	32
Migrating from Eclipse IDE 2.x to IDE 3.0.....	33



# Preface

This document explains: the procedures to upload a firmware in the FLASH ROM of the SH-2 microcontrollers, the installation of the programming tools, how to build a sample code and how to download it using the "TITechSH2 Universal Serial Programmer" together with a "TITechSH2 Tiny Controller".

No support is supplied over the tools that are utilized and explained in this document. Each tool is freeware and made by different vendors from HiBot corporation. The URL location of the tools and their versions as well as the contents of this document may change without prior notice.

These and other tools might be upgraded without notice. When downloading the latest tools, users are requested to go through the manuals and documents included in each package.



**Note:**

Do not connect the TITechSH2 Universal Serial Programmer before reading this document.

The tools utilized in this tutorial are to be utilized under Windows operative system (Windows is a TM of Microsoft Corporation ®). The following versions were utilized:

tool name	Version	Vendor
GNUSH Windows Tool Chain	V10.01	KPIT Cummins Infosystems Limited
KPIT Eclipse IDE (Windows or Linux)	V2.2 MP2	
Virtual COM Port Driver (FT232R)	2.06.02	Future Technology Devices International Inc.
Flash Development Toolkit	4.05	RENESAS



## Downloading the tools

The needed tools for this tutorial are listed in the following table:

Type	Tool name		Vender	Notes
Compiler and linker	GNUSH Windows Tool Chain(Windows)		KPIT Cummins	Needed tools
	GNUSH Lnx Tool Chain(Linux)		Infosystems	
			Limited	
IDE Programming Environment	KPIT Eclipse IDE (Windows or Linux)		Not indispensable but these tools are the one utilized in these tutorials	
	<b>Versions 2.0. For the new version 3.0 please refer to the section at pag. 32</b>			
USB driver	Virtual COM Port Driver (FT232R)	Future Technology Devices International Inc.		
FLASH Program	Flash Development Toolkit	RENESAS	Needed tool	

### KPIT Cummins Infosystems Limited User registration

In order to download all KPIT tools, a prior FREE user registration is needed:

English page can be found here : <http://www.kpitgnutools.com/index.php>

The registration area can be found on the right side of the main page as shown in these figures:

When registering, user can select the following options:

Host OS : Windows without target

OS: just as it is.

Target hardware : SH2



After registering, user will receive 2 emails from KPIT containing all information on how to access to the download page. Please keep all information available as they will be needed during the installation of the KPIT tools.

## Downloading of the compiler and of the IDE

After logging in the KPIT page, please download the latest version of Eclipse by selecting it from the window right below the login area.

**KPIT GNU TOOLS & SUPPORT**

Home | Manage Account | Free GNU Support | Free Downloads | Documentation | Sitemap

Welcome | Your last visit was on Wed, Jan 26 2011 at 14:07 GMT | 日本語 | English

**Welcome to the KPIT GNU Tools and Support website.**

KPIT GNU Tools are free, user-friendly GNU toolchains for Renesas micros with free customer support across the world. Not satisfied with just providing high-quality products, we also provide integration with the Renesas HEW IDE, KPIT Eclipse IDE, tutorials, FAQs and professional technical support for our products worldwide for free.

Register now for free and get unlimited downloads and support:

1. Register on our website
2. We'll send your username and password by email
3. Login and download installers for your chosen tools
4. Run the installers
5. Develop your application using either the Renesas HEW IDE, KPIT Eclipse IDE or Makefiles

If you have any questions, just ask our experienced support team via this website, or talk to other users on our discussion forum.

KPIT Cummins Infosystems Limited is an international software solutions provider also offering consultancy services in connection with Renesas devices and software. We would be happy to discuss how we can help you; [click here](#) for more information or to [contact us](#).

**Latest KPIT GNU Tools Downloads**

[Download SH2SH v10.03 Windows Tool Chain \(ELF\) \(for Windows\)](#)

**Targets Supported**

• SH-1	• H8300	• R8C	• RX
• SH-2	• H8300L	• M16C/10	
• SH-2E	• H8300H	• M16C/20	
• SH-2A	• H8300H Tiny	• M16C/Tiny	
• SH-2A Dual Core	• H82000	• M16C/30	
• SH-3	• H82600	• M16C/60	
• SH-4	• H8SX	• M16C/80	
• SH-4A		• M32C/80	
• SH4AL-DSP			

**QUICK LINKS**

- [Download Latest KPIT GNU Tools](#)
- [My Support Request System](#)
- [Post a Query](#)

[Logout](#)

**NEWS**

- KPIT Eclipse v3.00.02 - Released 24-12-2010 [1]
- KPIT Eclipse v3.00.01 - Released 07-12-2010 [1]
- KPIT GNU Tools v10.03 - Released 08-10-2010 [1]
- KPIT Eclipse v3.00.00 - Released 05-10-2010 [1]

[More →](#)

**WEBSITE STATISTICS**

- Number of Downloads : 109,567 (as of 26 Jan 2011)
- No. of Registered Users : 22,521 (as of 26 Jan 2011)



Sr. No.	Release Date	Description	Details	Download	File Size
<b>GDBH8</b>					
1	08-10-10	GDBH8 v10.03 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
2	16-06-10	GDBH8 v10.02 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
<b>GDBM16C</b>					
3	08-10-10	GDBM16C v10.03 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
4	16-06-10	GDBM16C v10.02 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
<b>GDBM32C</b>					
5	08-10-10	GDBM32C v10.03 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
6	16-06-10	GDBM32C v10.02 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
<b>GDBRX</b>					
7	08-10-10	GDBRX v10.03 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.24 MB
8	16-06-10	GDBRX v10.02 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
<b>GDBSH</b>					
9	08-10-10	GDBSH v10.03 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.24 MB
10	16-06-10	GDBSH v10.02 Source Code of GDB	<a href="#">View Details</a>	<a href="#">Download</a>	18.16 MB
<b>KPIT ECLIPSE</b>					
11	21-12-10	KPIT Eclipse IDE v3.00.02 for Linux	<a href="#">View Details</a>	<a href="#">Download</a>	3.14 KB
12	21-12-10	KPIT Eclipse IDE v3.00.02 for Windows	<a href="#">View Details</a>	<a href="#">Download</a>	3.14 KB
13	08-12-10	KPIT Eclipse IDE v3.00.01 for Linux	<a href="#">View Details</a>	<a href="#">Download</a>	3.32 KB
14	06-12-10	KPIT Eclipse IDE v3.00.00 for Linux	<a href="#">View Details</a>	<a href="#">Download</a>	448.19 MB
15	03-12-10	KPIT Eclipse IDE v3.00.01 for Windows	<a href="#">View Details</a>	<a href="#">Download</a>	3.20 KB
16	05-10-10	KPIT Eclipse IDE v3.00.00 Generic for Linux	<a href="#">View Details</a>	<a href="#">Download</a>	13.71 MB
17	05-10-10	KPIT Eclipse IDE v3.00.00 for Windows	<a href="#">View Details</a>	<a href="#">Download</a>	461.67 MB
18	05-10-10	KPIT Eclipse-Generic v3.00.00 for Windows	<a href="#">View Details</a>	<a href="#">Download</a>	13.24 MB
<b>GNUSH</b>					
59	08-10-10	GNUSH v10.03 Linux Tool Chain (ELF Format)	<a href="#">View Details</a>	<a href="#">Download</a>	97.54 MB
60	08-10-10	GNUSH v10.03 Windows Tool Chain (ELF)	<a href="#">View Details</a>	<a href="#">Download</a>	82.41 MB
61	08-10-10	GNUSH v10.03 Source Code of GCC	<a href="#">View Details</a>	<a href="#">Download</a>	64.46 MB
62	08-10-10	GNUSH v10.03 Source Code of Binutils	<a href="#">View Details</a>	<a href="#">Download</a>	19.51 MB
63	08-10-10	GNUSH v10.03 Source Code of Newlib	<a href="#">View Details</a>	<a href="#">Download</a>	8.37 MB
64	16-06-10	GNUSH v10.02 Source Code of GCC	<a href="#">View Details</a>	<a href="#">Download</a>	64.30 MB
65	16-06-10	GNUSH v10.02 Source Code of Newlib	<a href="#">View Details</a>	<a href="#">Download</a>	8.28 MB
66	16-06-10	GNUSH v10.02 Linux Tool Chain (ELF Format)	<a href="#">View Details</a>	<a href="#">Download</a>	94.00 MB
67	16-06-10	GNUSH v10.02 Windows Tool Chain (ELF)	<a href="#">View Details</a>	<a href="#">Download</a>	82.11 MB
68	16-06-10	GNUSH v10.02 Source Code of Binutils	<a href="#">View Details</a>	<a href="#">Download</a>	19.17 MB

The necessary tools to be downloaded are: the KPIT Eclipse IDE and the GNUSH latest windows Tool chain (ELF) compiler. Linux users have the option for linux tools, however this tutorial will describe how to install and use the windows tools.



**Attention:**

The version of the tools reported in this tutorial may differ from the ones available when using this document. Please make sure to read all the information on the readme files for each version.



## **Installation of the device driver for the use of HiBot TITechSH2 Universal Serial Programmer**

Access to the following URL of FDI chip:

<http://www.fdichip.com/Drivers/VCP.htm>

According the windows version, the FT232R device type driver must be downloaded and installed.

## **Download of the FLASH programming tool**

From the URL reported below, user must download the latest version of the flash development toolkit FDT.

[http://www.renesas.eu/products/tools/flash\\_prom\\_programming/fdt/download\\_search\\_results.jsp](http://www.renesas.eu/products/tools/flash_prom_programming/fdt/download_search_results.jsp)

Prior to download it is necessary to create a login which is easily created in a few minutes and it is free.



# Tools installation procedure

## Compiler and IDE installation

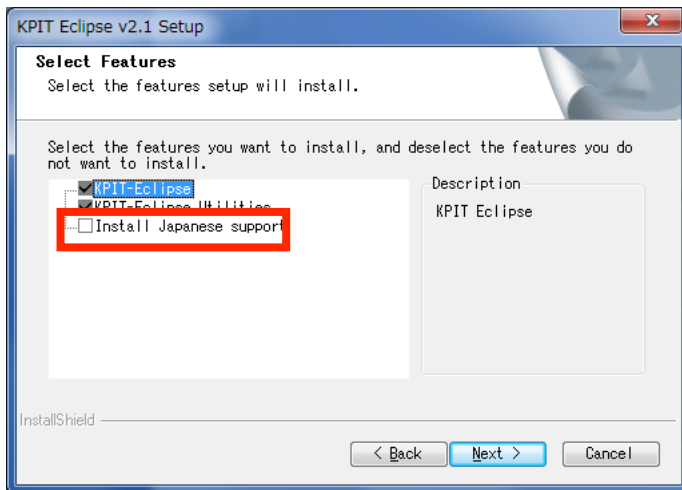


### Attention:

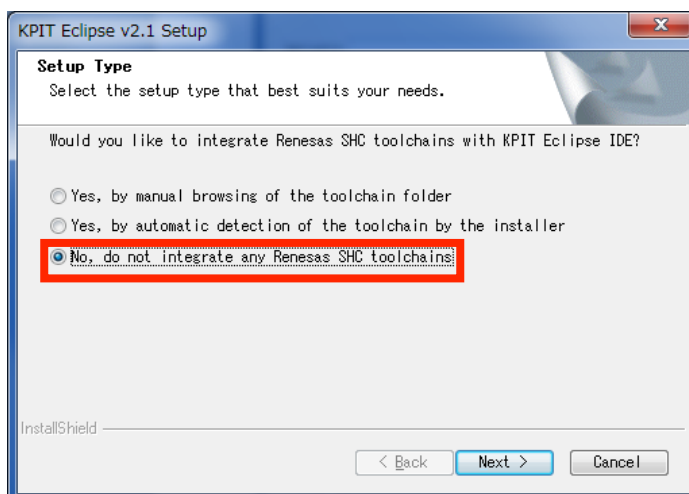
Please follow the advised order for the installation of all tools. Some applications may not be available after installation if installed in the wrong order.

Install first the KPIT Eclipse by double clicking the executable file.

In the first window please select the options that match the user environment:

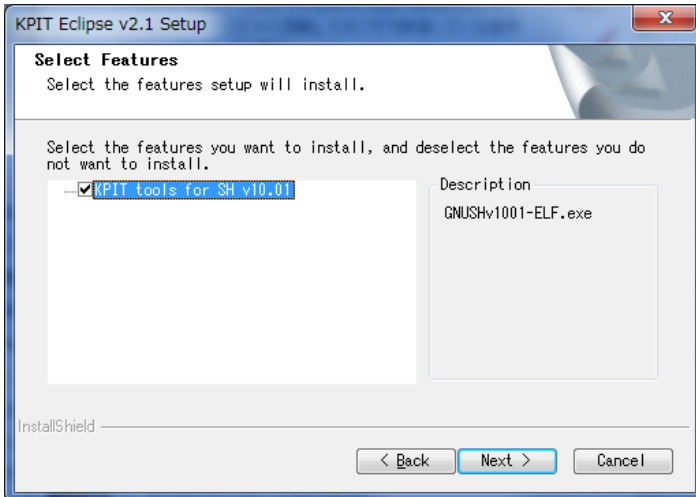


User may want to install the Japanese support at this point. We advise its installation as some Japanese characters may be included in our sample codes. They can be however erased from the source code.



with the following window select to NOT integrate the Renesas SH toolchains if no compiler from Renesas is installed in the system.

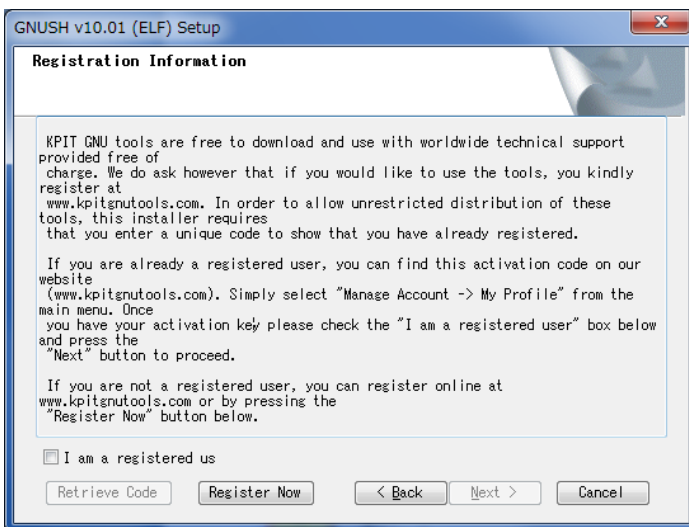




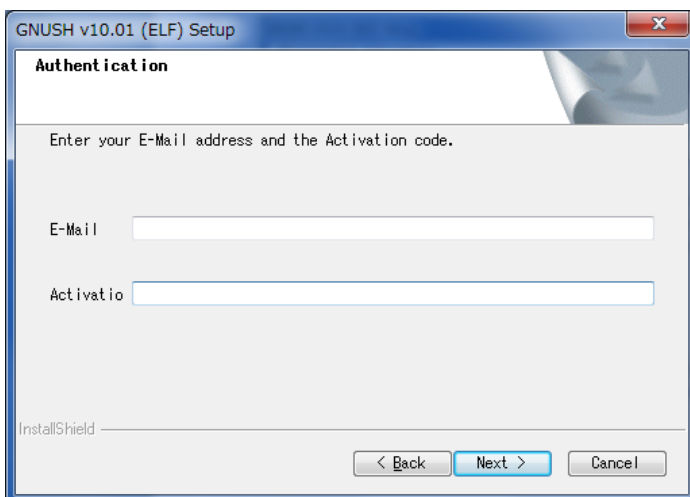
In the following window it will be requested if the user prefers to install at this moment the KPIT tools for SH (with the corresponding downloaded version number).

Please select the option and proceed.

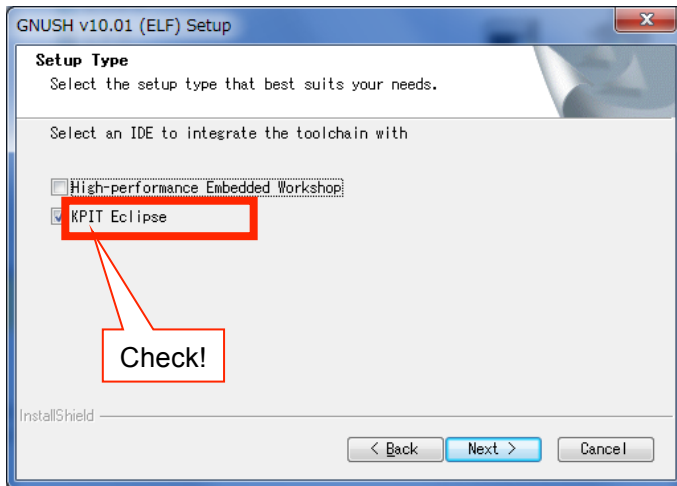
When pressing NEXT, the installation will pass to the installation of the KPIT tools.



Check in the bottom of the next window the option “I am a registered user” and press NEXT



User will need then its own activation code that was sent from KPIT at the registration with the first email. Please retrieve it and insert it in the next window.



**Attention:**

Please make sure to select the KPIT Eclipse option in the following window. If user has installed HEW (High Performance Embedded Workshop) also the first option can be selected.  
Press then NEXT

For the remaining windows there are no specific options to be selected, thus user can proceed the installation with keeping all default selections and by pressing NEXT

## **Device driver installation for the HiBot TITechSH2 Universal Serial Programmer**

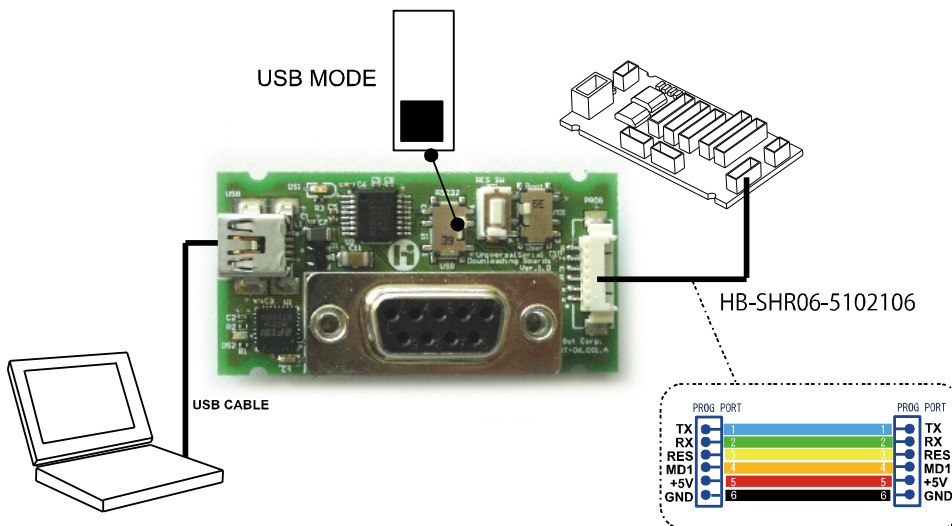
If the device driver downloaded was compressed, after decompressing it, please remember its location for the installation of the driver. If the device driver is in an executable form proceed with its the normal installation.



**Attention:**

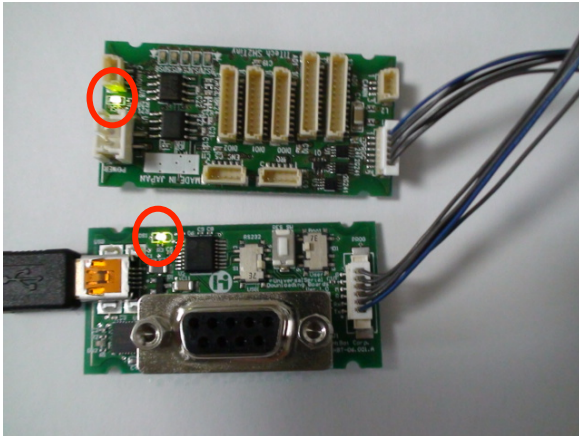
Please power up the board Titech SH2 Universal board using a USB to miniUSB cable.

Please connect your TITechSH2 Tiny Controller and the TITechSH2 Universal Serial Programmer like in



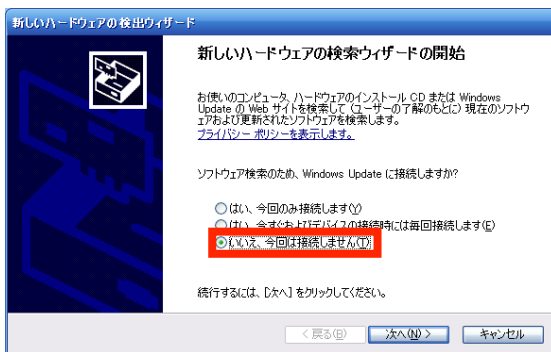
the figure on the left. Set the switch in the USB mode on the Titech SH2 Serial Programmer. If a serial port RS232 is utilized the RS232 mode should be selected (in this case it is not necessary to install the device driver).

Please connect the PC and the TITechSH2 Universal Serial Programmer through one USB cable.

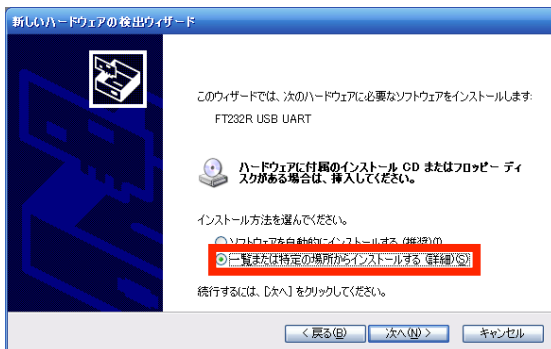


After connecting the USB cable and with having the supplied programming cable connecting the SH2Tiny PROG port and the Serial Programmer, the two LEDs shown in the figure on the left are lighten up GREEN. This will confirm the correct connection of both the cables.

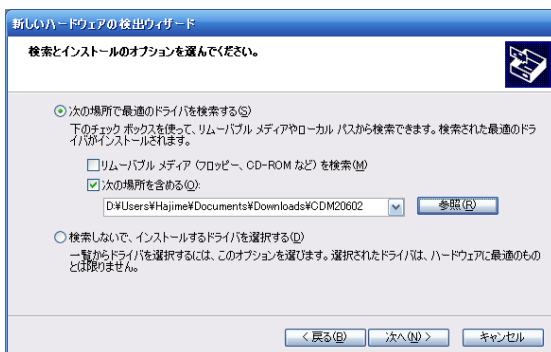
When the USB cable is connected, automatically the installation for a new device driver will be loaded.



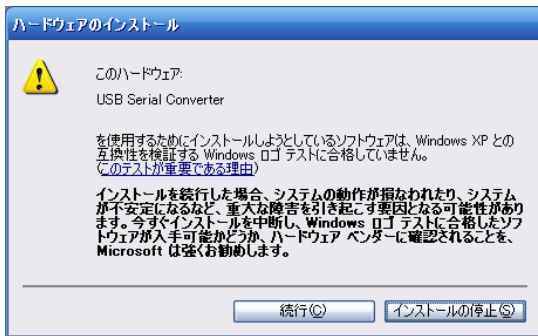
Select the third option in the new window.



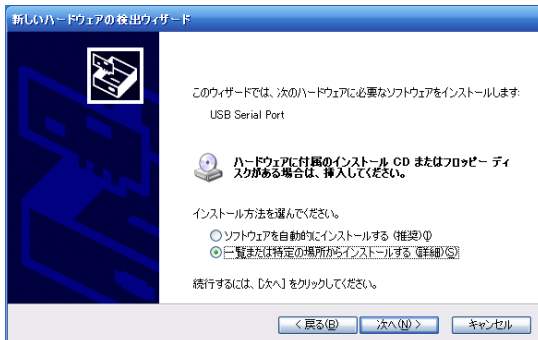
Select the option for the installation from a specific file location (second option)



Select the location where the device driver was uncompressed.



In the following window, a warning message will appear regarding the windows logo test of the application, please proceed without concerning about it.



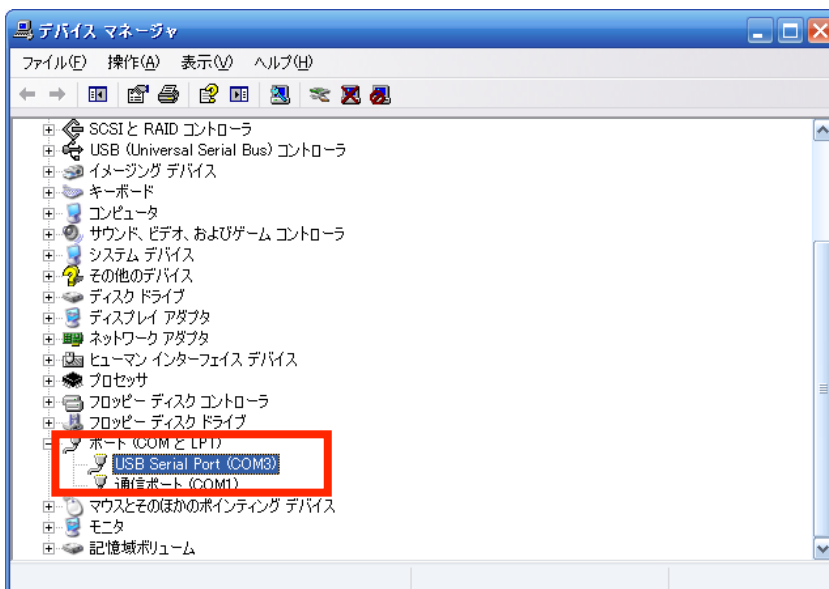
Please proceed with the usual installation process for all windows applications.



#### Attention:

In the case of Windows 7 do not close the dialogue box and continue the reading of this document.

If the installation of the device driver was successfully executed, a new com port should be appearing inside the windows device manager under the COM port option. Please open the dialogue and confirm the com port number.



#### IMPORTANT

Due to some possible compatibility issues with the Flash Development Tool Program of Renesas, it is important to set a low COM port number for the above device driver. A number lower than 10 should be set; to carry out the change first right click on the USB com port and select the new port number in the advanced settings under PORT SETTINGS



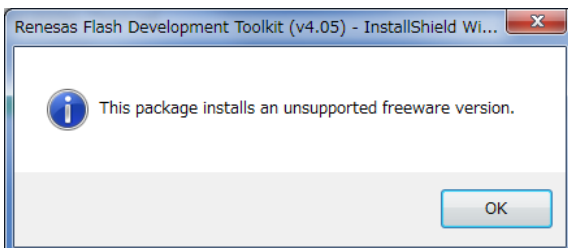
In the USB serial port property FTDI maker should appear.

As a reference user can write here the configured COM port number. Please note that each com port number will be assigned always to its respective and always same USB port. Changing the USB port will generate a different port number.

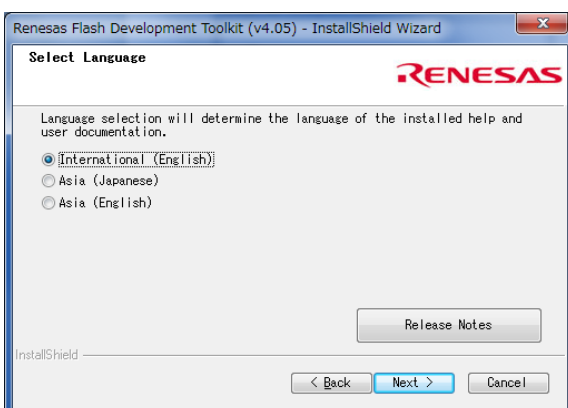
## COM

If the com port property is successfully confirmed, please remove the USB cable from the PC.

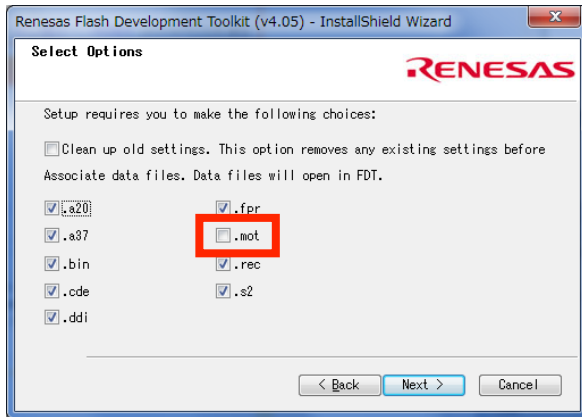
### Installation of the FLASH Development Toolkit (FTDI)



After downloading and starting the application, user is requested to confirm the unsupported version by clicking OK.



Select your language and confirm it by pressing NEXT



In the following window (shown on the left) all file extensions that will be related to the FTDI program, are going to be listed. Make sure to select the .mot option which is the extension for all compiled program on the SH2 Components. All other selections can be left as default.



# Importing, compiling and executing HiBot sample programs

In this section we report the procedure for importing one sample program for lighting up the LEDs of the SH2 Tiny Controller.

On Eclipse IDE v.3.0 it won't be possible to import correctly previous project (created with previous versions of Eclipse) as described in this page. Please refer to pag.32 of this tutorial document for more details.

## **Download of the sample program**

From the following URL download the following sample program for SH2TinyController available also without login:

[http://www.hibot.co.jp/html/webapps/download\\_link.php?lang=en](http://www.hibot.co.jp/html/webapps/download_link.php?lang=en)

## **SH2Tiny\_Sample1EclipseV3.zip**

The project file is compressed with ZIP; before to proceed uncompress it and remember the location of the file.

**The sample codes available on HiBot Homepage are to be utilized ONLY with HiBot components, different SH2 based programs generated for different maker components can/might damage HiBot products.**

## **Setting the workspace folder**

The workspace is the location of all project files. To each application/firmware for HiBot SH2 Tiny controller or for other HiBot components corresponds one project file. All projects have their respective folder name under the main folder of the workspace.

In this case we consider the following workspace location:

C:\Development\EclipseWorkArea

It is advisable to avoid the use of spaces or special characters in the folder name when selecting the workspace. In fact that may causes problems when importing or compiling project files.



## **Importing a project file into KPIT Eclipse**

When running KPIT Eclipse, by default the proposed workspace is a folder defined under ECLIPSE folder name.

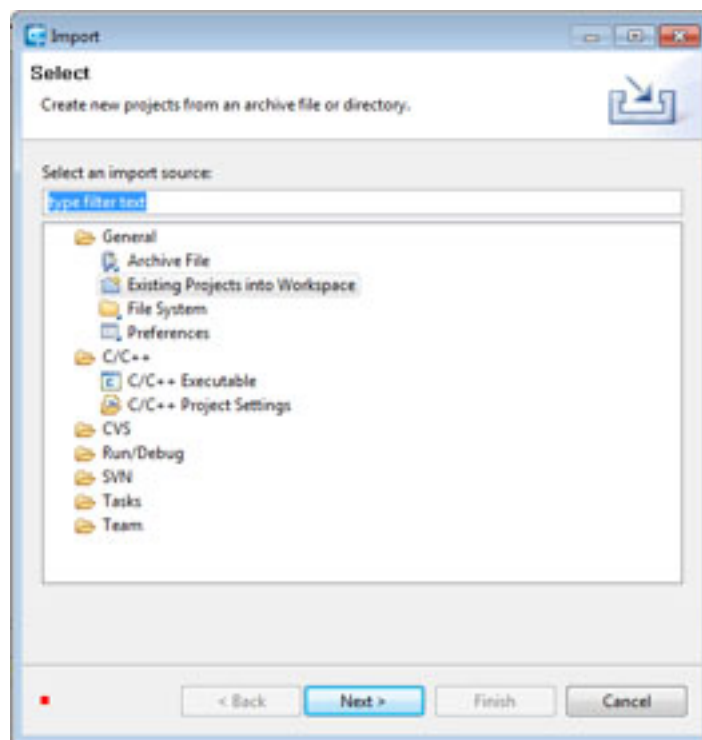


**Hint:**

For more details please consult the KPIT Eclipse User Manual for the generation of a new project file, or HiBot support blog from the HiBot Home page:

<http://www.hibot.co.jp/support/support/?p=3>

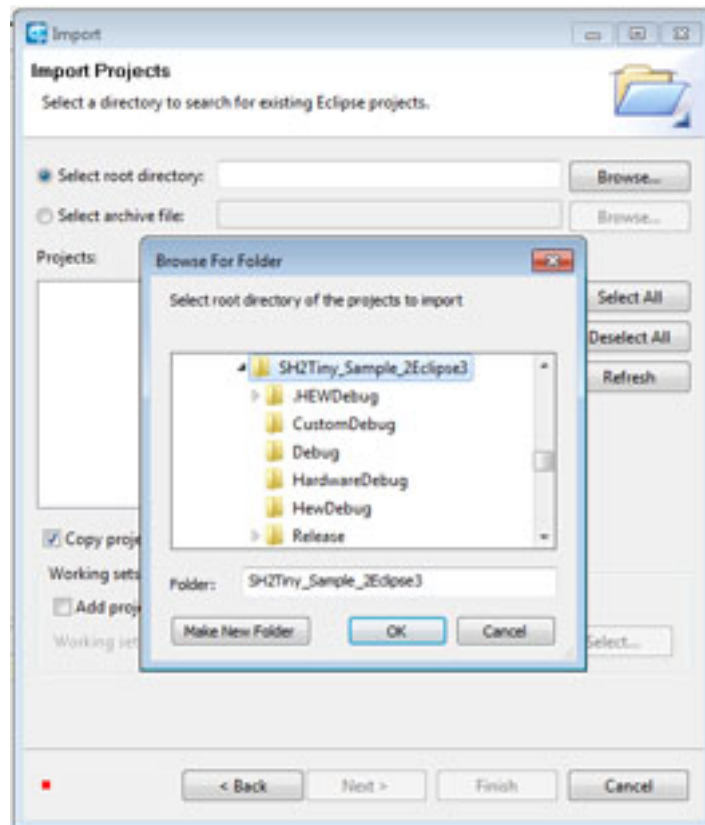
Select from the menu bar the option File->Import



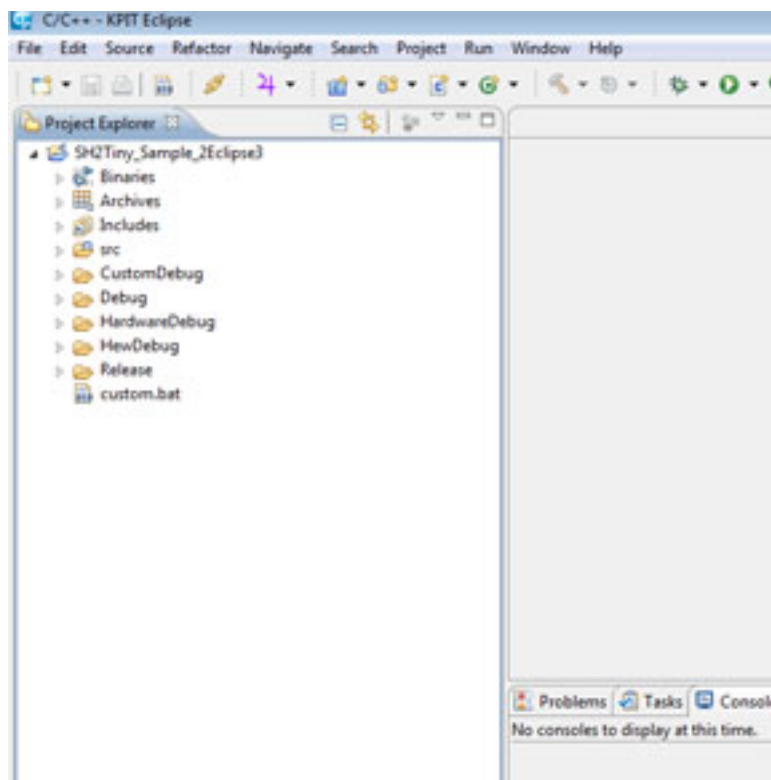
Select the option “Existing Projects into Workspace” and press Next>

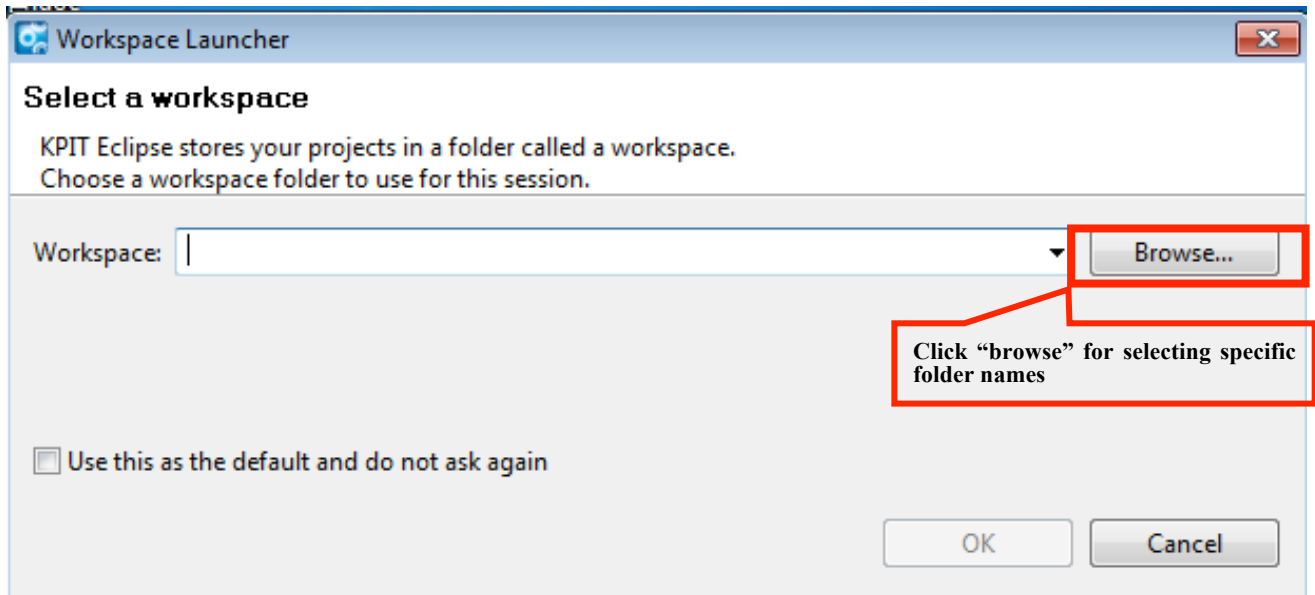
By pressing “browse” on the right of the workspace field name, we can select the LED\_Sample folder for our workspace:





Once the root folder of the project that has to be imported is selected, press OK and then Finish in the main window. After a few seconds of process we should be able to have the project correctly imported into our Project Explorer as in the following image.



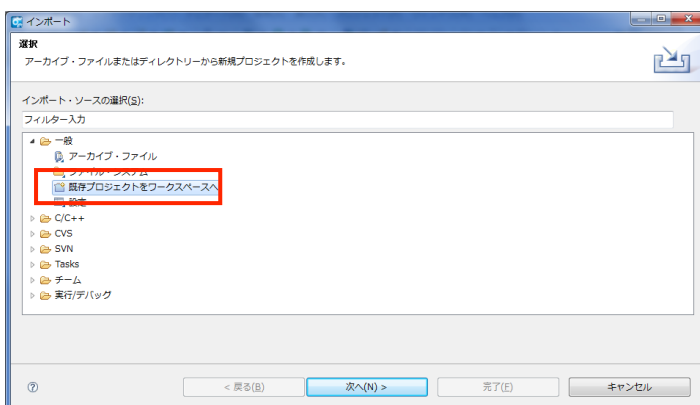


When eclipse is run for the first time, the following welcome window will appear:

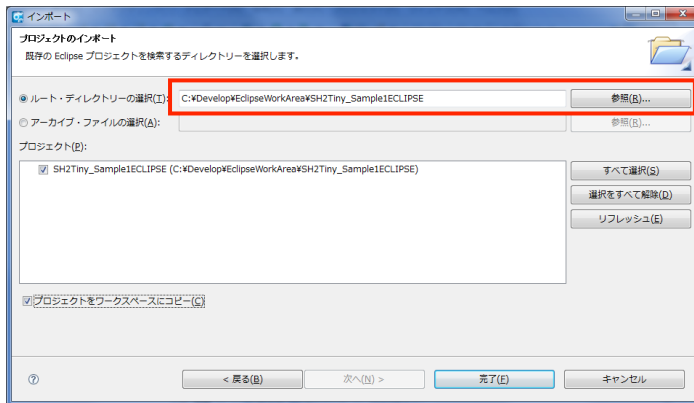


Press the right most icon "Workbench Go to the workbench".

In the next window we will import the project file. Under the menu "File" select "Import" to obtain the following window:



Select the option "Existing projects into Workspace"



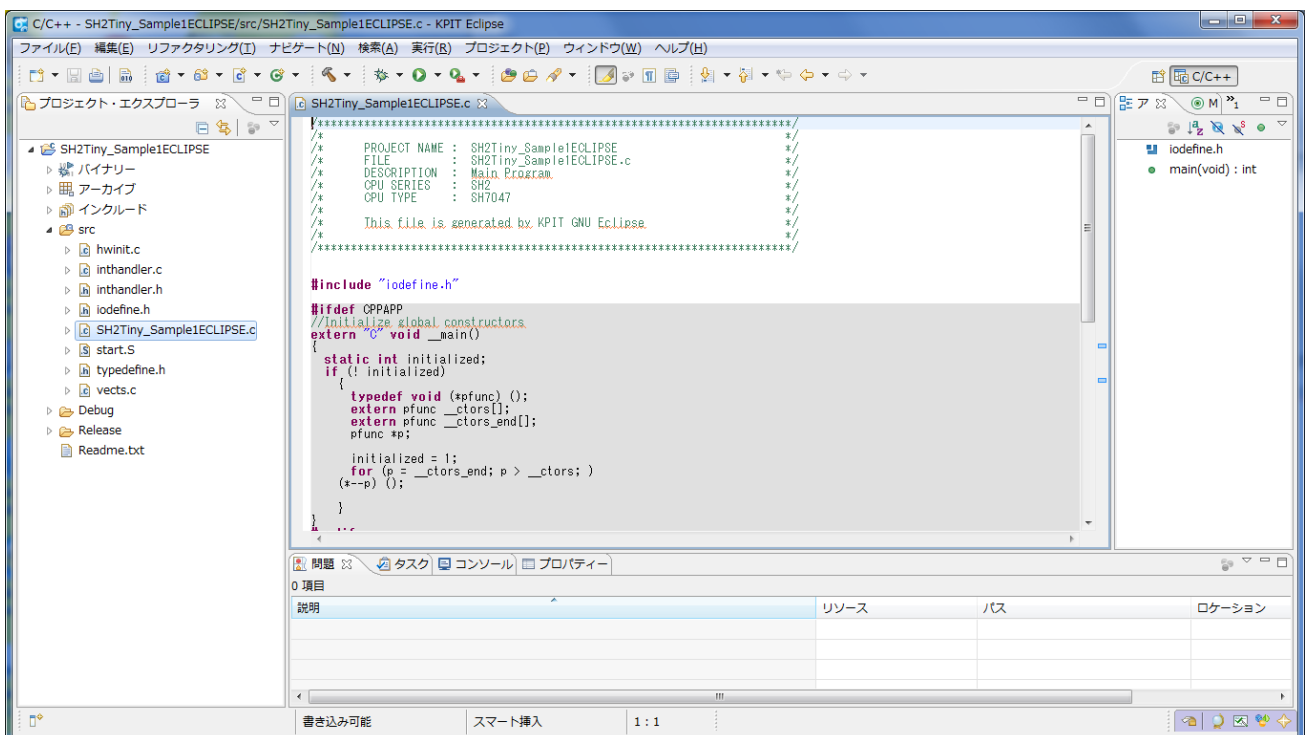
The folder of the project moved into the workspace can be selected (SH2Tiny\_Sample1ECLIPSE) by using the browse button.

When pressing Finish, the project file will be copied into the workspace. A dialogue box reporting: "The imported projects will be built using KPIT GNUSH-ELF v10.01 toolchain." (A

version number maybe different from the one reported in this example) will appear. Press OK to complete the importing process.

## Compiling the project

On the left side of the window, the project explorer section will appear. By browsing the project tree, please double click (under "src" file sources folder) on the main file of the imported project: SH2Tiny\_Sample1ECLIPSE.c. In this way in the main window the source code will be displayed.





There are two types of build:

Debug build: It will include the debugging code and it is not optimized

Release build: The code is optimized and it doesn't contain the debug code. It is the version that must be generated to be installed on HiBot SH2 based components.



Hint :

Build is the compilation process of all source files into one standalone file; in this case a file with .mot extension.

Inside HiBot TITechSH2 Tiny Controller a debugger is not included, so user must generate a Release target build for each project file. Also after importing a project file that was generated on a different machine (as in this case) it is necessary to set the new archive files locations as they are at the moment of importing, pointing to the old location:

To do:

- 1.Set the project file target into Release
- 2.Set the archive option of the sample code
- 3.Build all the files

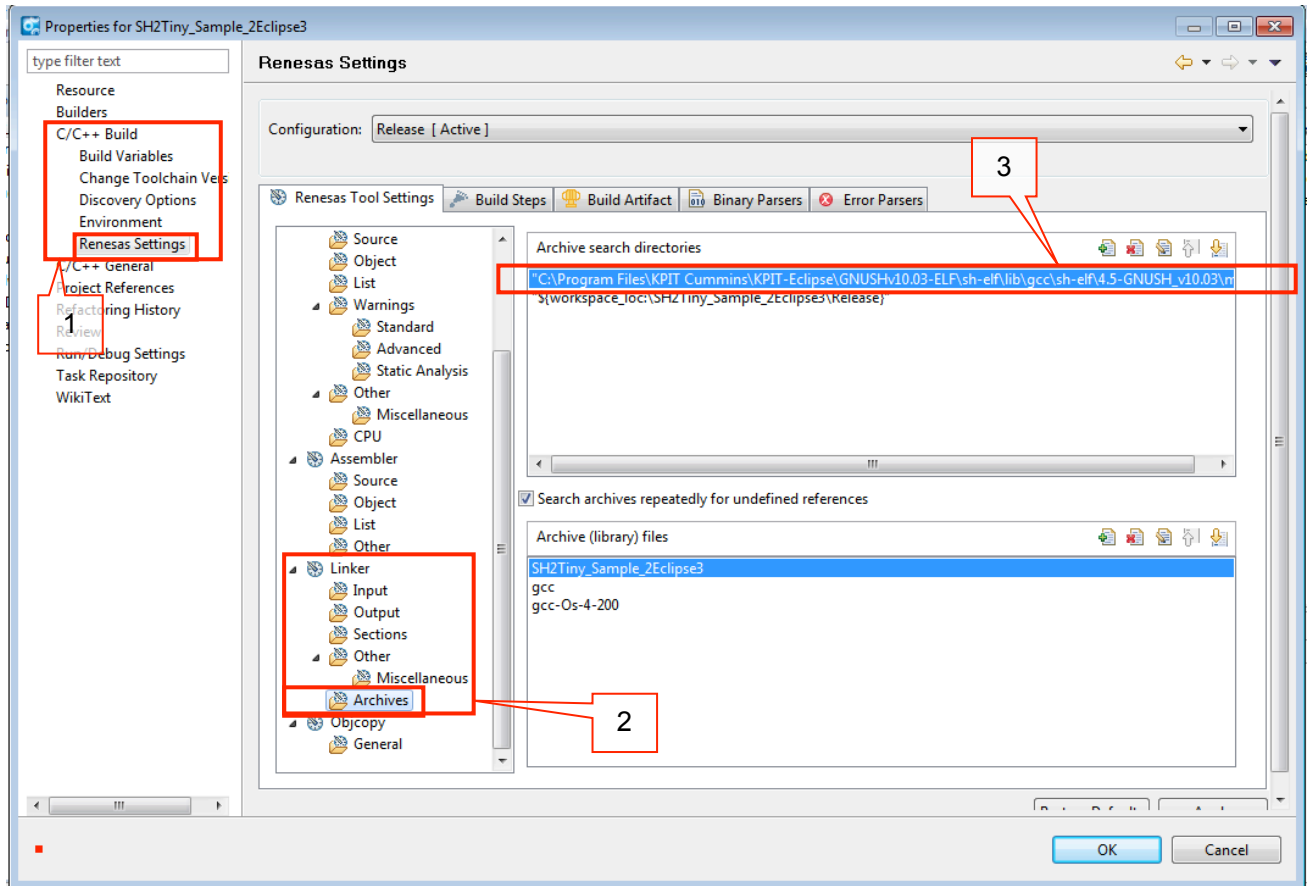
- 1.Set the project file target into Release

First select the project name from the project explorer (in this case select SH2Tiny\_Sample1Eclipse).

From the menu bar, select under "Project" option, "Build configuration" and after that "set active", finally select "2 Release" under the sub menu that will appear.

- 2.Set the archive option of the sample code

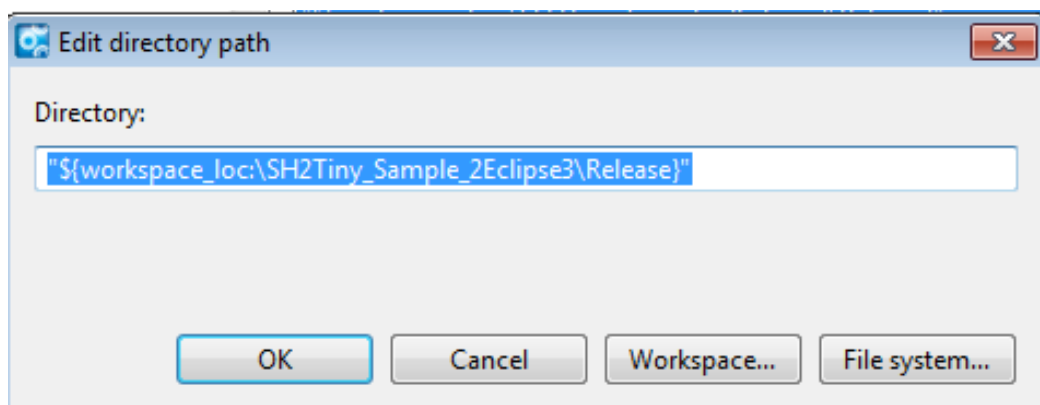
After selecting again the project file name from the project explorer, right click with the mouse and select "Properties". The following window will appear:

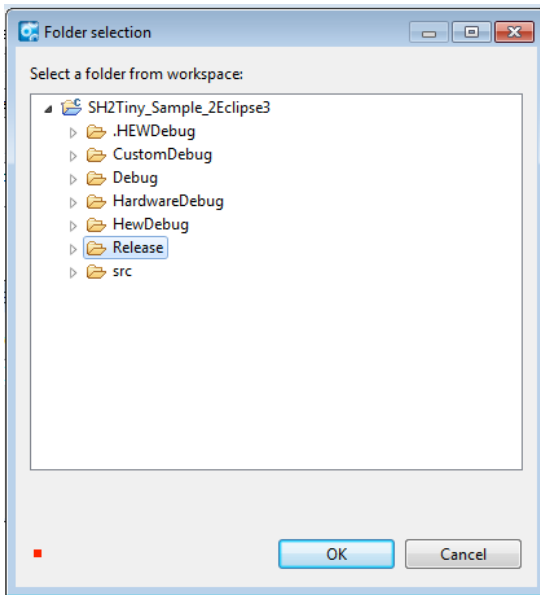


Select and open from the above window, the option C/C++ Build. Then select Settings (1)

The content on the right will change and a new project settings tree will appear. Select from there the “Linker” option and under that select finally “Archives” (2). The actual folder for search of archives, will appear; As it can be seen, Release folder, is not the one related to the actual workspace in use. We need now to change the path by double clicking on the first line reporting the path of the folder Release.

From the *Edit Directory Path* window that will appear after double clicking, select the location of the real Release folder for the imported project file. Using the button “Workspace...” we can easily move in the computer folders and select under the workspace folders the release folder for the project file SH2Tiny\_Sample1Eclipse.



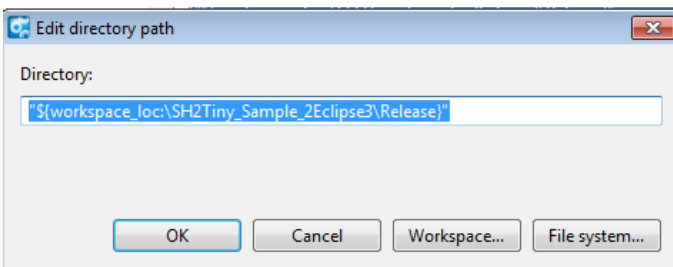


Double click on Release from the window that shows the project subfolders and press OK.



**Attention:**

The compiled file to be written/downloaded into the SH2Tiny Controller will be saved in this Release folder if the compiling (build) process will be successful.



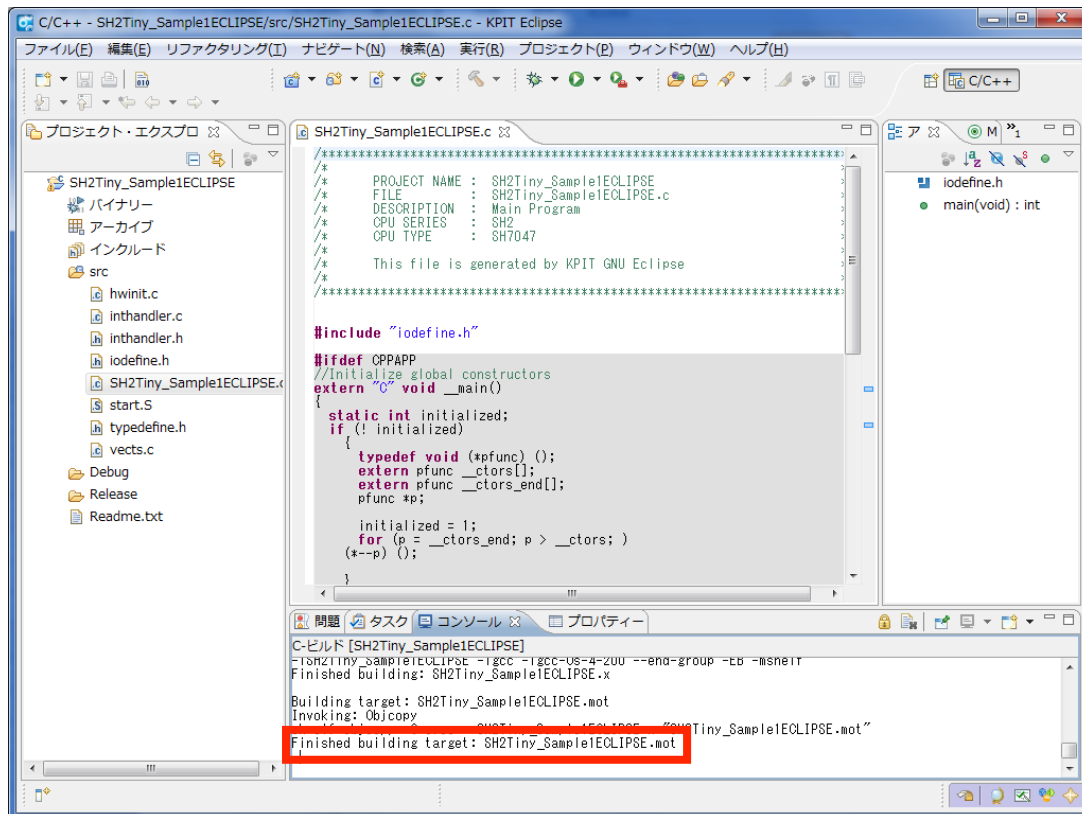
Press OK again from the Project Properties window where we returned after selecting the folder Release location. This will take us to the source code of the main file.

It is now possible to execute a build all process. Under “Project” from the menu bar, select “Build All”. The make file will be automatically generated.

No errors should be reported (if the source code was not modified after the importing of the project file) and we should have the following message in the console section in the bottom:

Finished building target: SH2Tiny\_Sample1ECLIPSE.mot

The corresponding file SH2Tiny\_Sample1ECLIPSE.mot is now located inside the folder Release of the project tree structure. **That is the file that we have to install inside the SH2 Tiny Controller.** The flashing/download operation is explained in details in the following section.





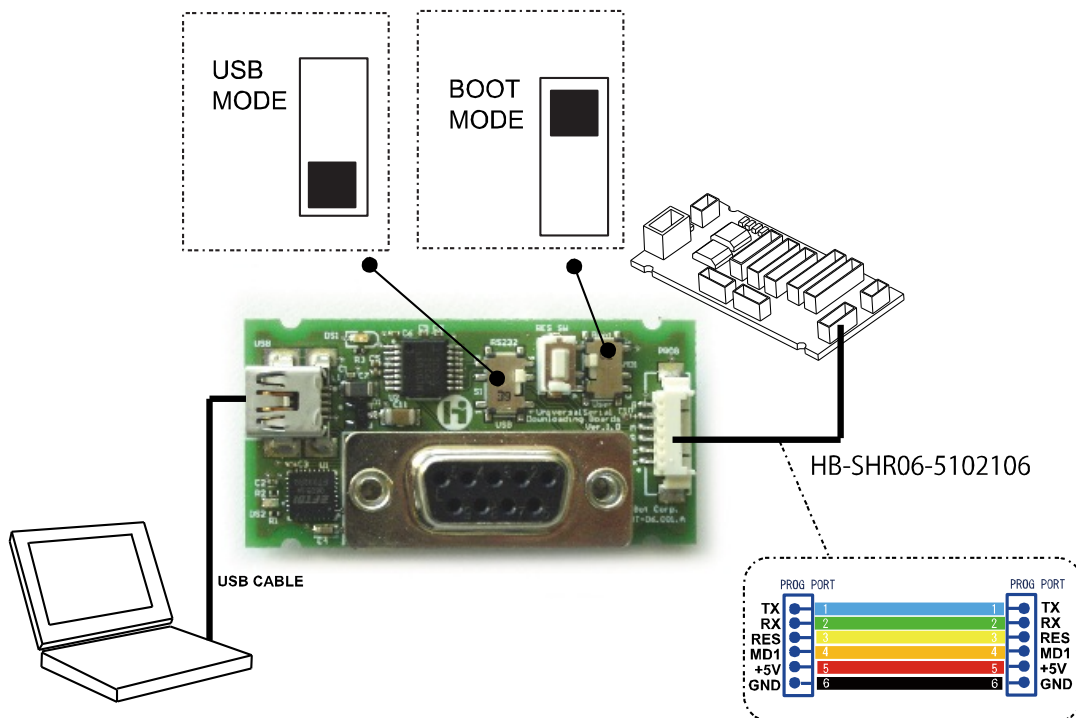
## Writing the program into the FLASH memory of theSH2Tiny Controller



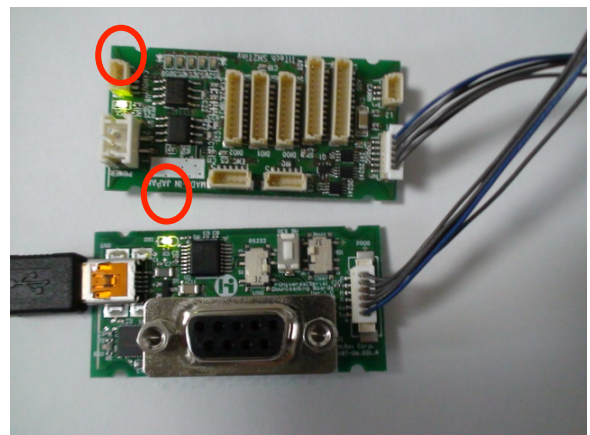
### Hint :

For the writing of the firmware (compiled .mot file) into the component please refer also to the user manual of the TitechSH2 Universal Serial Programmer board available online on HiBot Home page.

Set the USB mode and the Boot mode on the Universal Serial Programmer and press once the reset switch button SW.



Connect the PC with the mini USB of the serial programmer and the serial programmer with the SH2 component programming port (SH2 Tiny Controller in this case) through the supplied cable. TITechSH2 Tiny Controller DS1 and TITechSH2 Universal Serial Programmer DS1 should be lighten on GREEN.







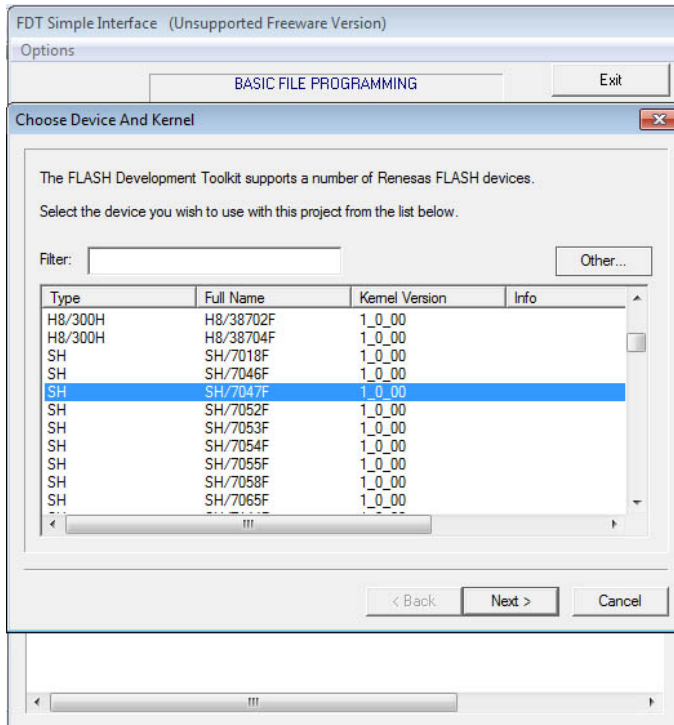
We will now write the firmware into the component using the Flash Development Toolkit that was installed before. From the Windows start menu select “Renesas” and then “Flash Development Toolkit 4.05” (or a later version if newer one was installed). Run the application “Flash Development Toolkit 4.0 Basic” or the latest version available.



**Hint :**

Please refer also to the FDT Users Guide for more details.

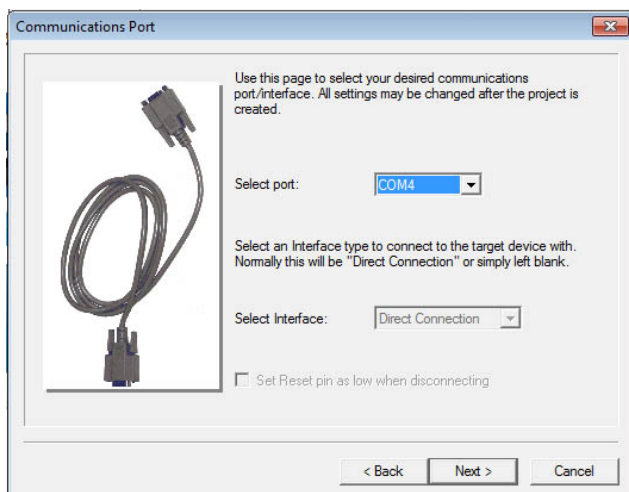
Also refer to the support blog page: <http://www.hibot.co.jp/support/support/?p=31>



If the application is run for the first time, user will be requested to set the configuration. Different configurations can be selected later again.

Select the chip SH7047F.

Press then NEXT



Select here the port number that was assigned to the USB device driver. Press NEXT

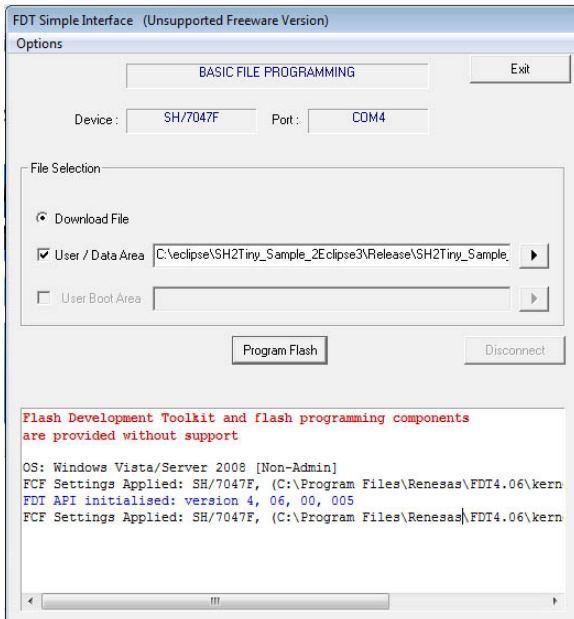


**Hint:**

If there was a mistake when setting the configuration of the FDT, it is possible to start over again the configuration by selecting “New Settings” under the menu Option of the FDT application



Select the option “Download File” for File Selection



In the User/Data Area we must select the file “SH2Tiny\_Sample1ECLIPSE.mot”. It can be located pressing the button with a small black arrow.

As explained above, it is located under the folder Release of the imported project.

After the right file is reported in the text field “User/Data Area”, make sure to press once again the button RESET (SW) on the Universal Serial Programmer and press “Start”. The file will be slowly downloaded on the SH2Tiny controller. Once the 100% is reached and no errors are reported, press DISCONNECT to make the FDT application ready for downloading again in case we are modifying and testing our program.

It is a good habit to confirm that the .mot file to be downloaded is the correct one. This can be carried out by confirming the date and time of compiling/generation to make sure we are really downloading new firmwares on the SH2Component.

With leaving the USB cable connected, set the Universal Serial Programming board in the User Mode (or running) and press once the reset button SW. After resetting the SH2Tiny will run the program.



LEDs should be ON or blinking according to the sample program installed.



## Creating a new project file with KPIT Eclipse

This section will take the user into the creation of a new project file with KPIT Eclipse for the SH2 components. Other information can be found on the support blog of hibot at the following link:

<http://www.hibot.co.jp/support/support/?p=3>

### **Setting the working area**

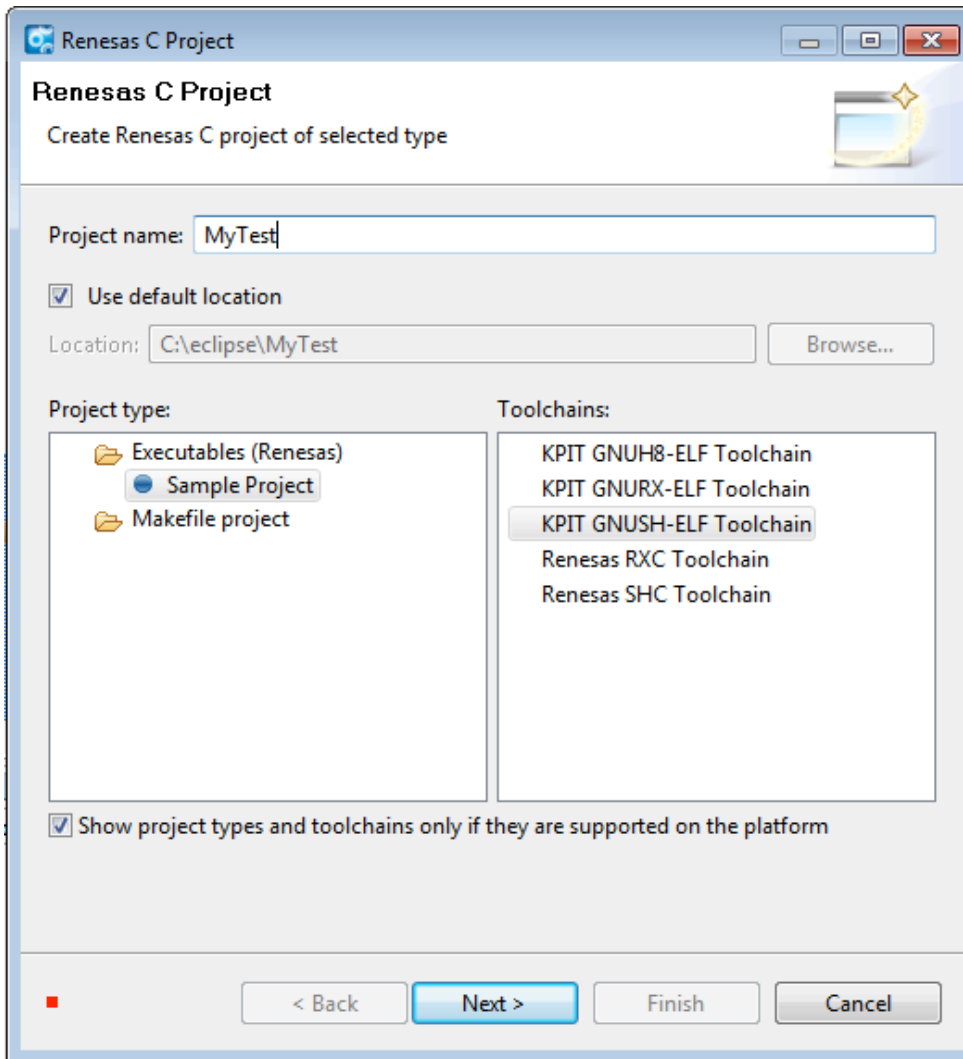
Close Eclipse if opened and start it over again. Select a new workspace or the same as before.

When the same workspace will be selected, in the project explorer will appear other projects of the same workspace. If they are not going to be utilized they can be temporary closed by selecting the option “close project” after a right click with the mouse on the project name.

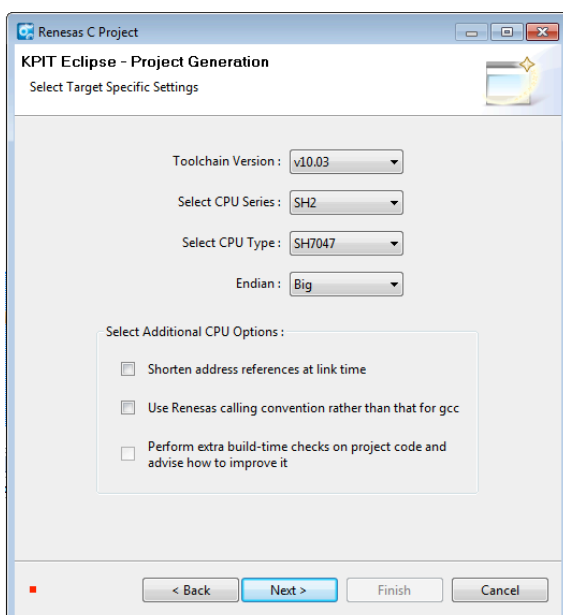
### **Making a project using the wizard option**

Makefile and a basic template including C and H source files will be automatically generated for the SH2 series components.

1. From the Menu File select “New” and then “C Project”



2. In the C Project dialogue select a name for the project and then select the type of Toolchains. In this case KPIT GNUSH-ELF Toolchain. Then press Next.



### 3. CPU Selection

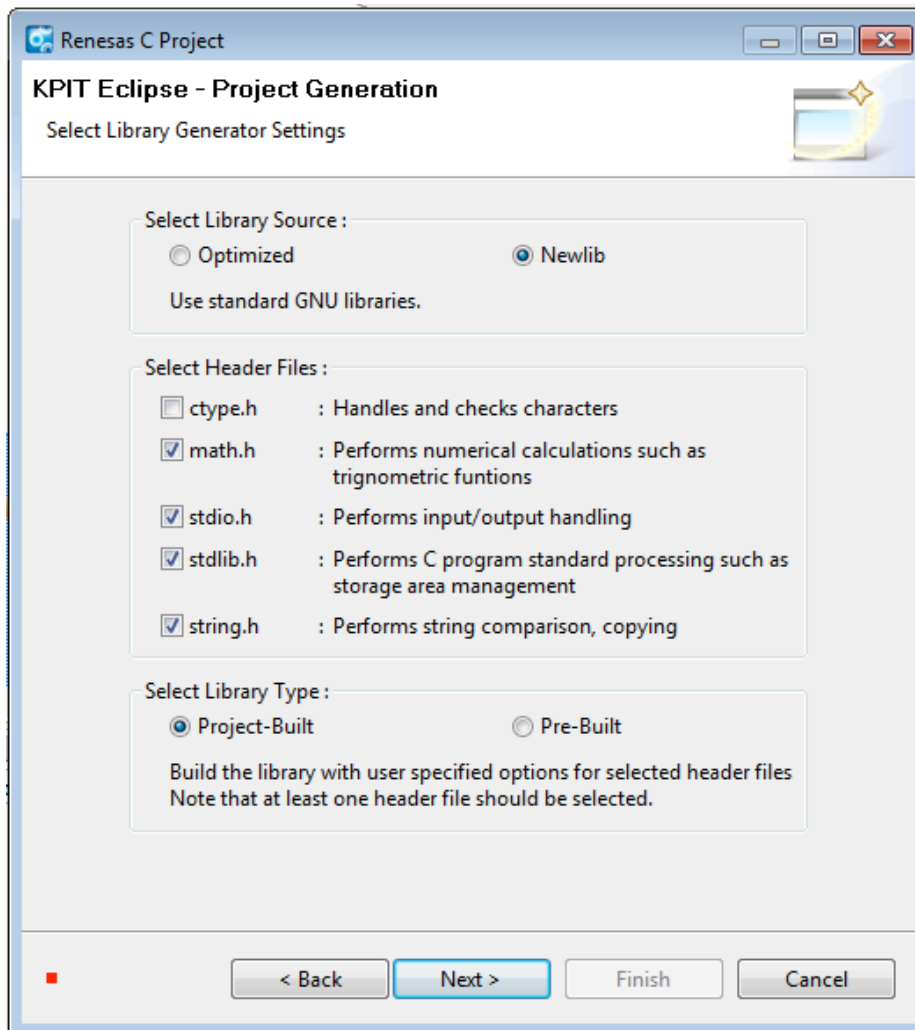
Select the following options:

- CPU Series: SH2
- CPU Type: SH7047

Press Next without modifying the default options



#### 4. Library settings



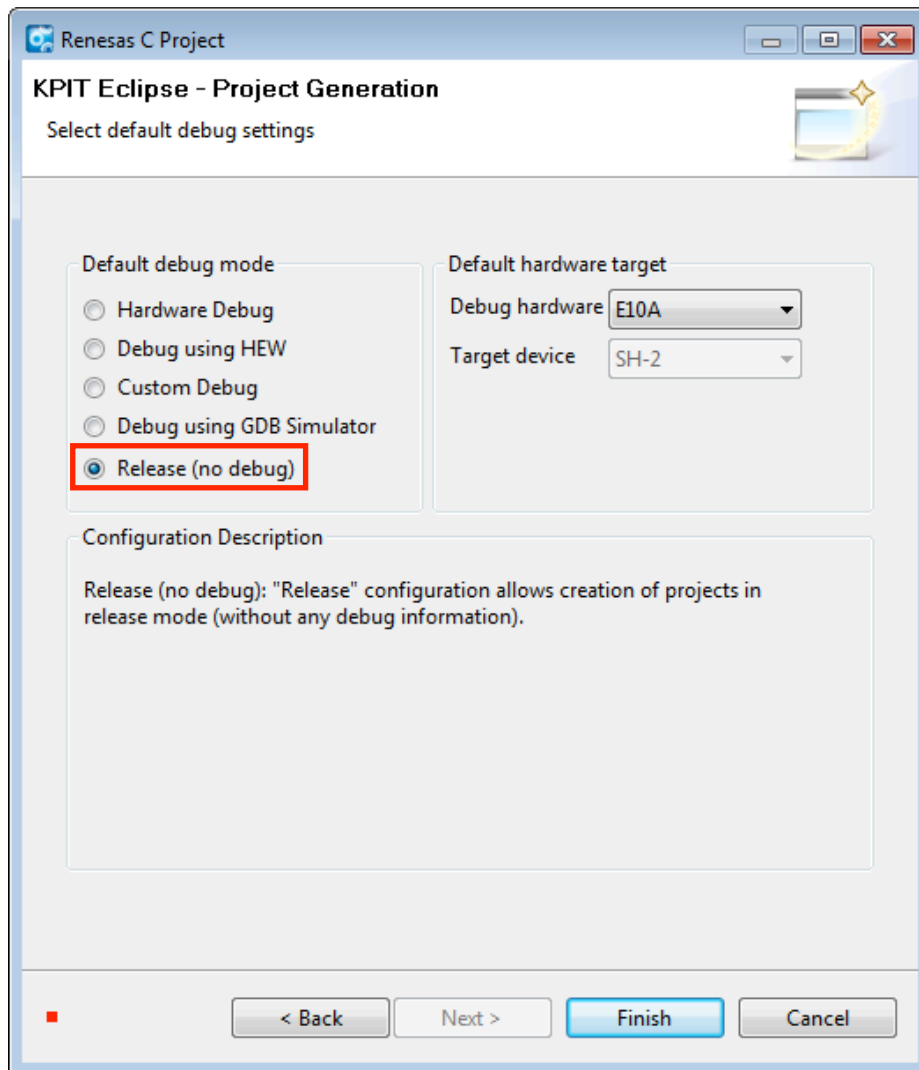
Select the option “NewLib”

A different selection will be done in this example with respect to the Eclipse Wizard. Please follow the same options:

Library Source	newlib
ctype.h	Check
math.h	Remove the check. If it is not going to be utilized (as in this case) it will make the compiling process faster. It can be included later on.
stdio.h	Check
stdlib.h	Check
string.h	Check
Library Type	Project-Built



## 5.Debug settings



As explained above, the HiBot SH2Tiny Controller does not include onboard a debug port so we will select the Release only option. Press Finish and OK in the following dialogue.

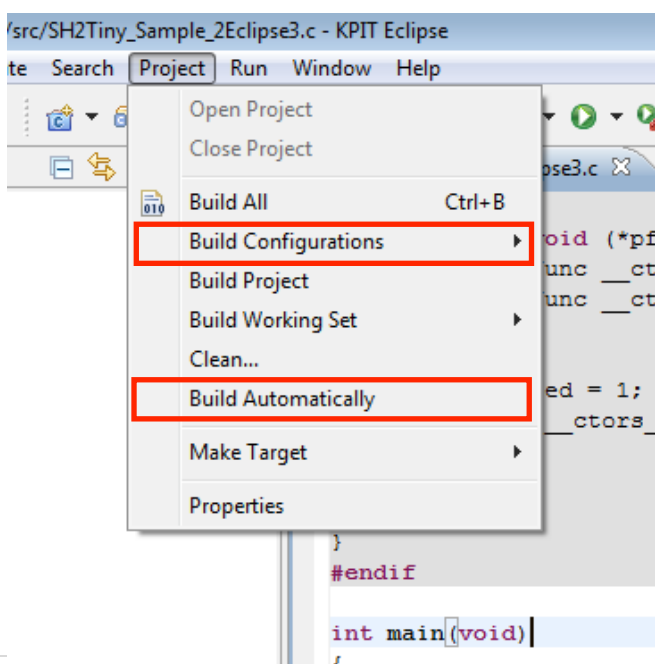


## Automatic generation of the files

The following list of files will be automatically generated by the Eclipse Wizard. (Note name of the files may change with different updated versions of Eclipse).

start.asm	BOOT code	This is the code that is run at the beginning when resetting the CPU. No modification are needed.
MyTest.c	Main program	Is the main file of the project
hardware_setup.c	Hardware initialization	It is run from the start.s program at the boot. The CPU will initialize all the hardware and peripherals according to the register definitions written in this file.
iodefine.h	CPU I/O register file definition	All registers of the SH7047F are defined within this file in the form of structures and unions. User should not be needing any modification for this file. <b>For some HiBot sample codes, a few modifications were added, please confirm that when using the sample codes.</b>
typedefine.h	Data type definitions	
intrinsics.h	Special CPU definitions	
vects.c	Interrupt table definition	Main handlers are automatically defined. Functions are however empty. When using them, user will be requested to write the specific interrupt handler functions according to his needs and to the user hardware manual of the SH7047 b y Renesas.
Interrupt_handlers.c	Interrupt function definition	
Interrupt_handlers.h	Interrupt function reference	

## Project settings



Confirm at first that the automatic build generation is not selected by checking the command under the menu option “Project”

Set active the release configuration: Project-> Build Configuration -> Set Active -> Release

We are now ready to write our own program.

Please refer to the following URL for an example of a basic example controlling the LEDs

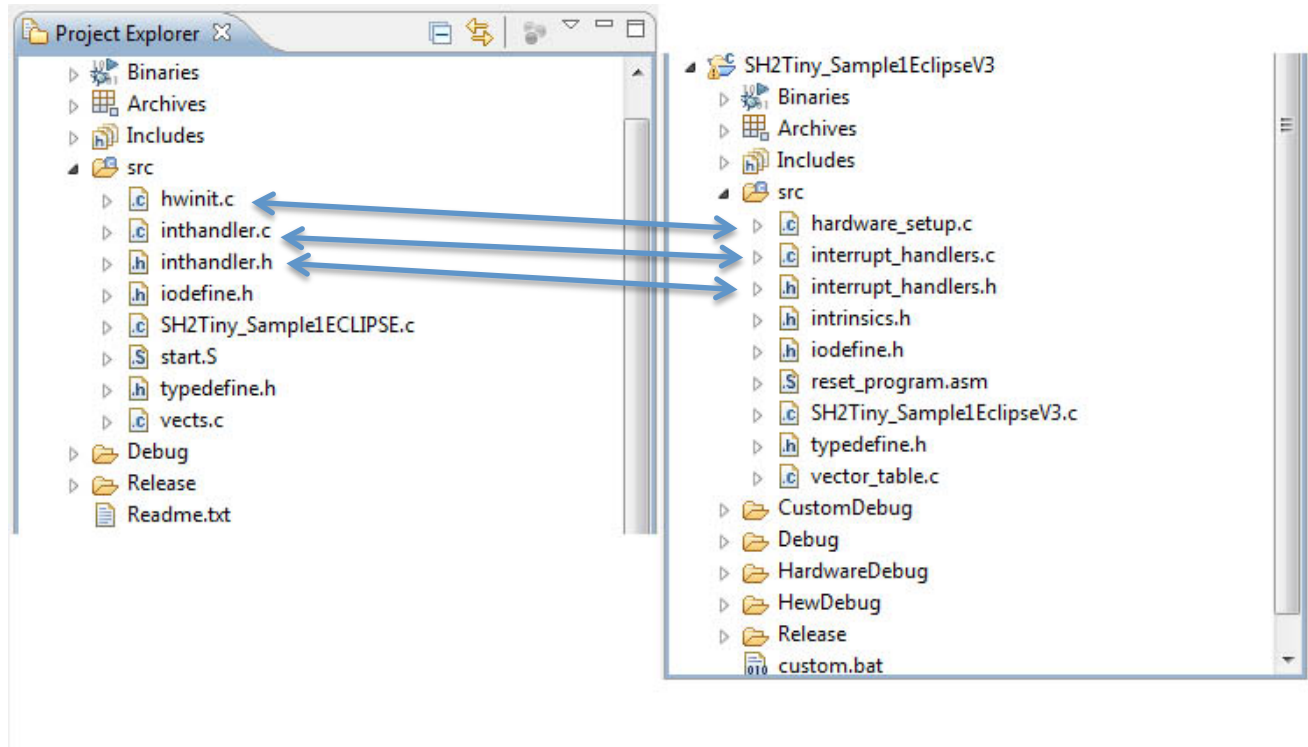
<http://www.hibot.co.jp/support/support/?p=77>





## Migrating from Eclipse IDE 2.x to IDE 3.0

With the new version of GNU KPIT Eclipse IDE 3.0, the import of old sample files is no longer working. The bug is due to the missing reference to the new toolchains, however also the project file names with the new version was changed as shown in the following figure:



All sample codes will be soon ported on Eclipse IDE 3.0 however user can copy and paste the contents of the old files (in particular hwinit.c inthandler.c and inthandler.h) into the new files (in particular hardware\_setup.c interrupt\_handler.c and interrupt\_handler.h) being careful on the functions names that in some cases also changed.



Last revision: January 27<sup>th</sup> 2011

株式会社ハイボット

〒153-0064

東京都目黒区下目黒 2-18-3

目黒第一花谷ビル 801 号

**HiBot Corporation**

Meguro Daiichi Hanatani Bldg. 801

Shimomeguro 2-18-3, Meguro-ku

Tokyo, 153-0064 JAPAN

TEL 03-6420-0445

FAX 03-6420-0446

<http://www.hibot.co.jp>