R-IN32M3-CL

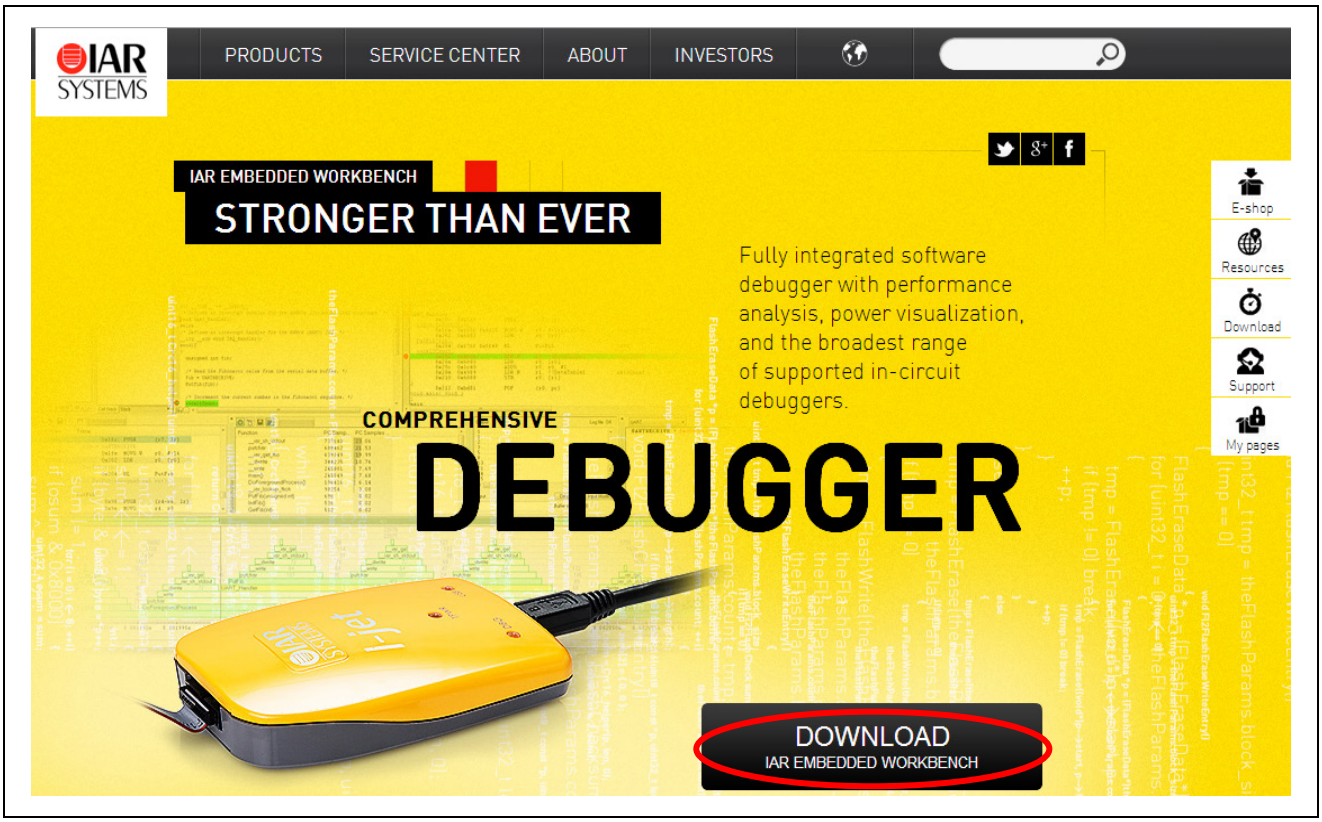
Industry Ethernet Communication LSI

R18UZ0024EJ0201
Rev.2.01
Apr 19, 2019

1. How to obtain and install the IAR software and license

1.1 Download the IAR Embedded Workbench software

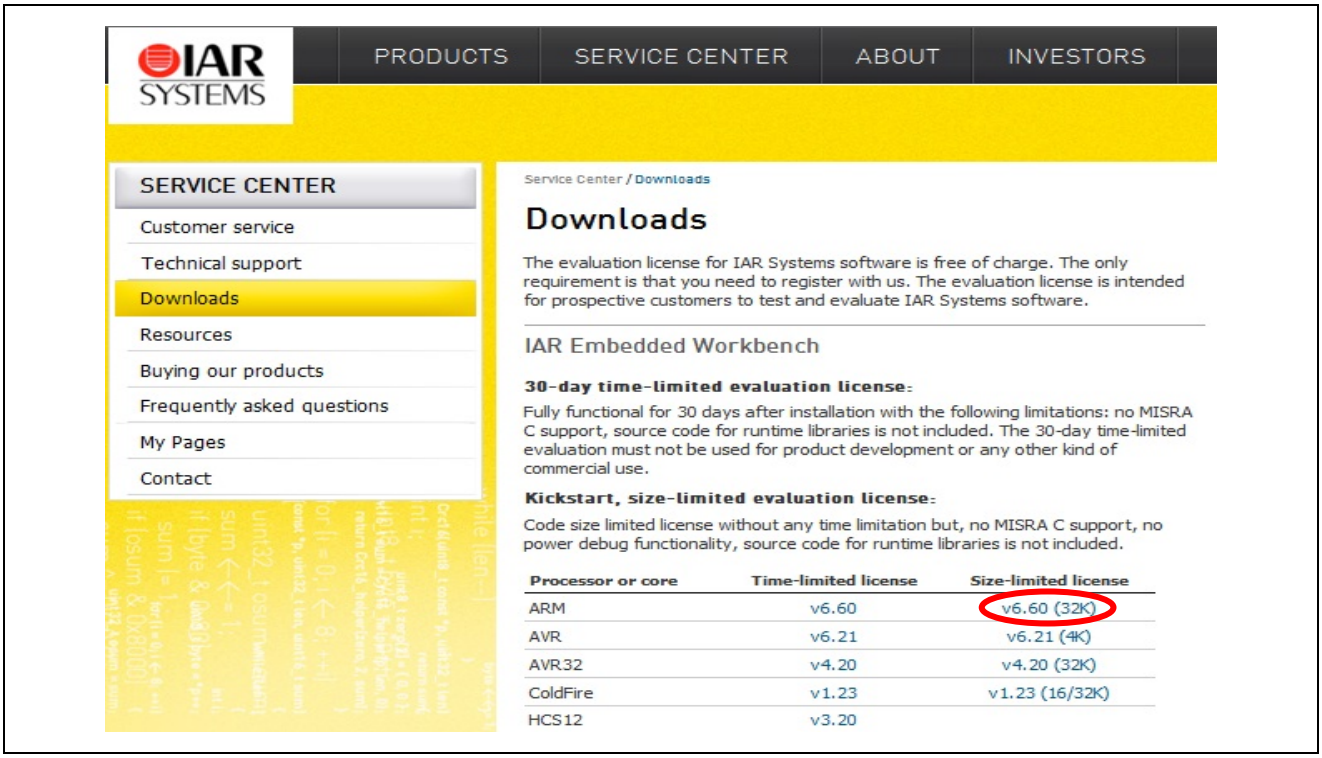
Download IAR Embedded Workbench software from http://www.iar.com.



Important notes:

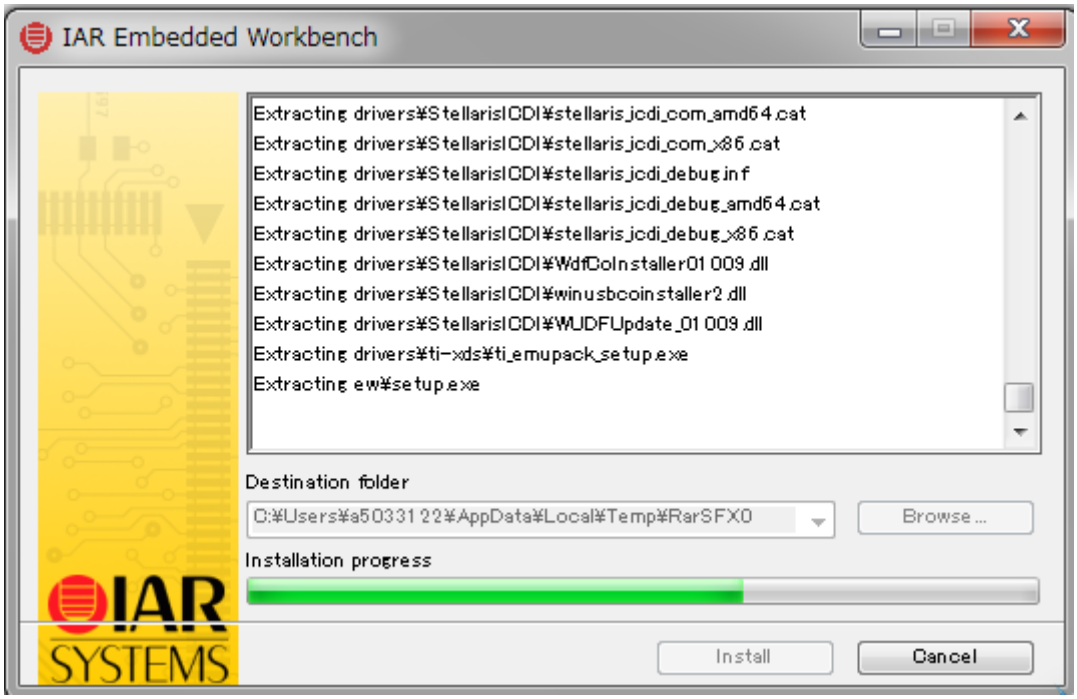
To use the R-IN32 sample code you must install IAR Embedded Workbench version 6.60 or higher.

If you want to use one of the SEGGER J-Link debuggers (J-Link Plus or J-Link Lite CortexM-19 as shown in chapter 3) you must install the IAR Embedded Workbench version 6.70 or higher. This will include the J-Link driver software required for R-IN32M3 flash support.


IAR SYSTEMS
PRODUCTS
SERVICE CENTER
ABOUT
INVESTORS
SERVICE CENTER
Customer service
Technical support
Downloads
Resources
Buying our products
Frequently asked questions
My Pages
Contact
Service Center / Downloads
Downloads
The evaluation license for IAR Systems software is free of charge. The only requirement is that you need to register with us. The evaluation license is intended for prospective customers to test and evaluate IAR Systems software.
IAR Embedded Workbench
30-day time-limited evaluation license:
Fully functional for 30 days after installation with the following limitations: no MISRA C support, source code for runtime libraries is not included. The 30-day time-limited evaluation must not be used for product development or any other kind of commercial use.
Kickstart, size-limited evaluation license:
Code size limited license without any time limitation but, no MISRA C support, no power debug functionality, source code for runtime libraries is not included.
Processor or core | Time-limited license | Size-limited license
ARM | v6.60 | v6.60 (32K)
AVR | v6.21 | v6.21 (4K)
AVR32 | v4.20 | v4.20 (32K)
ColdFire | v1.23 | v1.23 (16/32K)
HCS12 | v3.20

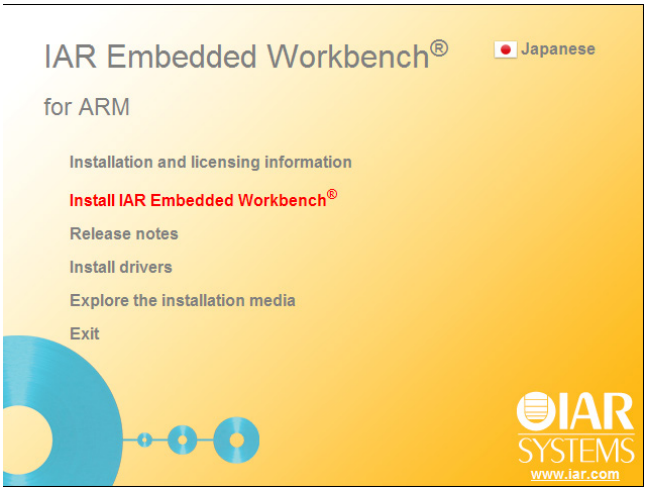
1.2 Install IAR Embedded Workbench

(1) Double click the downloaded file, the following window will appear as the software is uncompressed.



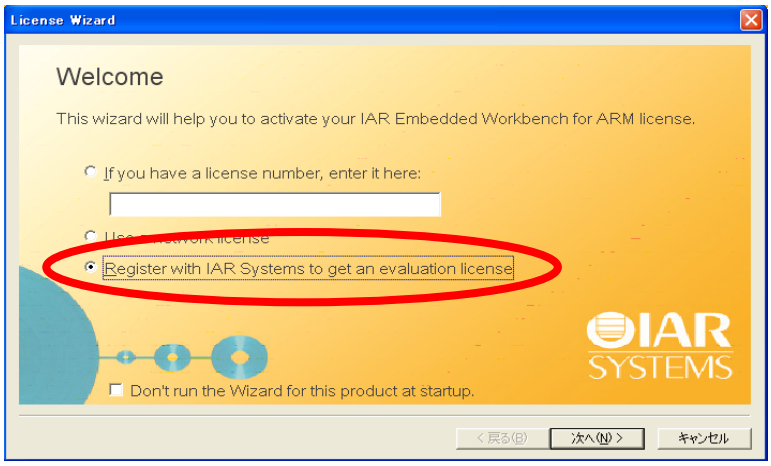
The window shown above will be opened automatically and the necessary files will be uncompressed to a temporary folder under the C:\Users directory. After uncompressing, the window shown below will open automatically.

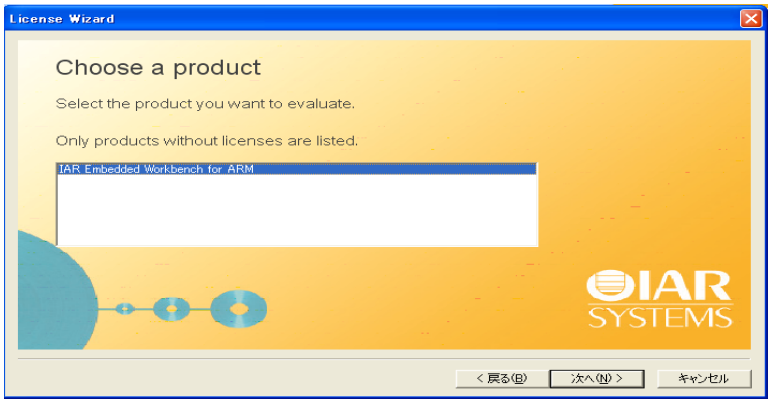
(2) Click [Install IAR Embedded Workbench®].

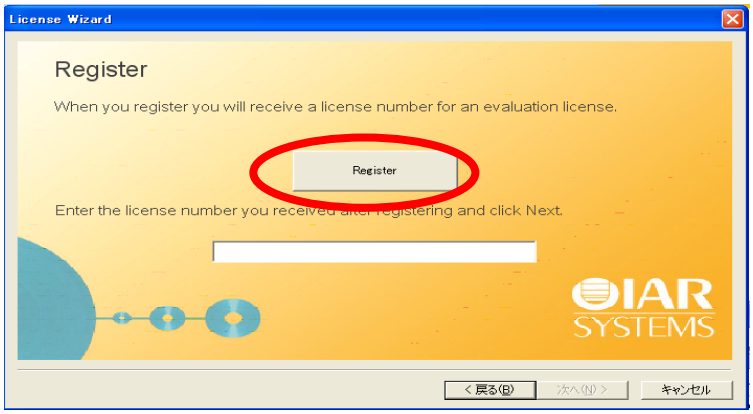


(3) Obtain an evaluation license

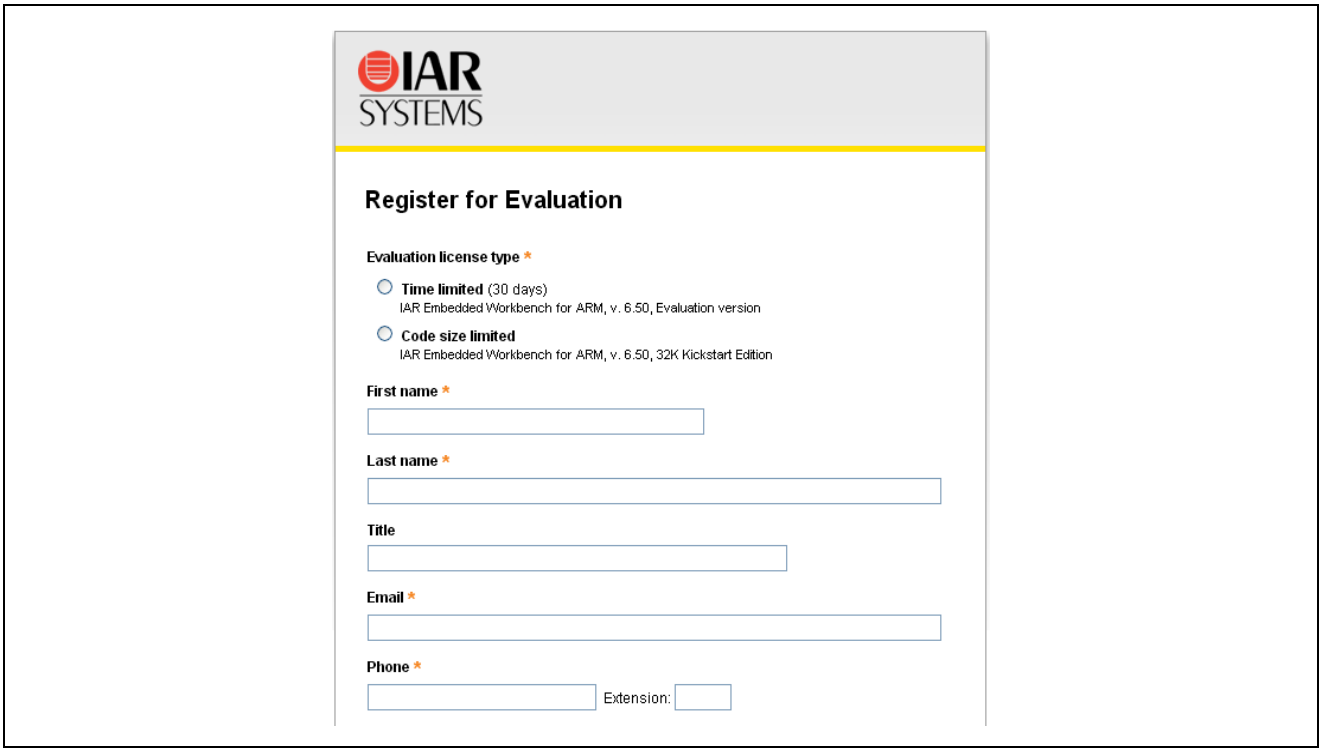
Note: There are two types of evaluation licenses from IAR: Time limited (30 days) and Code size limited. It is possible to use the 32KB code size-limited evaluation license for an operation check of R-IN32 sample code. Since some sample code such as TCP / IP stack exceeds 32 KB size, operation check can not be performed.



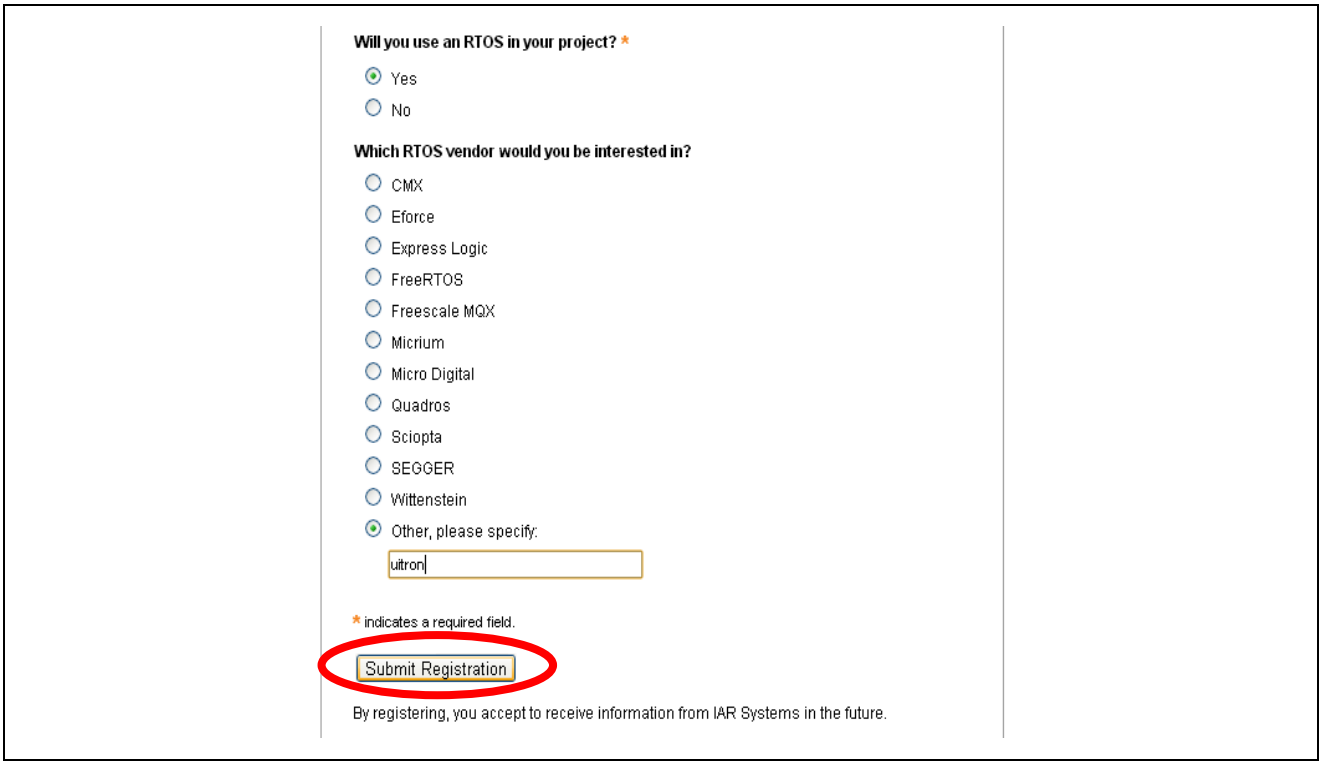




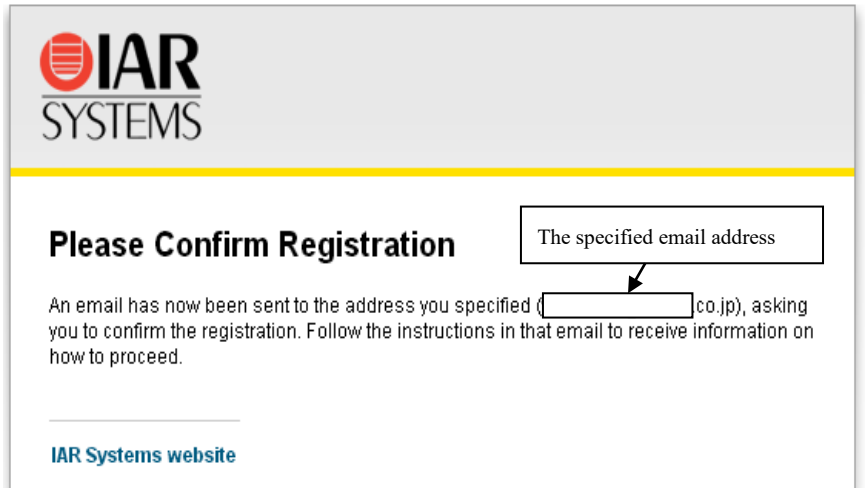
(4) IAR will email license information to the email address entered into the form above. Generally both license types (time limited and code size limited) will work for R-IN32M3 sample software (<32KB code memory size). Please refer to the IAR website for more details on the evaluation license limitations.



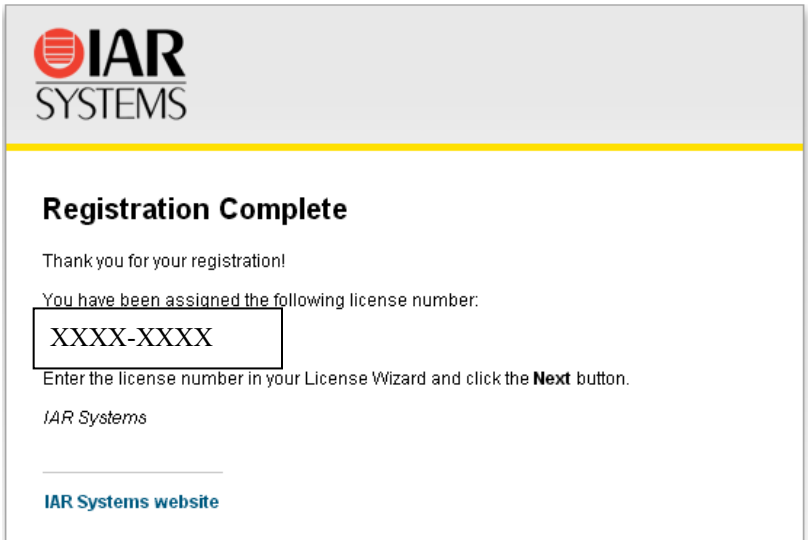
Please click [Submit Registration] after entering data into the required fields.



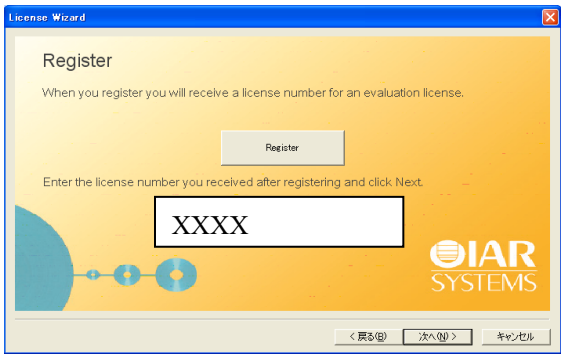
(5) A link of the form https://register.iar.com/confirm?key=XXXX will be sent to your email address; please click this link to confirm registration and obtain your evaluation license key.



The 14-digit license key will be shown as below. This license key is bound to the PC you used for the registration, so different licenses are required for different PCs.



(6) After the above procedure, installation and registration of IAR Embedded Workbench is complete.



2. Setting and Connection for R-IN32M3-CL

Please connect the board with cables as shown below.

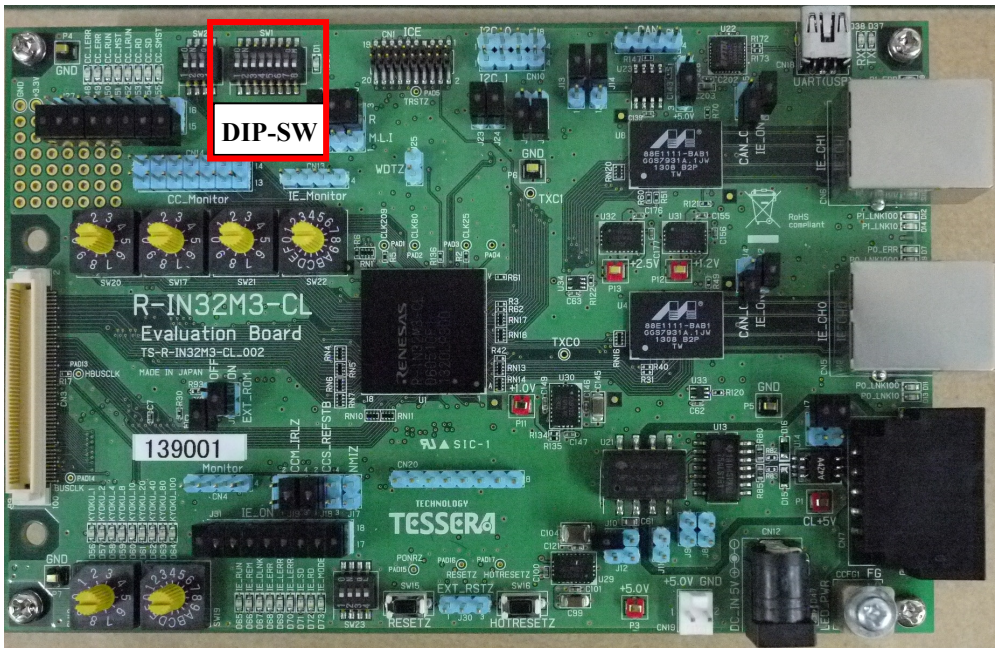
Please refer to board specification for the detail. (http://www.tessera.co.jp/eng/ts-r-in32m3-e.html)

2.1 Boot mode setting for R-IN32M3-CL

R-IN32M3 have two external terminal named BOOT0 and BOOT1. Boot mode is selected depend on status of these terminal. Regarding R-IN32M3-CL board, Boot mode is selected by DIP-SW (SW1).

Table 2.1 Boot mode selection

DIP-SW（SW1）		Boot mode selection
1	2	
ON(High)	ON(High)	Instruction RAM boot (test)
ON(High)	OFF(Low)	External MPU boot
OFF(Low)	ON(High)	External serial flash ROM boot
OFF(Low)	OFF(Low)	External parallel flash ROM boot



Instruction RAM boot

In the case of using I-jet debugger and executing on Instruction RAM of R-IN32M3, set MODE SW as below.

MODE SW (SW1 [1:8]): |**ON** |**ON** |OFF|OFF|OFF|OFF|OFF|OFF|

External parallel flash ROM boot

In the case of using I-jet debugger and executing on External parallel flash ROM of R-IN32M3, set MODE SW as below.

Furthermore, In the case of writing to Parallel FlashROM, use same setting.

MODE SW (SW1 [1:8]): |**OFF** |**OFF** |OFF|OFF|OFF|OFF|OFF|OFF|

External serial flash ROM boot

In the case of using I-jet debugger and executing on External serial flash ROM of R-IN32M3, set MODE SW as below.

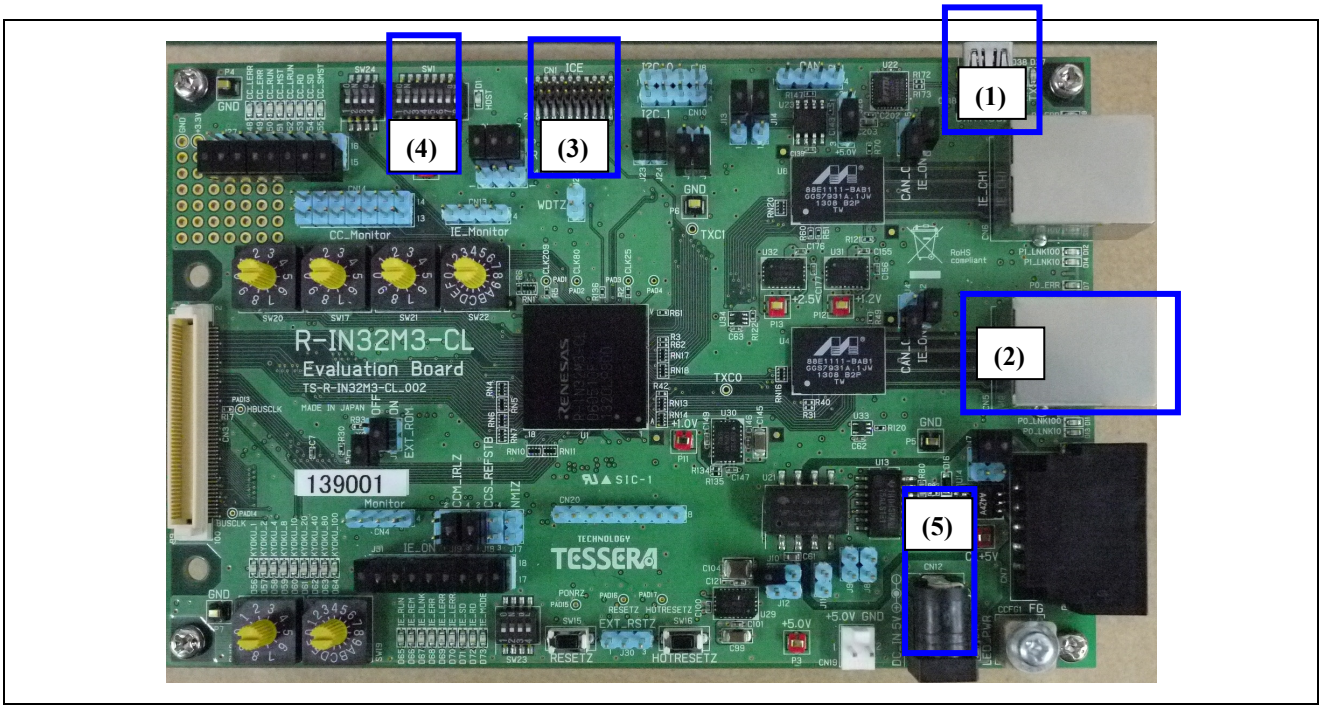
Furthermore, In the case of writing to Serial FlashROM, use same setting.

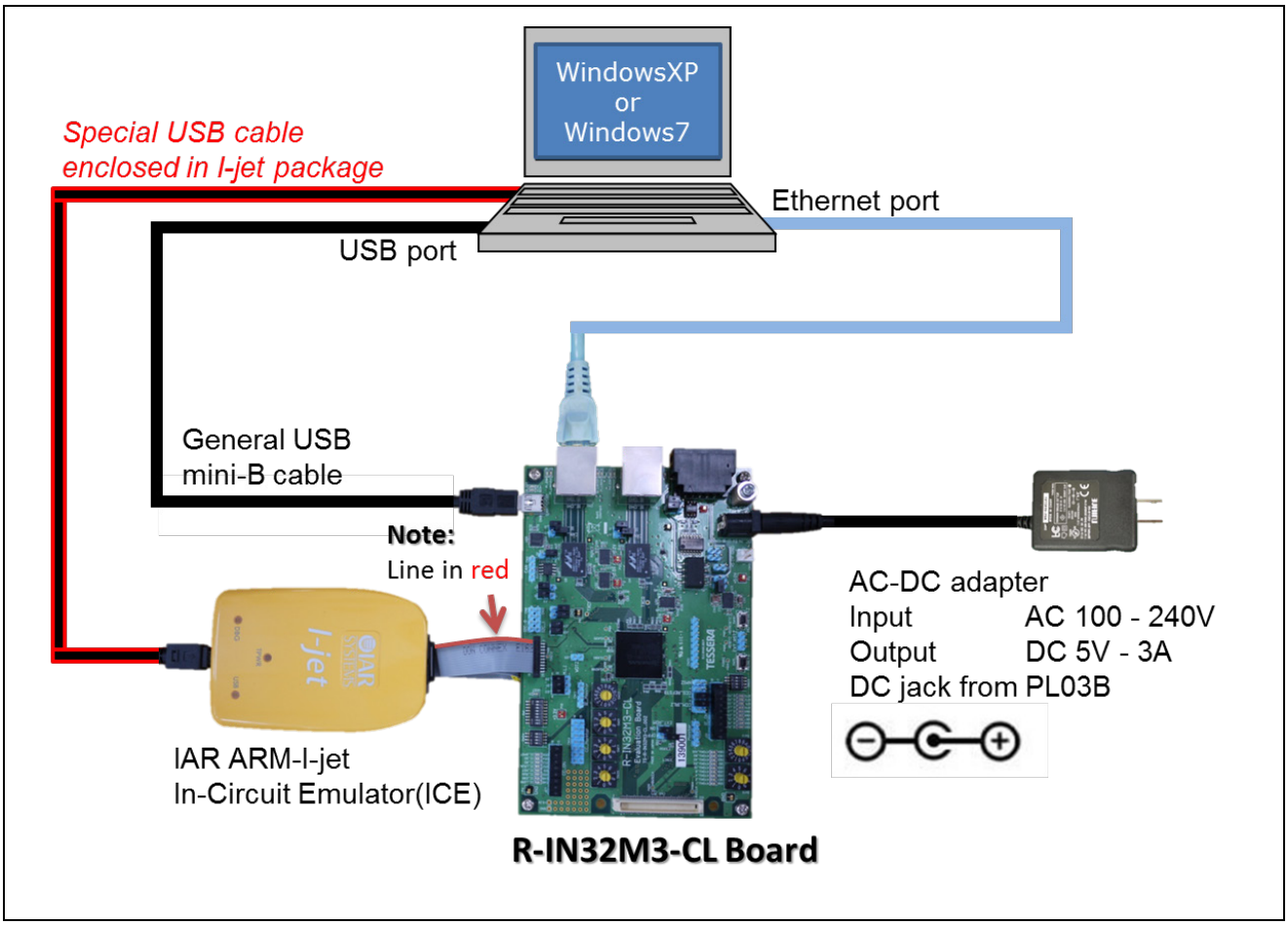
MODE SW (SW1 [1:8]): |**OFF** |**ON** |OFF|OFF|OFF|OFF|OFF|OFF|

2.2 Boot Procedure for R-IN32M3-CL board

Please connect the board with cables as shown below.
Please refer to board specification for the detail. (http://www.tessera.co.jp/eng/ts-r-in32m3-e.html)

(1) Please connect the USB connector of PC with the enclosed USB (mini-B) cable.
(2) Connect Port 0 on the right side of the picture below with Ethernet cable (recommend category 5).
(3) Please connect the 20-pin half-pitch connector included with the IAR to the header (3). The No. 1 terminal of the cable is red on the left side.
Please connect debugger and the USB port of PC with the specified USB cable enclosed with debugger I-jet.
(4) Please select the MODE_SW.
(5) Please connect D to C adaptor of 5V/3A.



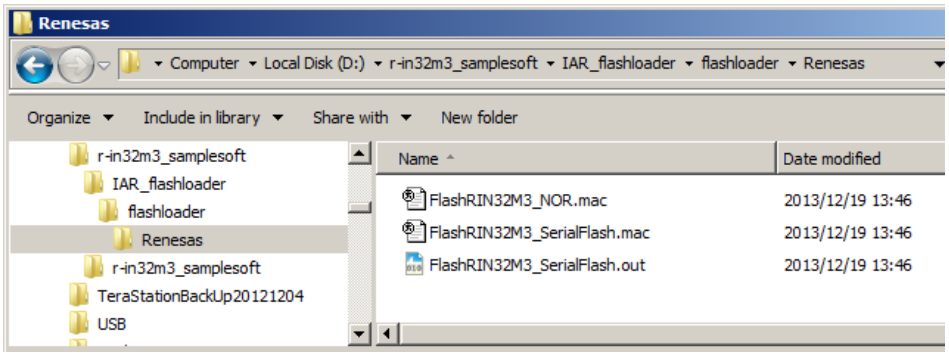

WindowsXP
or
Windows7
Special USB cable
enclosed in I-jet package
Ethernet port
USB port
General USB
mini-B cable
Note:
Line in red
AC-DC adapter
Input AC 100 - 240V
Output DC 5V - 3A
DC jack from PL03B
IAR ARM-I-jet
In-Circuit Emulator(ICE)
R-IN32M3-CL Board

2.3 Updates of the Flash loader program of IAR Embedded Workbench

If writing to the FlashROM of the R-IN32M3-CL board fail, copy the file under the sample program (\IAR_flashloader\flashloader\Renesas) to the following folder installed on the PC.

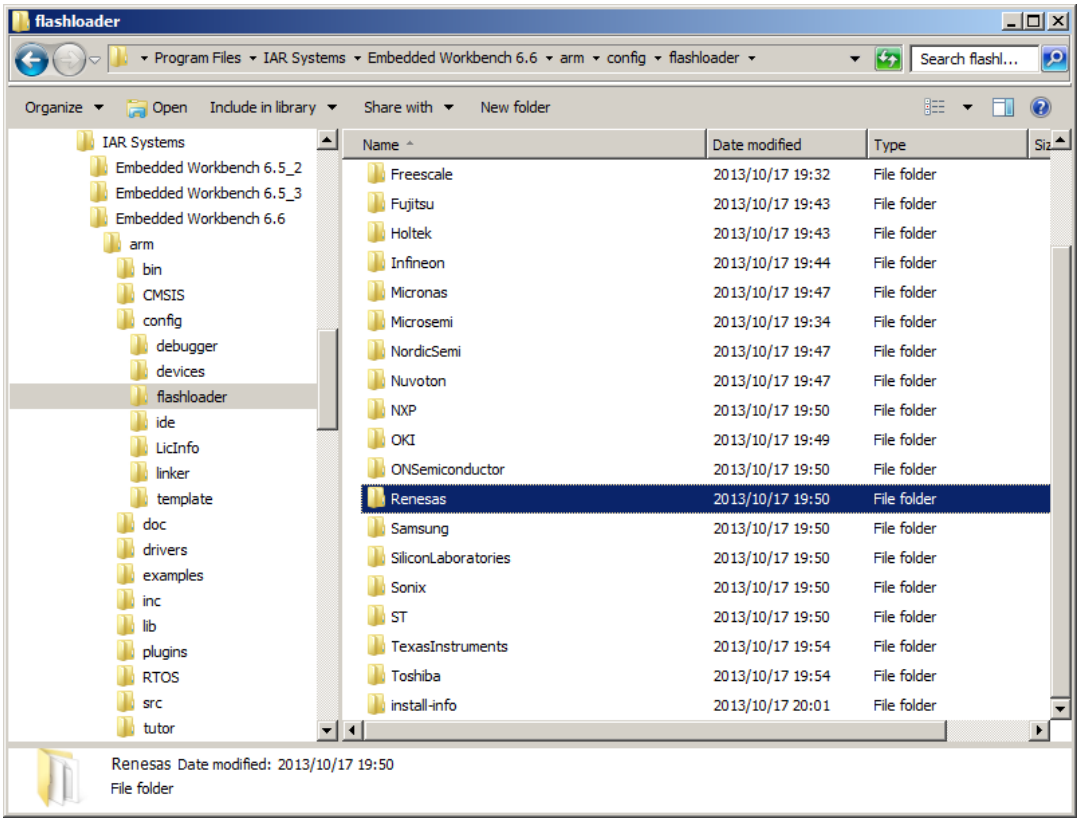
- Copy source

\IAR_flashloader\flashloader\Renesas



- Destination Folder

C:\Program Files\IAR Systems\Embedded Workbench xxx\arm\config\flashloader



3. Installation of USB Serial Conversion Driver

3.1 Obtain the driver

In the case of connecting PC with the USB cable enclosed with R-IN32M3-EC board, the FT232R USB UART driver may be requested.
(Note: If the OS of PC is Win7, there is no need to install driver. In fact, the driver can be installed automatically in Win7.)

Please install the driver after obtaining it from the address below.
http://www.ftdichip.com/Drivers/VCP.htm

FTDI drivers may be distributed in any form as long as license information is not modified.
If a custom vendor ID and/or product ID or description string are used, it is the responsibility of the product manufacturer to maintain any changes and subsequent WHQL re-certification as a result of making these changes.

Currently Supported VCP Drivers:

		Processor Architecture							
Operating System	Release Date	x86 (32-bit)	x64 (64-bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows 8.1	2013-10-21	2.08.30 8.1	2.08.30 8.1	-	-	-	-	-	2.08.30 WHQL Certified for Win 8.1 Available as setup executable Release Notes
Windows*	2013-08-01	2.08.30	2.08.30	-	-	-	-	-	2.08.30 WHQL Certified Available as setup executable Release Notes
Linux	2009-05-14	1.5.0	1.5.0	-	-	-	-	-	All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19 Refer to TN-101 if you need a custom VCP VID/PID in Linux
Mac OS X	2012-08-10	2.2.18	2.2.18	2.2.18	-	-	-	-	Refer to TN-105 if you need a custom VCP VID/PID in MAC OS
Windows CE 4.2-5.2**	2012-01-06	1.1.0.10	-	-	1.1.0.14	1.1.0.10	1.1.0.10	1.1.0.10	
Windows CE 6.0	2012-01-06	1.1.0.10	-	-	1.1.0.14	1.1.0.10	1.1.0.10	1.1.0.10	

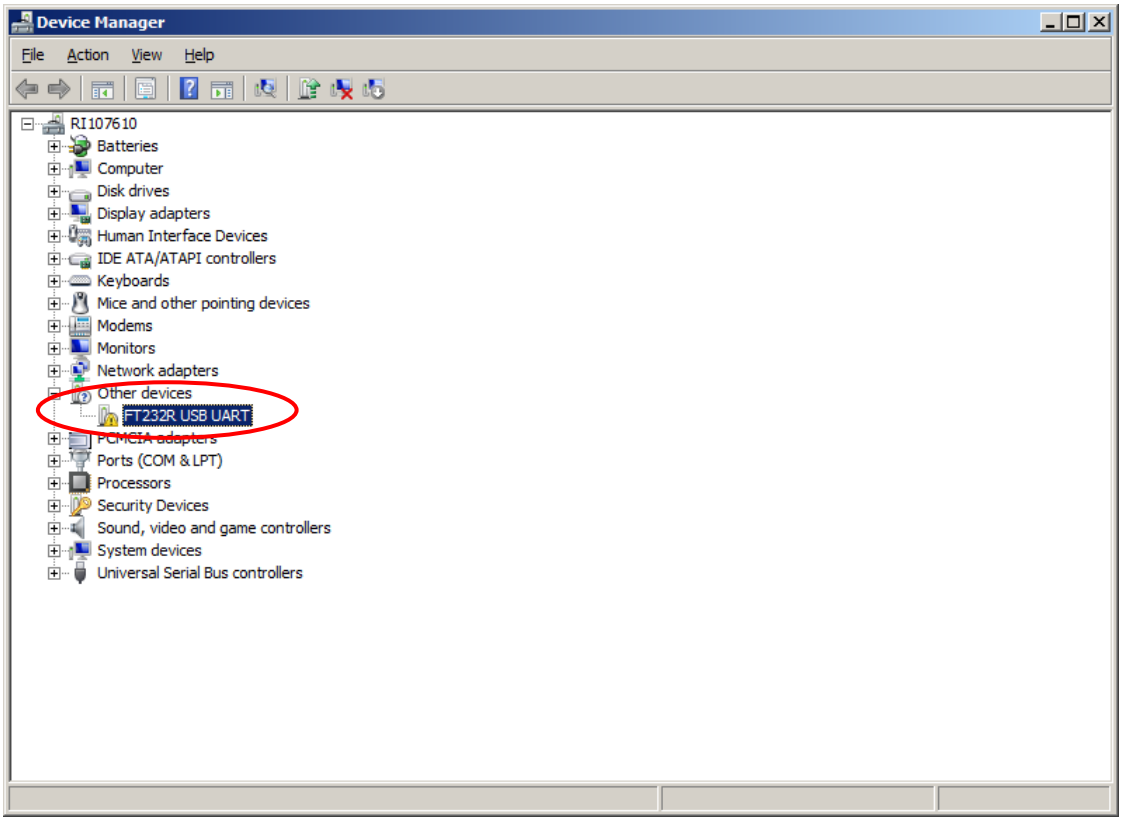
*includes the following versions of the Windows operating system: Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7, Windows Server 2008 R2 and Windows 8.

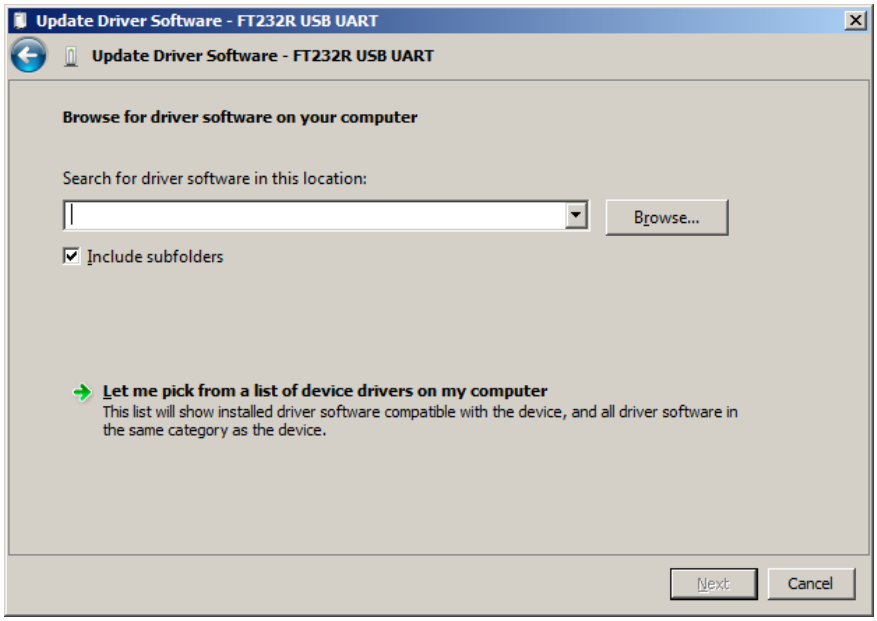
*Also, as Windows 8 RT is a closed system not allowing for 3rd party driver installation our Windows 8 driver will not support this variant of the OS.

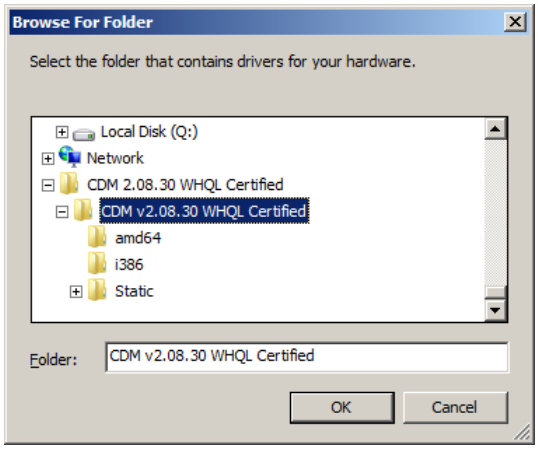
Download the file named “CDM 2.08.30 WHQL Certified.zip”.

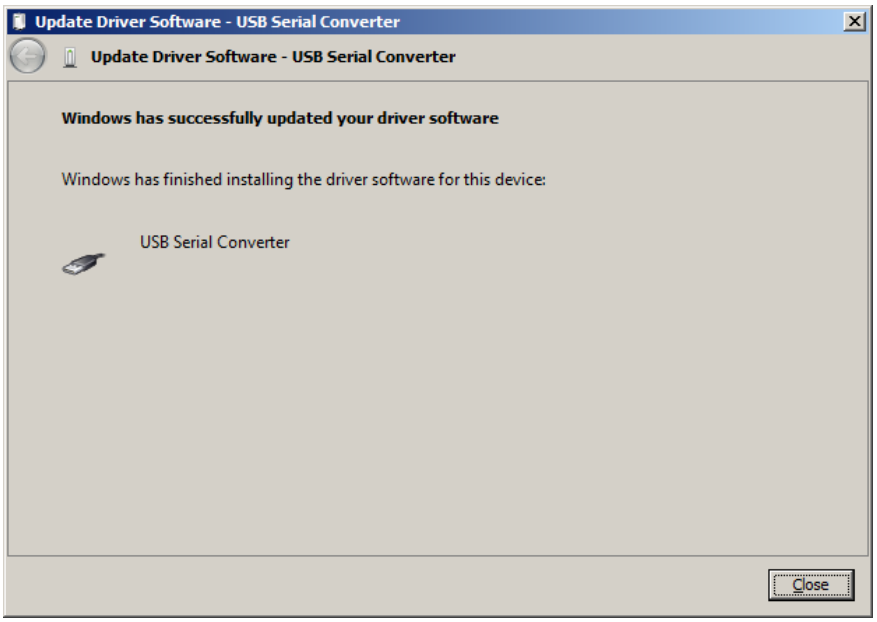
3.2 Install FT232R USB UART Driver

After uncompressing the file into local folder, select[It installs from a list or a specific place (recommendation).] and click[Next(N) >]. Please choose folder [CDM 2.08.30 WHQL Certified] and click [OK].





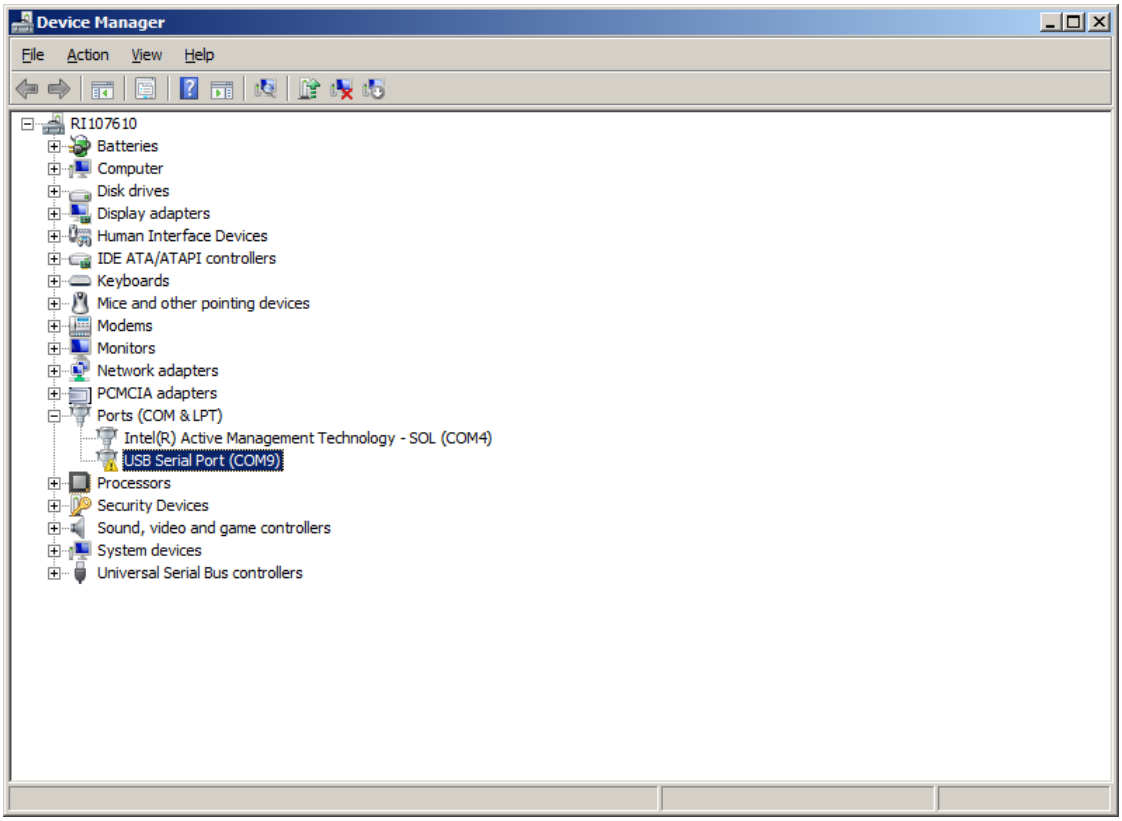

Browse For Folder
Select the folder that contains drivers for your hardware.
Local Disk (Q:)
Network
CDM 2.08.30 WHQL Certified
CDM v2.08.30 WHQL Certified
amd64
i386
Static
Folder:
CDM v2.08.30 WHQL Certified
OK
Cancel

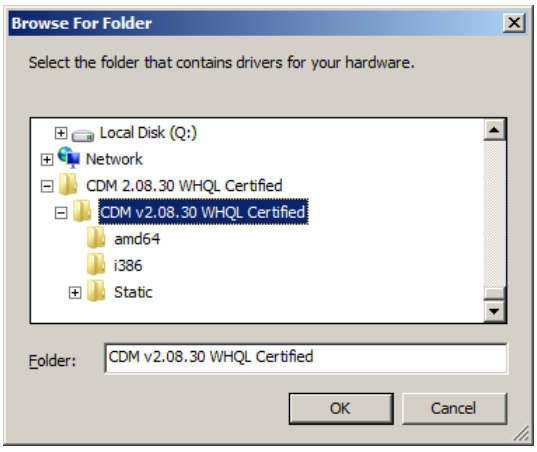

Update Driver Software - USB Serial Converter
Update Driver Software - USB Serial Converter
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
USB Serial Converter
Close

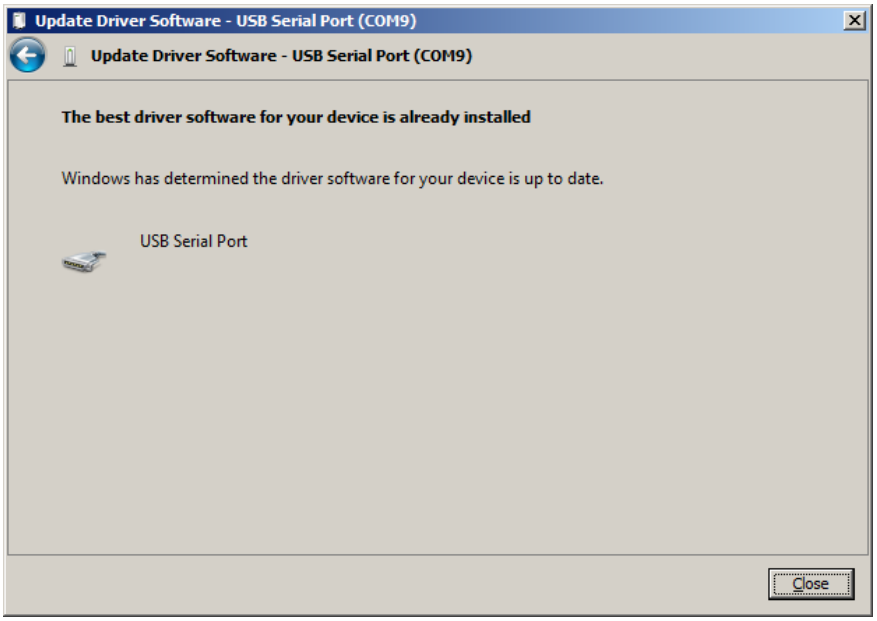
Click [Close]

3.3 Install USB Serial Port Driver

Install USB Serial Port driver. After uncompressing the file into local folder, select [It installs from a list or a specific place (recommendation).] and click [Next(N) >]. Please choose folder [CDM 2.08.30 WHQL Certified] and click [OK].



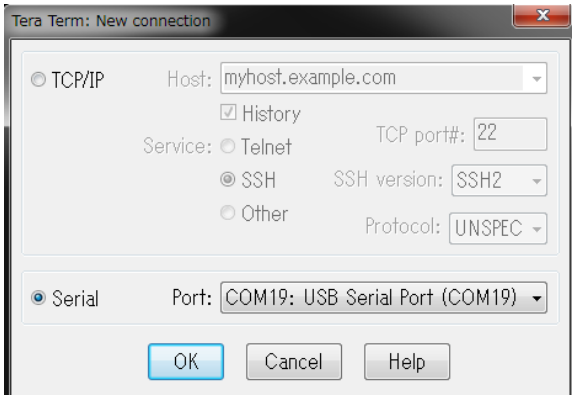



Update Driver Software - USB Serial Port (COM9)
Update Driver Software - USB Serial Port (COM9)
The best driver software for your device is already installed
Windows has determined the driver software for your device is up to date.
USB Serial Port
Close

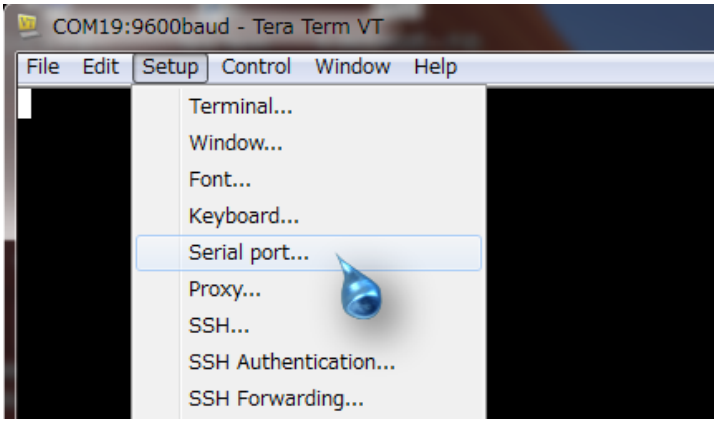
Click [Close]

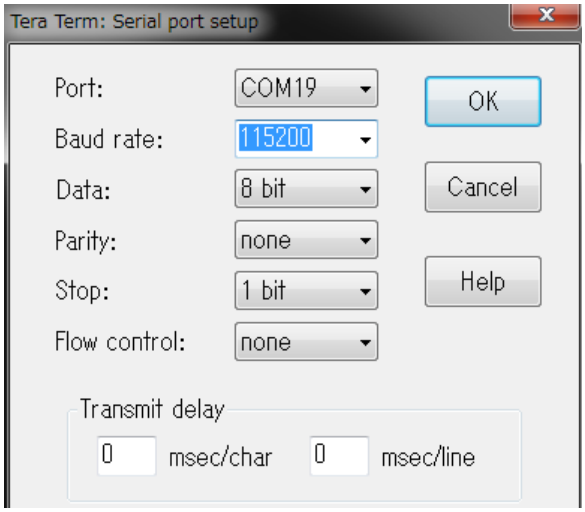
4. UART Setting

Install serial terminal software (such as TeraTerm) on your PC and set it up as shown below:

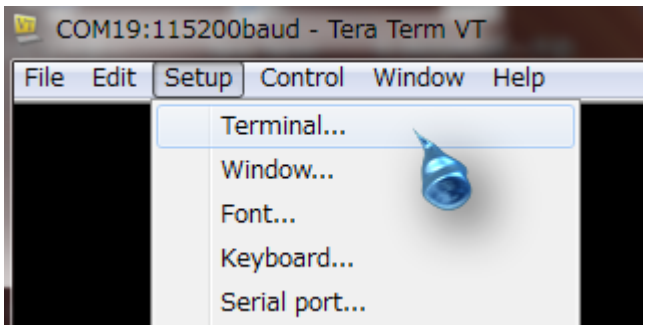


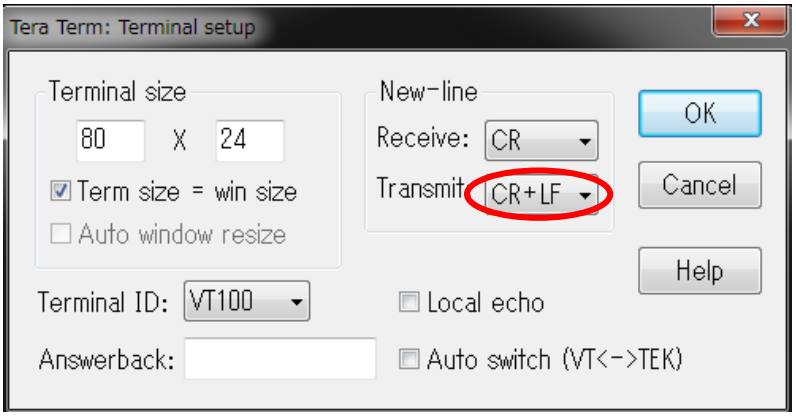
Please set the port according to your PC configuration.





Set the baud rate to 115200, data to 8-bit, no parity, 1 stop bit, and no flow control.





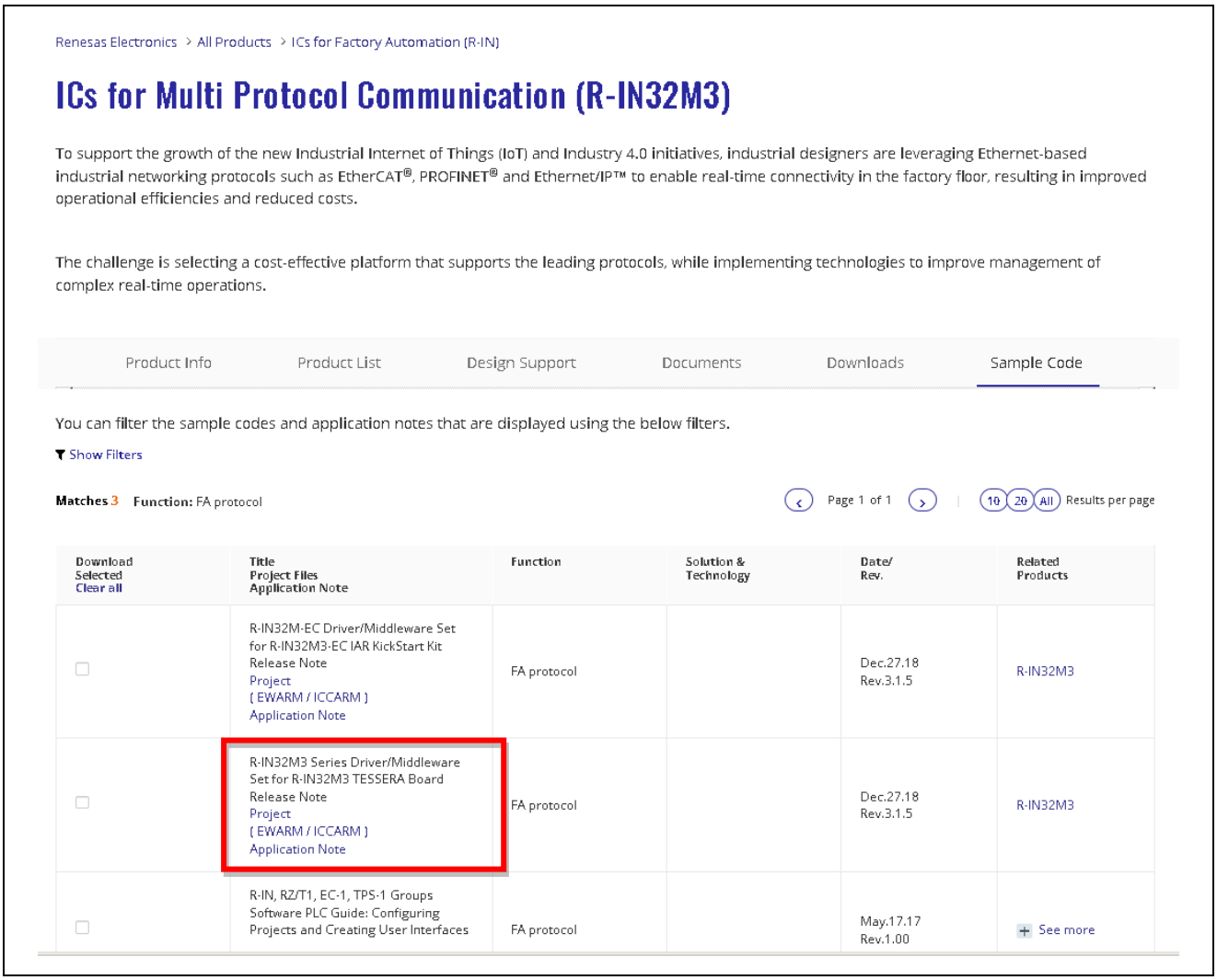
Please set the terminal software to transmit “CR+LF” for new lines (In TeraTerm the option is［Transmit］under ［New-line］in [Terminal setup] as shown above.)

5. Sample Program

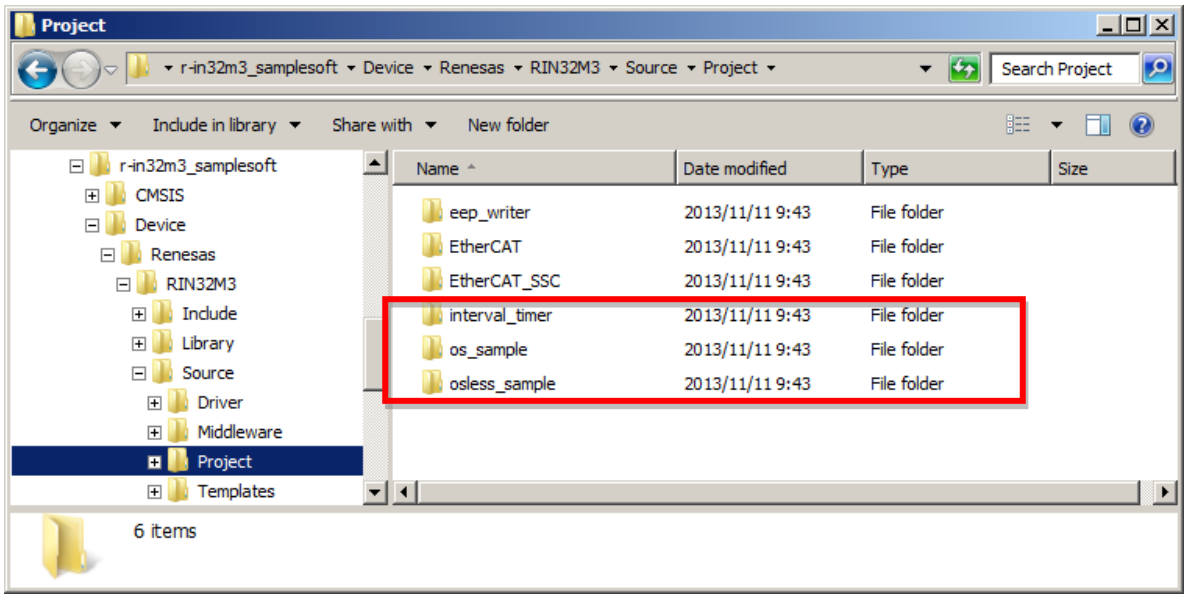
5.1 Download Sample Program

Please download Sample program for R-IN32M3 from below web site.
https://www.renesas.com/us/en/products/factory-automation/multi-protocol-communication.html#sampleCodes

R-IN32M3-CL sample program: R-IN32M3 Series Driver/Middleware Set for R-IN32M3 TESSERA Board



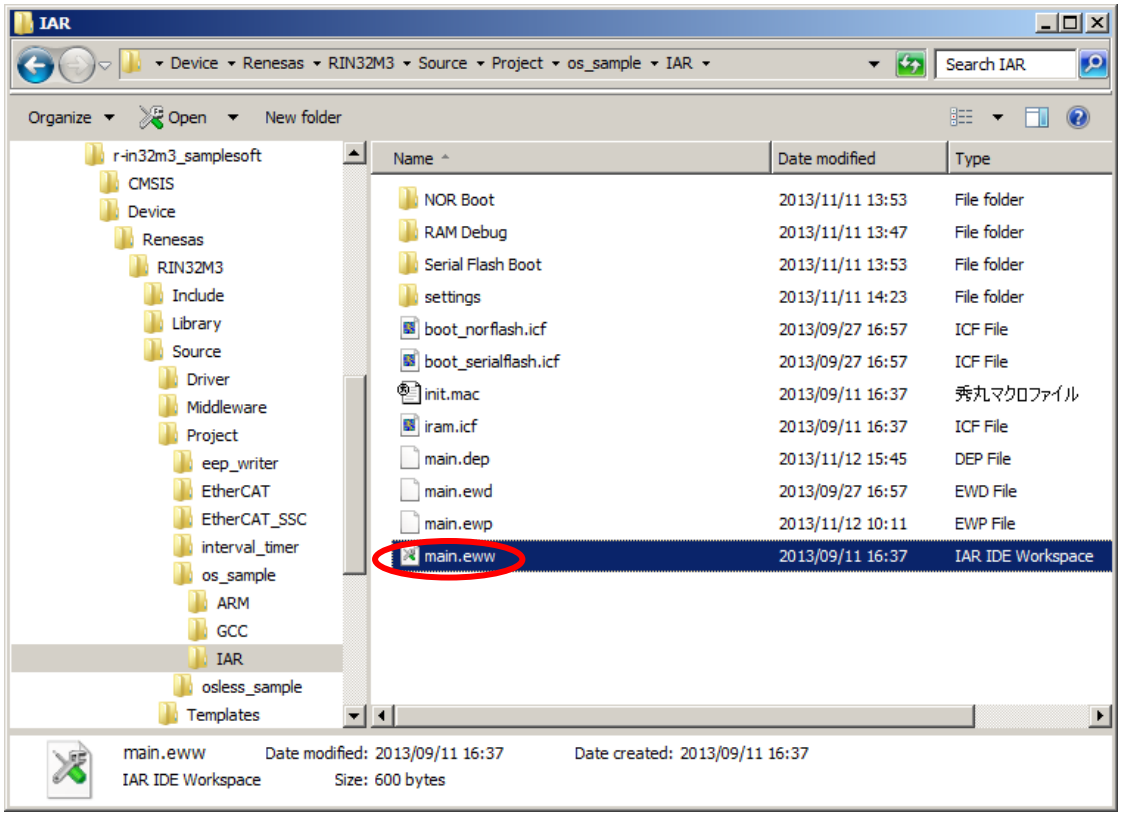
By using R-IN32M3-CL board, you can use 3 sample programs “interval_timer”, “os_sample” and “osless_sampl”.



”eep_writer”, ”EtherCAT”, ”EtherCAT_SSC” is sample program for R-IN32M3-EC board.

5.2 Boot “os_sample” program from EWARM tool

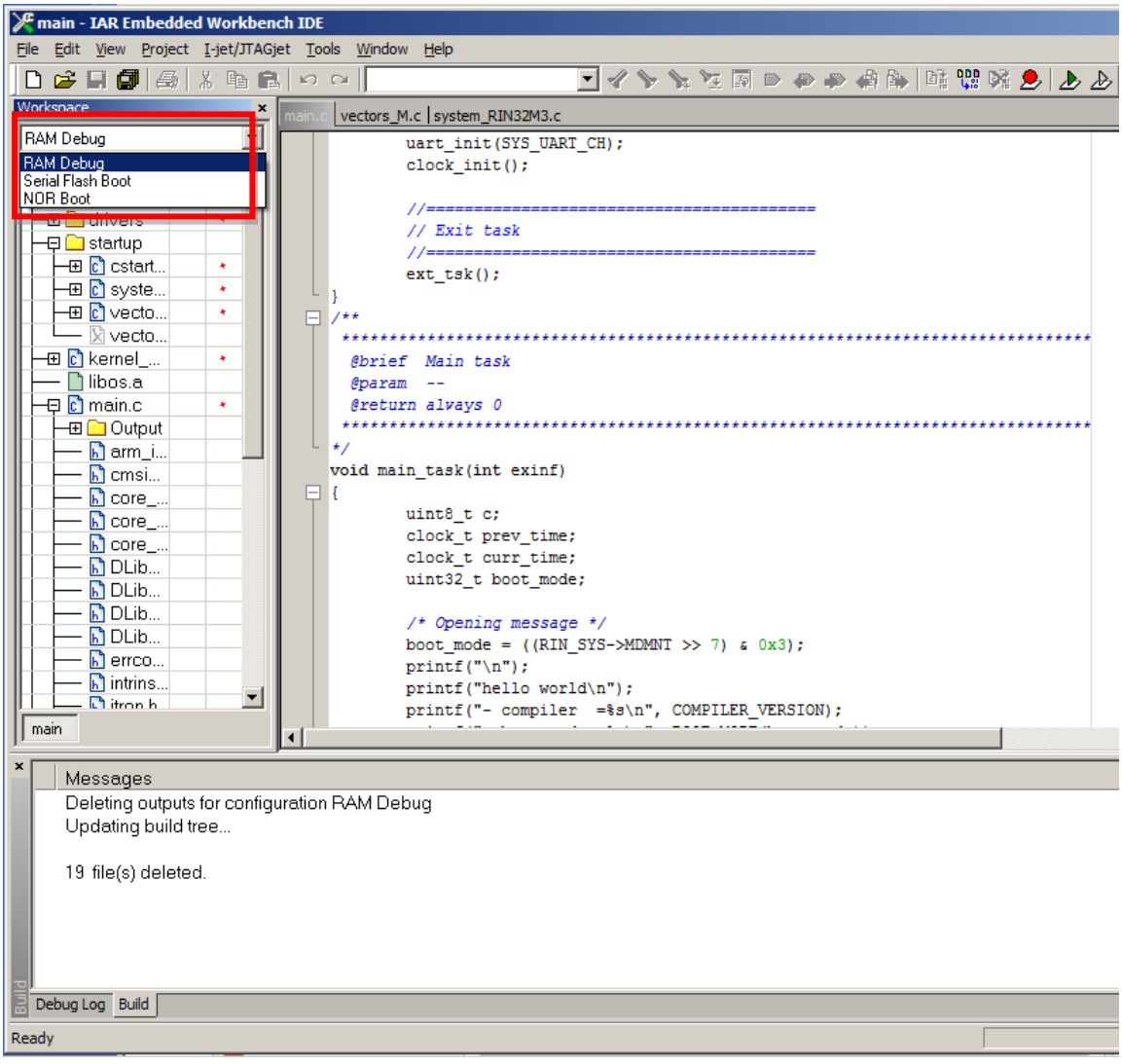
EWARM tool corresponding to “os_sample” starts when you Double-Click Below file,
\Device\Renesas\RIN32M3\Source\Project\os_sample\IAR\main.eww



5.3 Build configuration setting

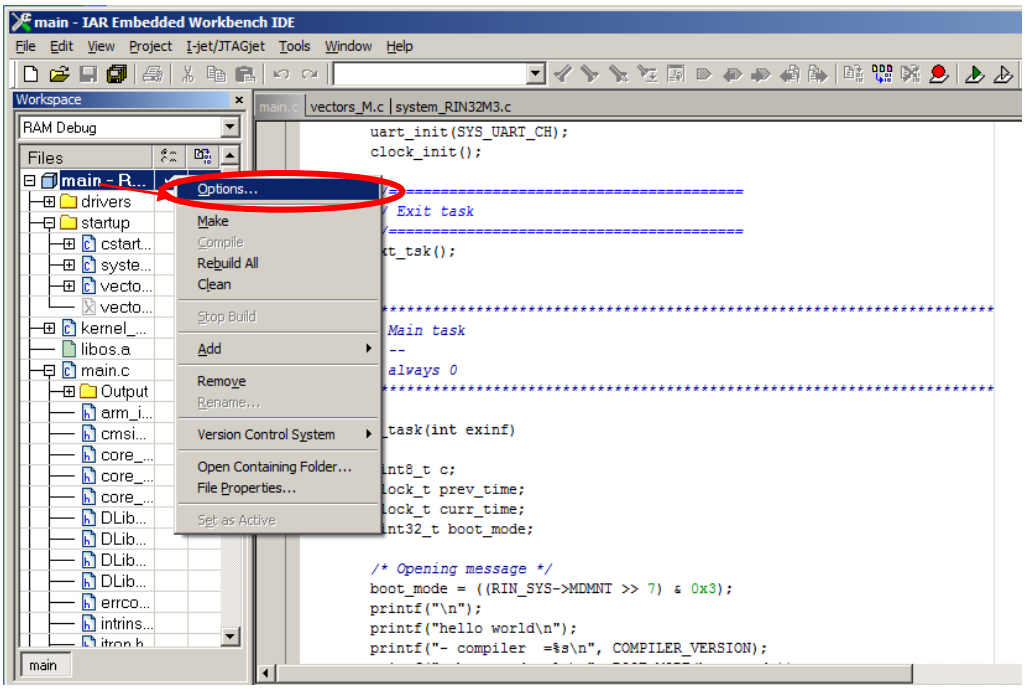
Please select Build configuration setting from next 3 types, RAM Debug, Serial Flash Boot, and NOR Boot.

1) In the case of using I-jet debugger and executing on Instruction RAM of R-IN32M3, select “RAM debug”.
2) In the case of using I-jet debugger and executing on External serial flash ROM of R-IN32M3, select ”Serial Flash Boot”.
3) In the case of using I-jet debugger and executing on External parallel flash ROM of R-IN32M3, select “NOR Boot”

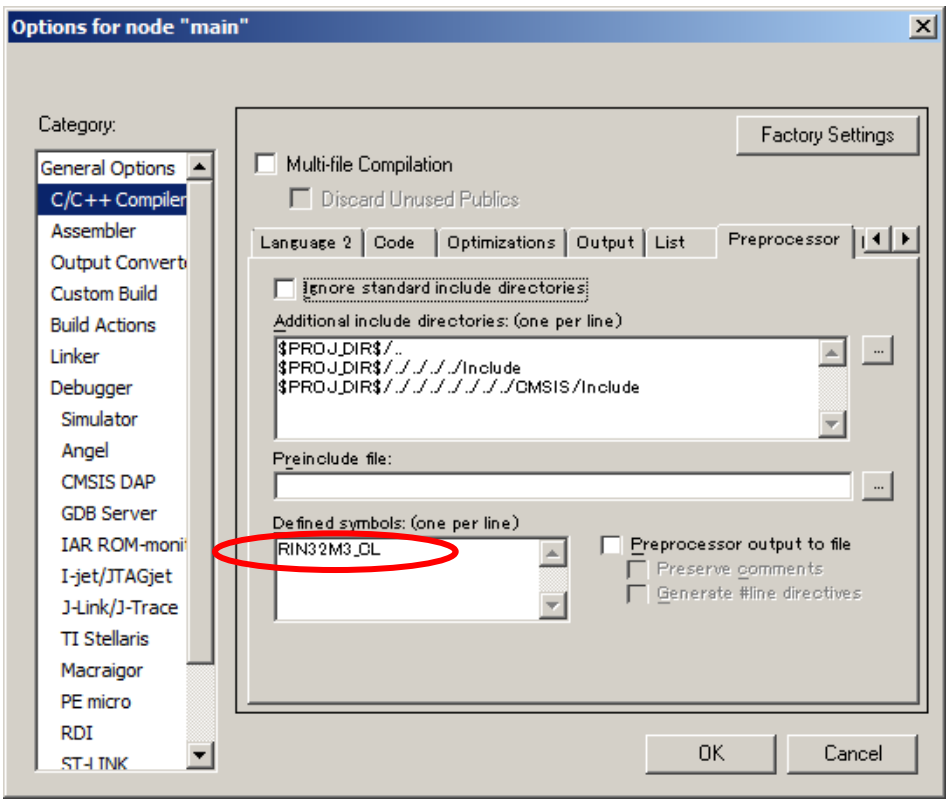


5.4 Compiler Setting

After select workspace, please right-click “main” file and later click “Options…..” too.

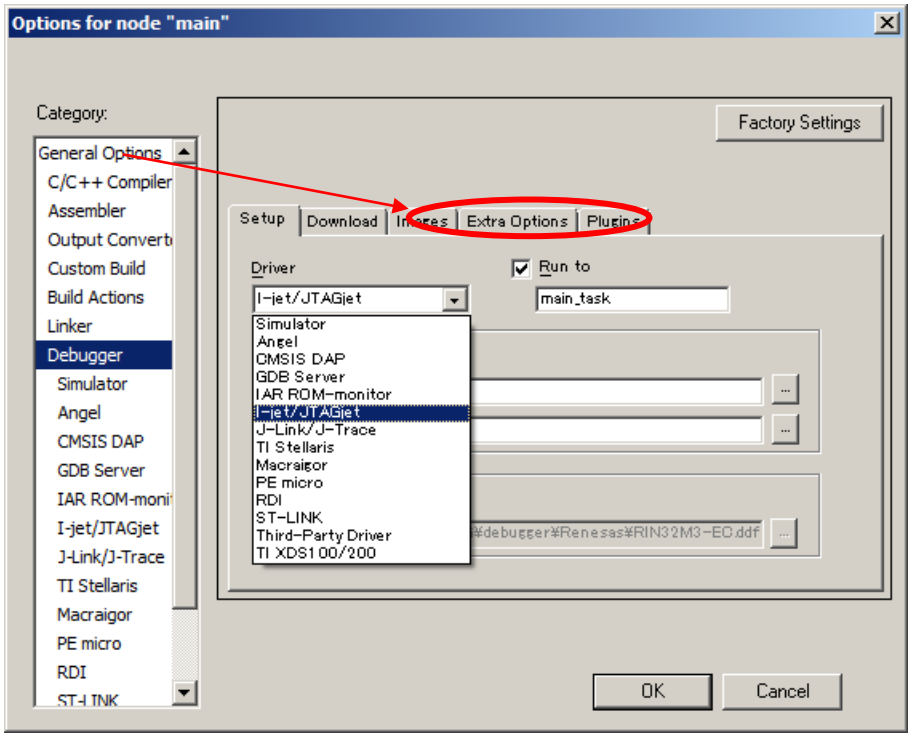


Please add Defined symbols “**RIN32M3_CL**” at C/C++ Compiler Category as below.



5.5 Debugger(I-Jet) Setting

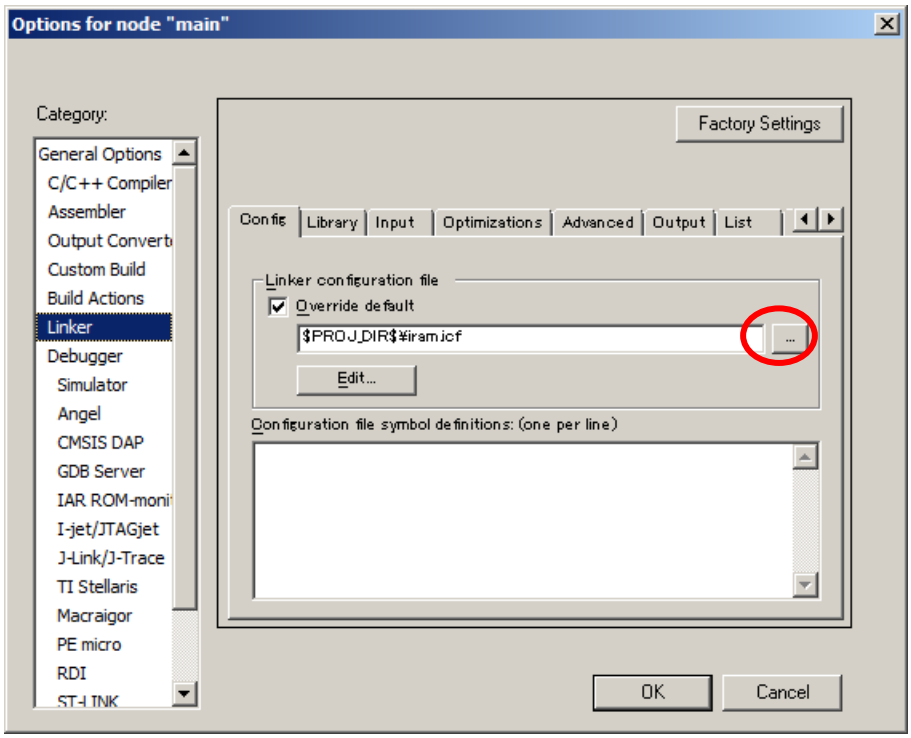
Please select “I-jet/JTAGjet” at Debugger Category as below



As an alternative to the I-jet debugger you can use other debuggers as well, which are supported by the IAR Embedded Workbench. To modify the debugger type you have to switch to the [Project] → [Options …] dialog and select the category [Debugger]. Please click in the drop down menu the debugger you want to use and click [OK].

One example is the SEGGER J-Link Lite CortexM-19 (http://www.segger.com/jlink-lite-cortexm.html). At Renesas Electronics Europe you can optionally order a R-IN32M3-CL Starter Kit with the Segger J-Link Lite included. The J-Link debugger already includes the required 20 pin half pitch flat ribbon cable and the USB cable as seen in the picture below.

5.6 Linker Setting

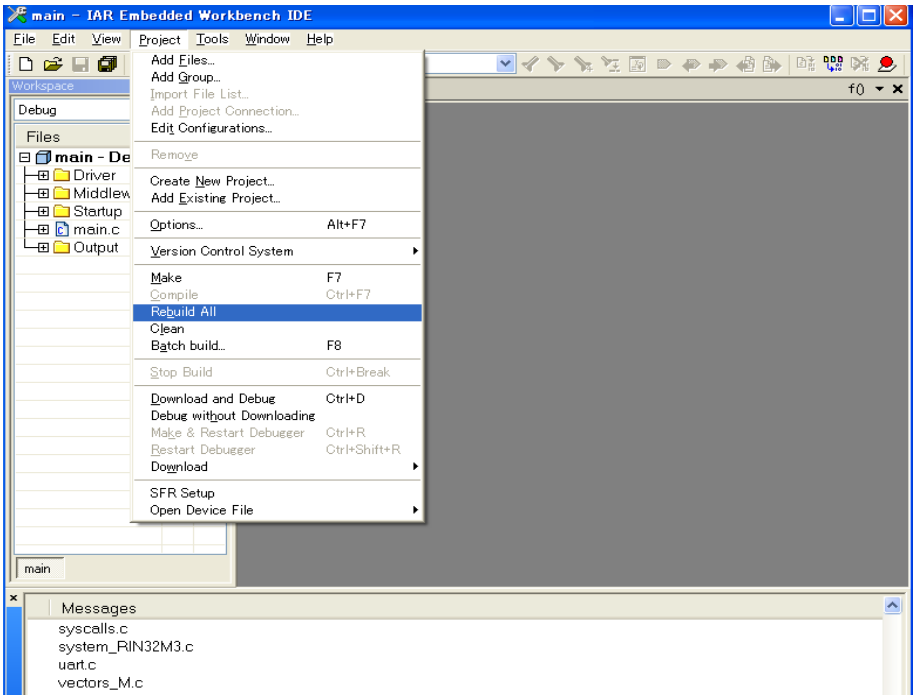


The R-IN32M3 board supports different boot options which can be selected via bit 1 and bit 2 of the MODE_SW switch. To select one of this option you have to select the right linker parameter in the IAR environment. In the Linker Category on the left side of the [Project] / [Options…] menu use the [Config] tab in the right window and modify *.icf file as shown below:

For execution on the R-IN32 internal RAM (iRAM)) : iram.icf
For booting from parallel NOR flash : boot_norflash.icf
For booting from serial flash : boot_serialflash.icf

5.7 Build and Execute “os_sample” program

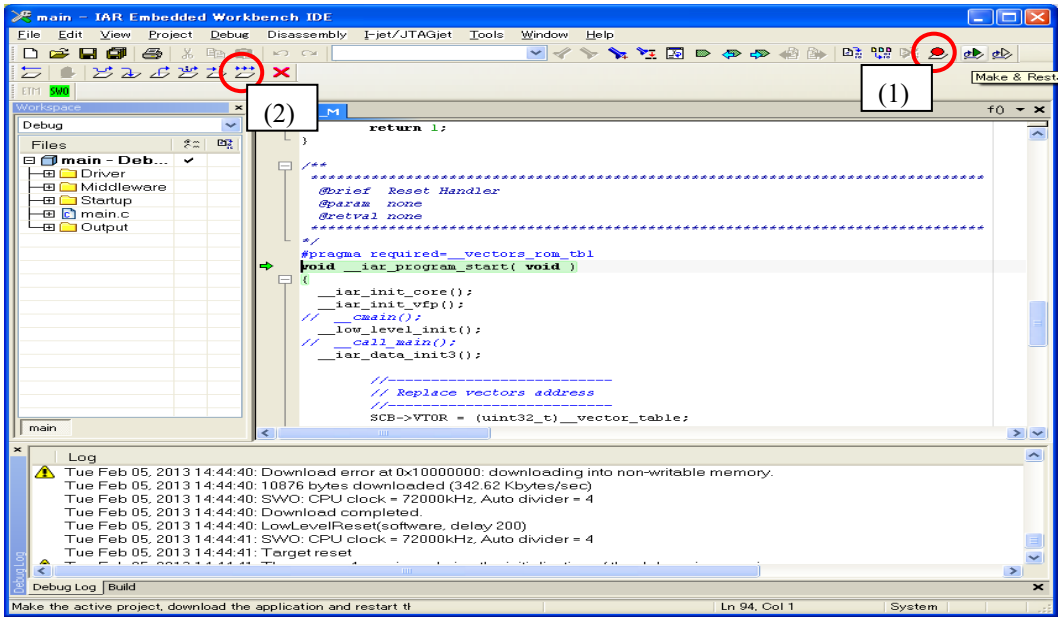
Please click [Project]／[Rebuild All] at Upper side of IAR window.



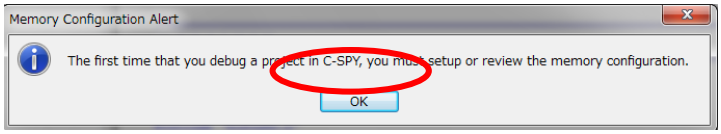
After complietion of the build process you can execute the generated SW:

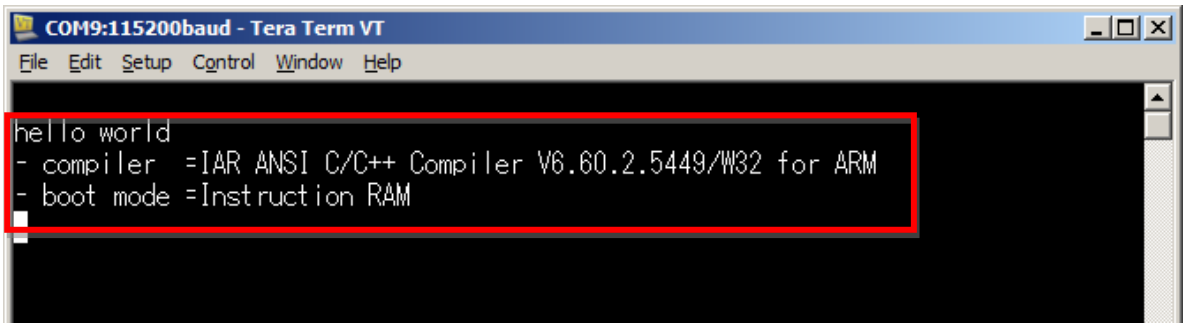
Click (1) to download code to target.

Click (2) to run the program.

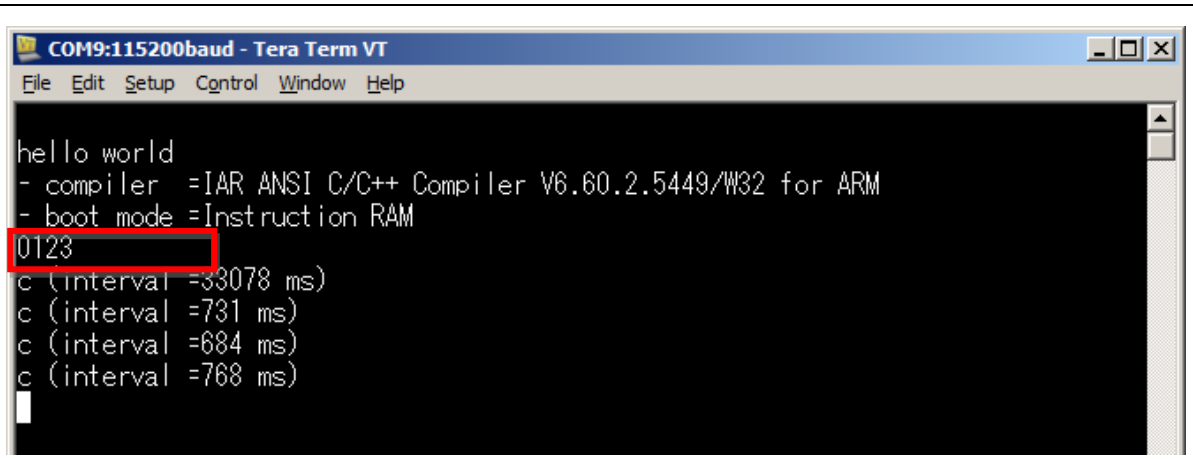


Only at the 1st time of starting(1)[Download and Debug], [Memory Configuration Alert] and [Memory Configuration] window may sequentially pop up, in this case, please click [OK]. (It will not pop up any more.)

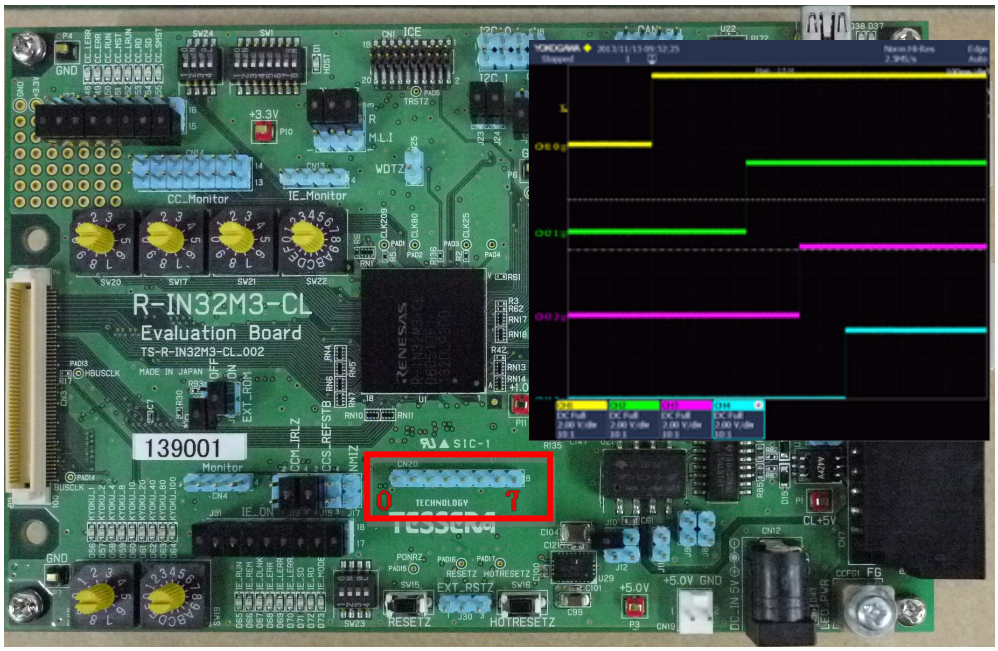




If the program is operating normally, it is displayed as “hello world” at Serial terminal.



when you input “0”,”1”,”2”,”3” from serial terminal, Outputs level which are assigned at pins from 0 to 3 of CN20 of R-IN32M3 CL board are inverted.


R-IN32M3-CL
Evaluation Board
TS-R-IN32M3-CL_002
139001
0
1
TECHNOLOGY

6. Connection with PLC (MELSEC-Q Series) from MITSUBISHI

6.1 Sample stack for CC-Link IE Field

Please download sample stack of CC-Link IE Field (Intelligent Device Station) for R-IN32M3 from below web site.
https://www.renesas.com/us/en/products/factory-automation/multi-protocol-communication.html#sampleCodes

CC-Link IE sample stack : R-IN32M3-CL CC-Link IE Driver/Middleware Set for R-IN32M3-CL

Place the sample application “CCLinkIE” folder in the downloaded CC-Link IE sample in the following folder of the R-IN 32 M 3 sample program.
\Device\Renesas\RIN32M3\Source\Project

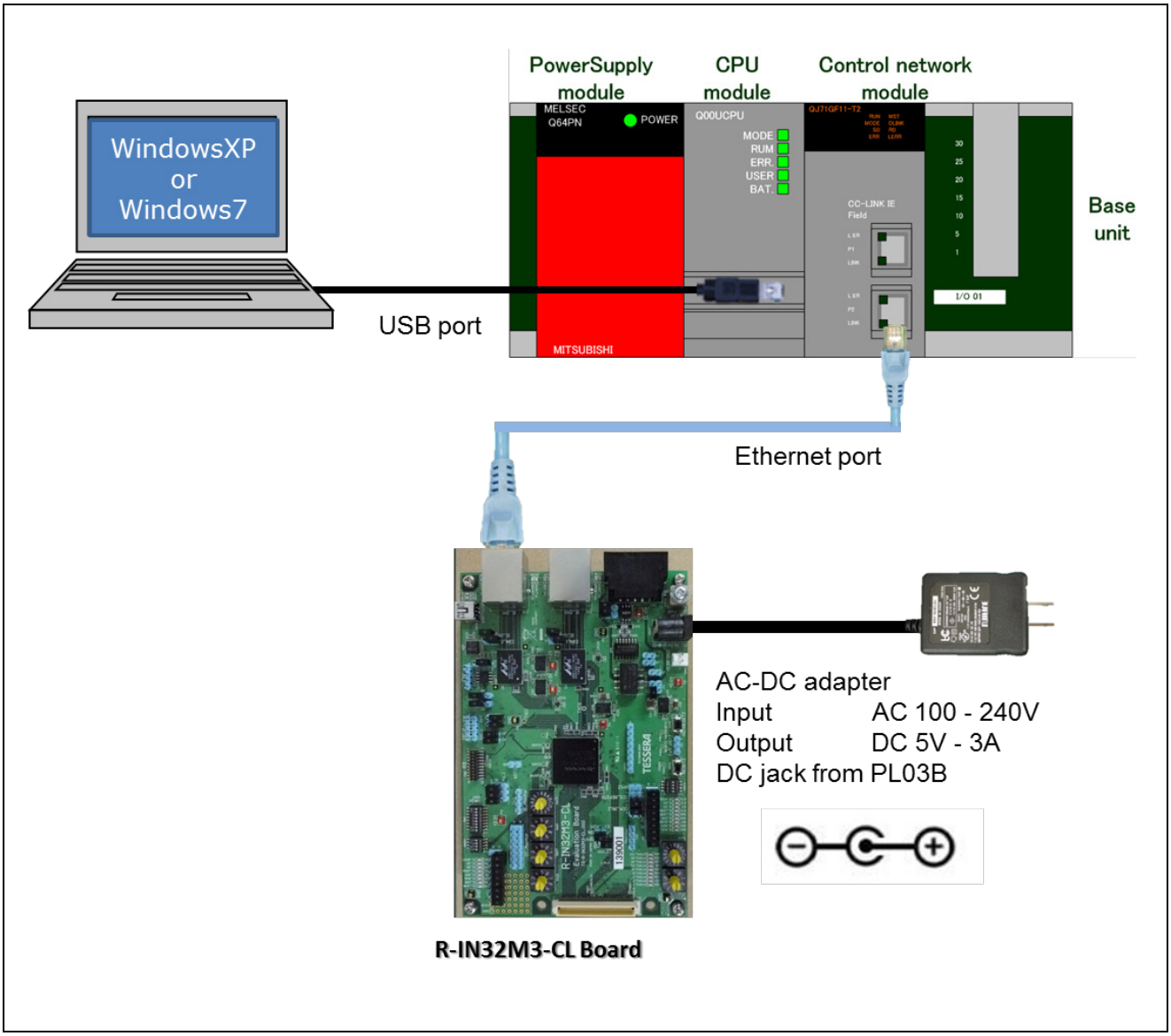
And by referring to the procedure in Chapter2 and 4, download this program to R-IN32M3-CL Board.
Below table show board setting for CC-Link IE Field.

Table.5.1 DIP Switch setting for CC-LINK IE Field

SW	Setting
SW23 bit2	ON
SW23 bit3	ON

6.2 Connection with PLC (MELSEC-Q) of Mitsubishi

Please connect Windows PC ,PLC and R-IN32M3-CL board as shown below.
-Windows PC and CPU module of PLC connect with USB interface.
-Control network module of PLC and R-IN32M3-CL board connect with USB interface.



6.3 Installation of GX-Works2 of Mitsubishi

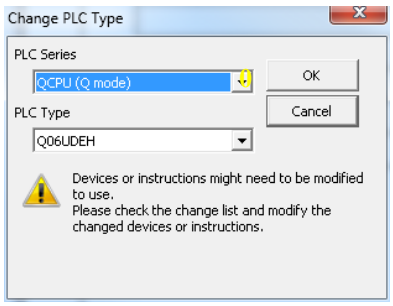
Please purchase GX-Works2 from Mitsubishi electric products and install the tool.
http://www.mitsubishielectric.co.jp/fa/products/cnt/plceng/lineup/gx_works2/index.html

6.4 Start GX-Works2

There is project file of GX-Works2 in the CC-Link IE sample stack.
Gx-Works2 is started by executing the project file.
\CCLinkIE\GX_Works2\

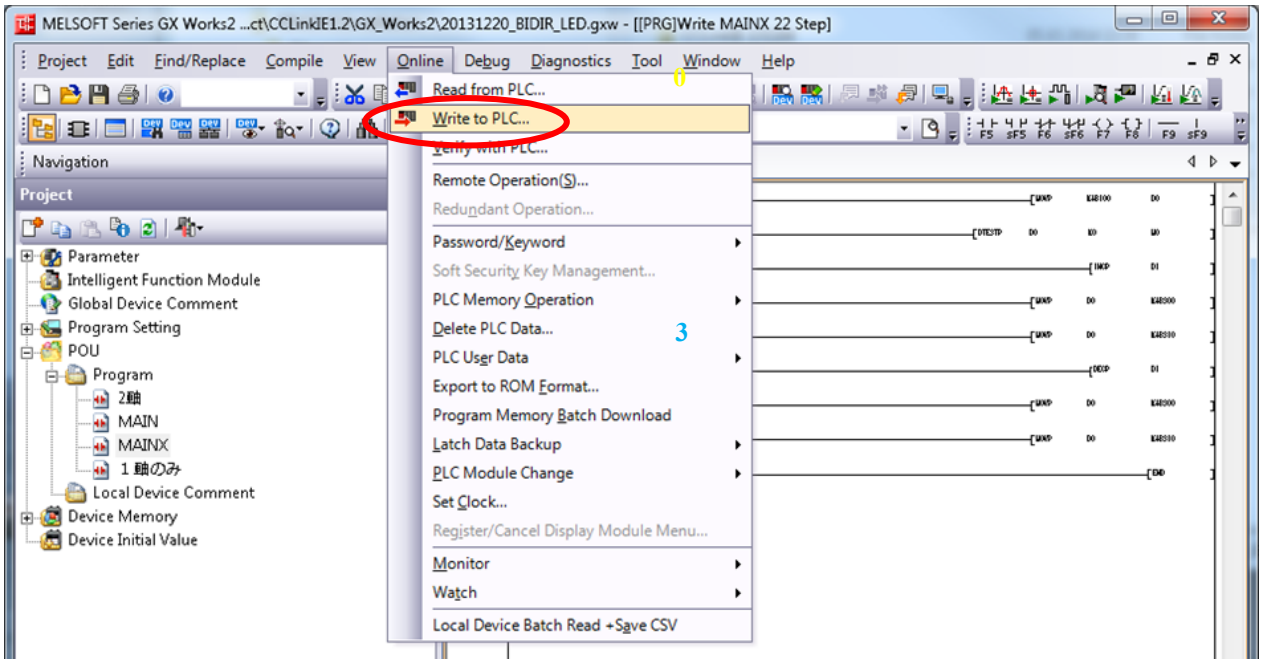
6.5 Writing BIDIR program to CPU module

Before writing the program to the PLC to probably have to change the PLC type with the menu “Project / Change PLC Type …”. In case you have entered a different PLC type than given in the sample program, GX-Works2 is asking you to confirm the conversion of the supplied sample PLC program.

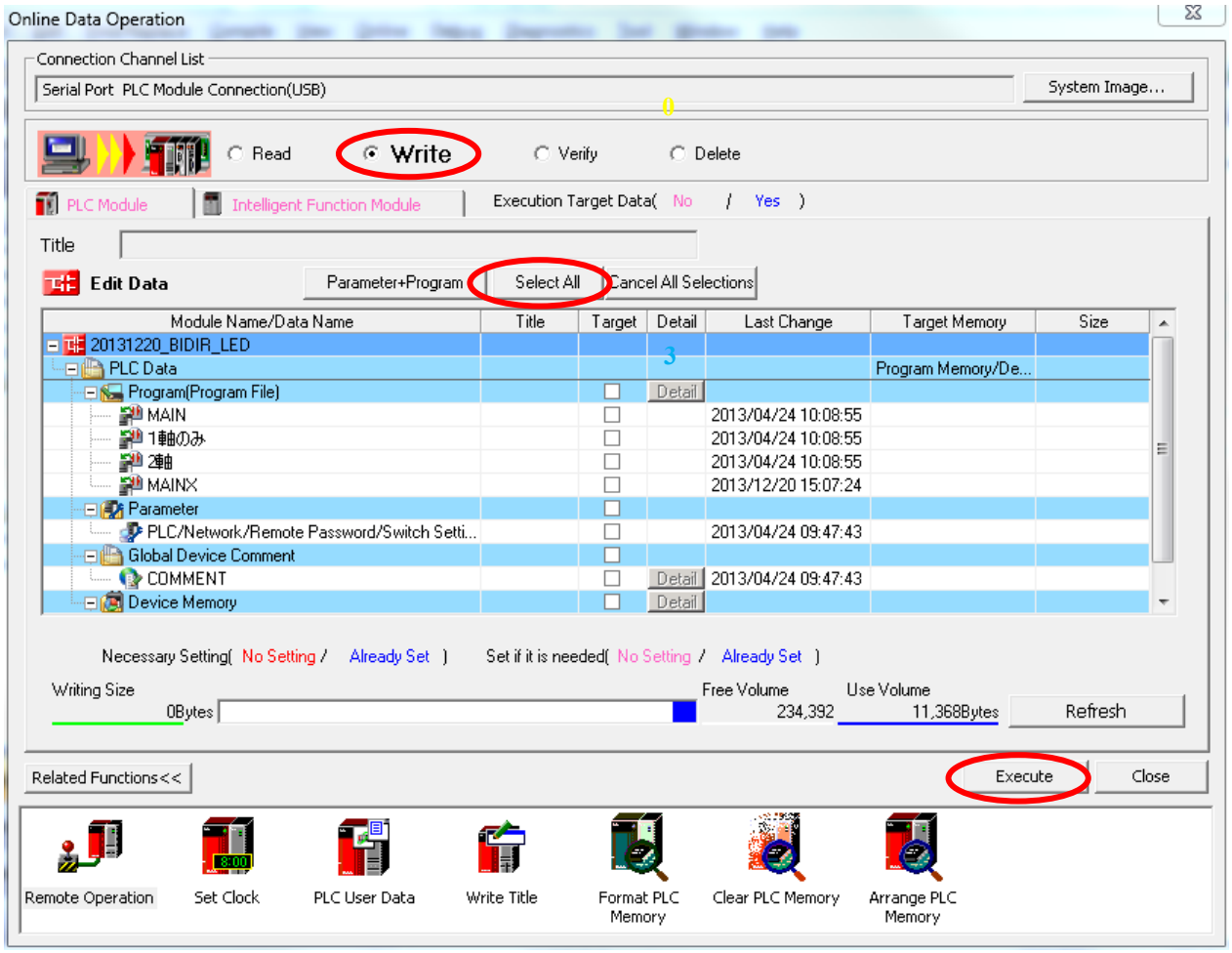


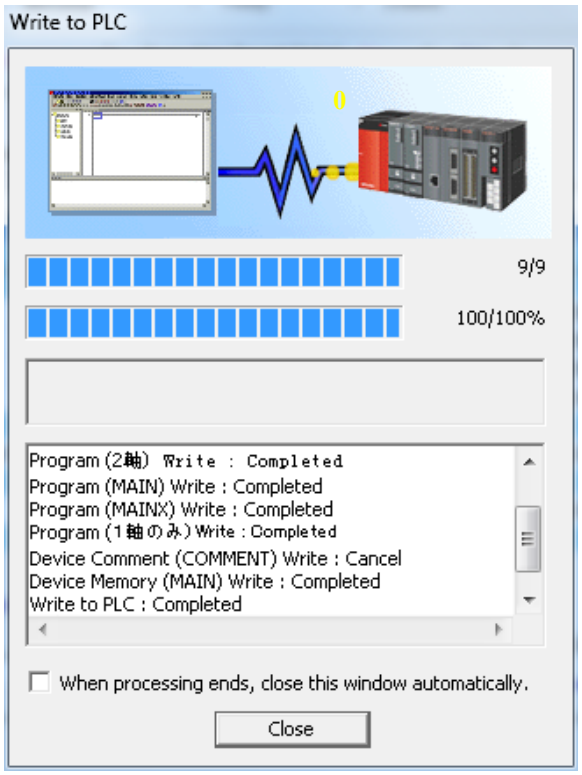
3

After this step you can download the BIDIR sample project into the PLC with the menu “Online / Write to PLC …” as shown below.



The following dialog window appears to select the related project parts which are going to be downloaded into the PLC. Click on the “Select All” button, then press “Execute” button. A progress window appears which is showing the download status and the downloaded program items.


Online Data Operation
Connection Channel List
Serial Port PLC Module Connection(USB)
System Image...
Read
Write
Verify
Delete
PLC Module
Intelligent Function Module
Execution Target Data(No / Yes)
Title
Edit Data
Parameter+Program
Select All
Cancel All Selections
Module Name/Data Name
Title
Target
Detail
Last Change
Target Memory
Size
20131220_BIDIR_LED
PLC Data
Program Memory/De...
Program(Program File)
MAIN
2013/04/24 10:08:55
1軸のみ
2013/04/24 10:08:55
2軸
2013/04/24 10:08:55
MAINX
2013/12/20 15:07:24
Parameter
PLC/Network/Remote Password/Switch Setti...
2013/04/24 09:47:43
Global Device Comment
COMMENT
2013/04/24 09:47:43
Device Memory
Necessary Setting(No Setting / Already Set)
Set if it is needed(No Setting / Already Set)
Writing Size
0Bytes
Free Volume
234,392
Use Volume
11,368Bytes
Refresh
Related Functions<<
Execute
Close
Remote Operation
Set Clock
PLC User Data
Write Title
Format PLC Memory
Clear PLC Memory
Arrange PLC Memory

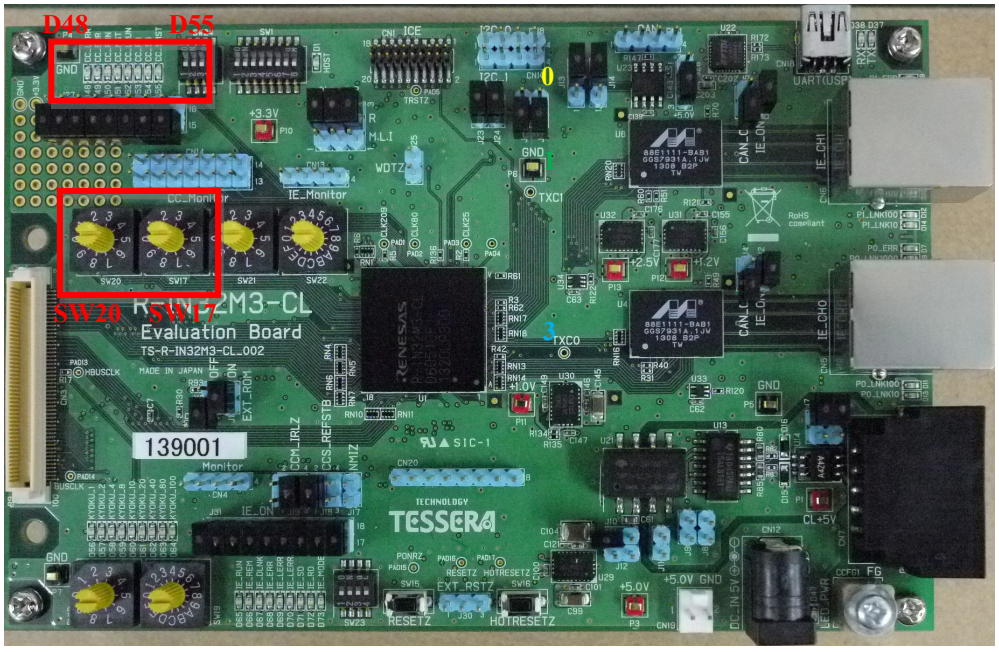

Write to PLC
9/9
100/100%
Program (2軸) Write : Completed
Program (MAIN) Write : Completed
Program (MAINX) Write : Completed
Program (1軸のみ) Write : Completed
Device Comment (COMMENT) Write : Cancel
Device Memory (MAIN) Write : Completed
Write to PLC : Completed
When processing ends, close this window automatically.
Close

6.6 Confirmation of communication between PLC and R-IN32M3-CL

R-IN32M3-CL send status of rotary SW17 and SW20 to PLC. PLC send 8bit data correspond with received data as Table 5.2 to R-IN32M3-CL. R-IN32M3-CL output to LED(D48-D55) according to the received data.

Table.5.2 Rotary Switch and LED lighting pattern

SW	Value	LED lighting pattern
SW17 SW20	0, 0	Increment
SW17 SW20	0, 1	Decrement
SW17 SW20	0, 2	All Off
SW17 SW20	0, 3	All On



7. KEIL MDK-ARM Setup

This section shows how to setup KEIL MDK-ARM.

7.1 Board and emulator preparation

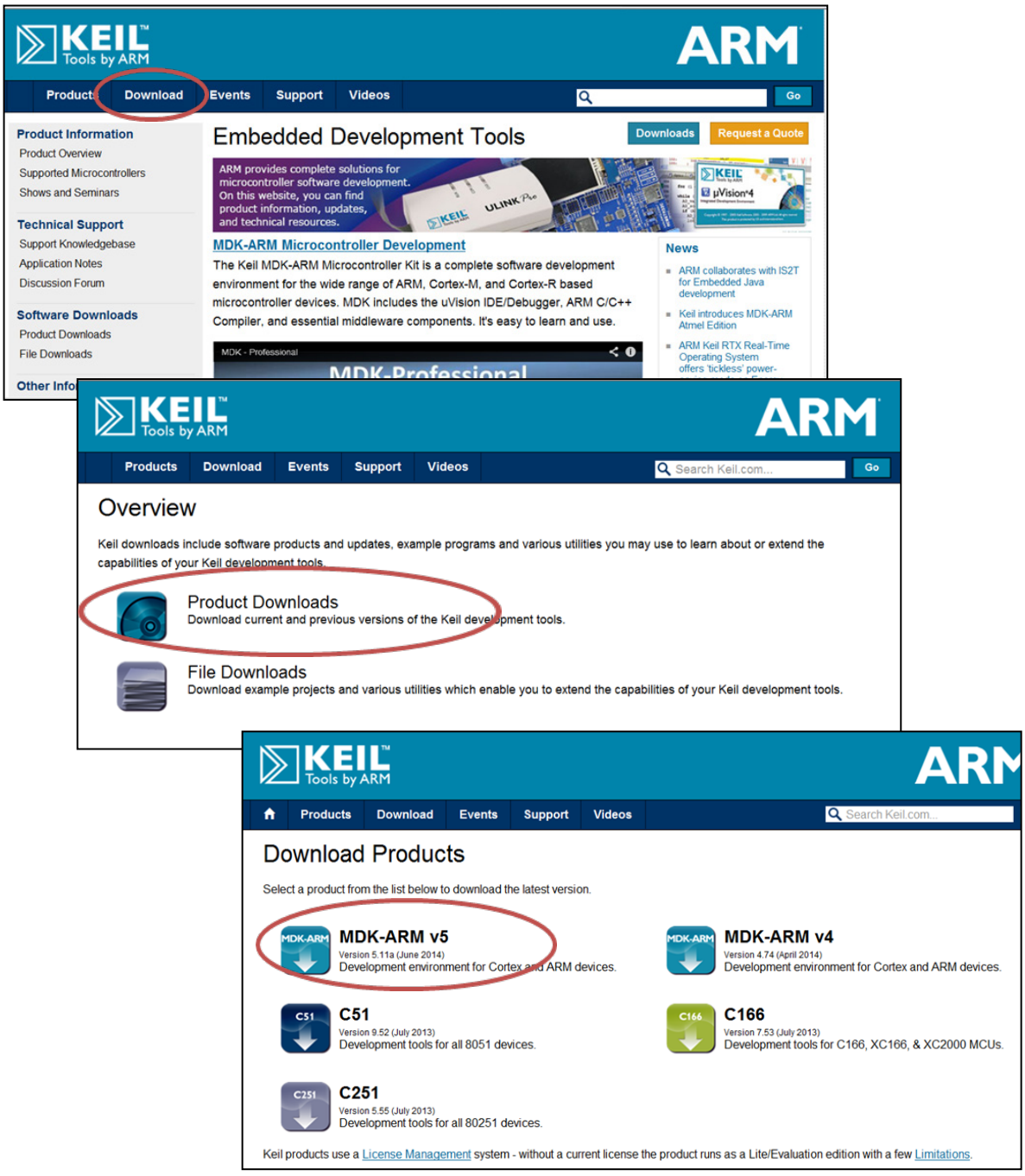
Prepare R-IN32M3-CL Board (e.g. TS-R-IN32M3-CL_002 from Tessera Technology) and MDK-ARM emulator (e.g. ULINK).

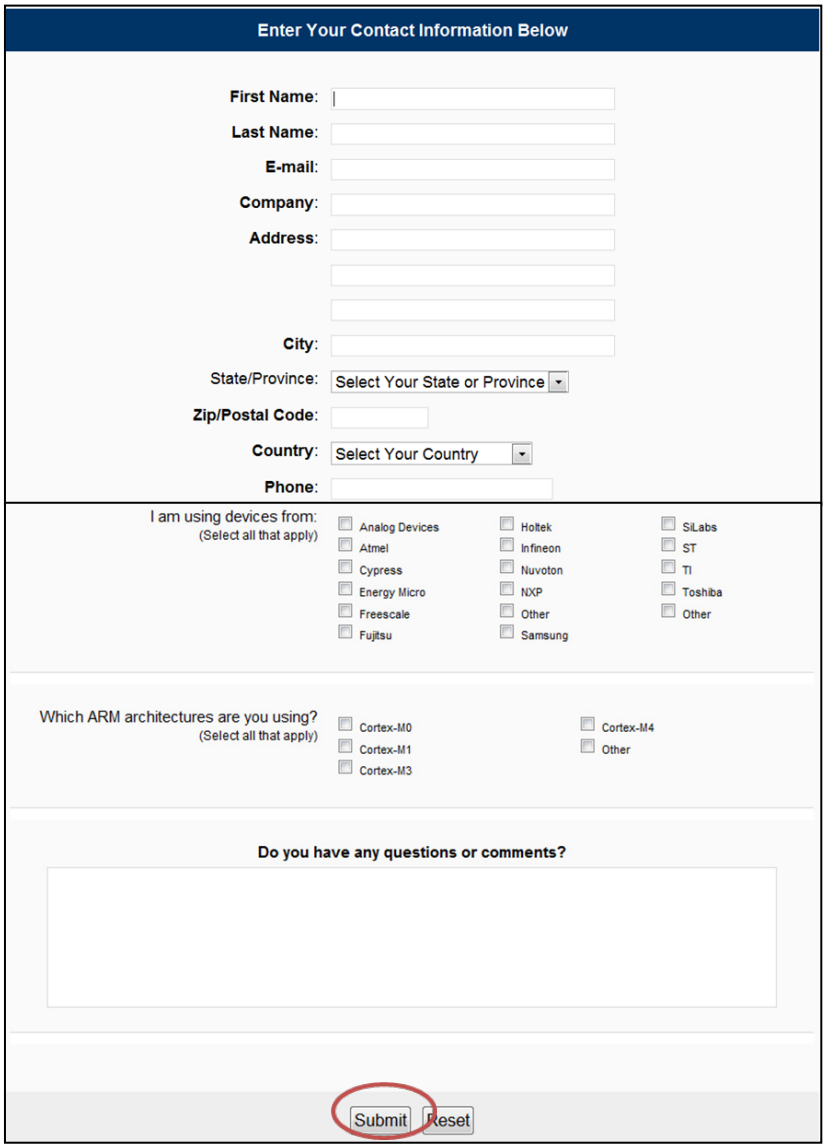
Please do setting the board by referring “2.1 Boot mode setting for R-IN32M3-CL” section.

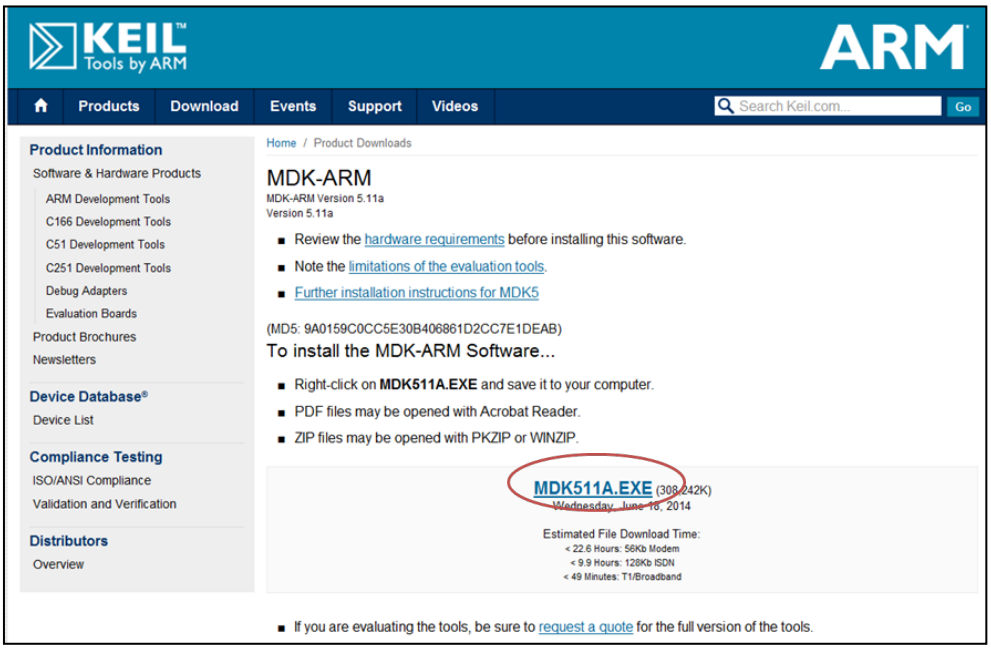
7.2 Download MDK-ARM

Install MDK-ARM from KEIL web page (https://www.keil.com/).

The example of MDK-ARM V5.11 is showed as bellows.



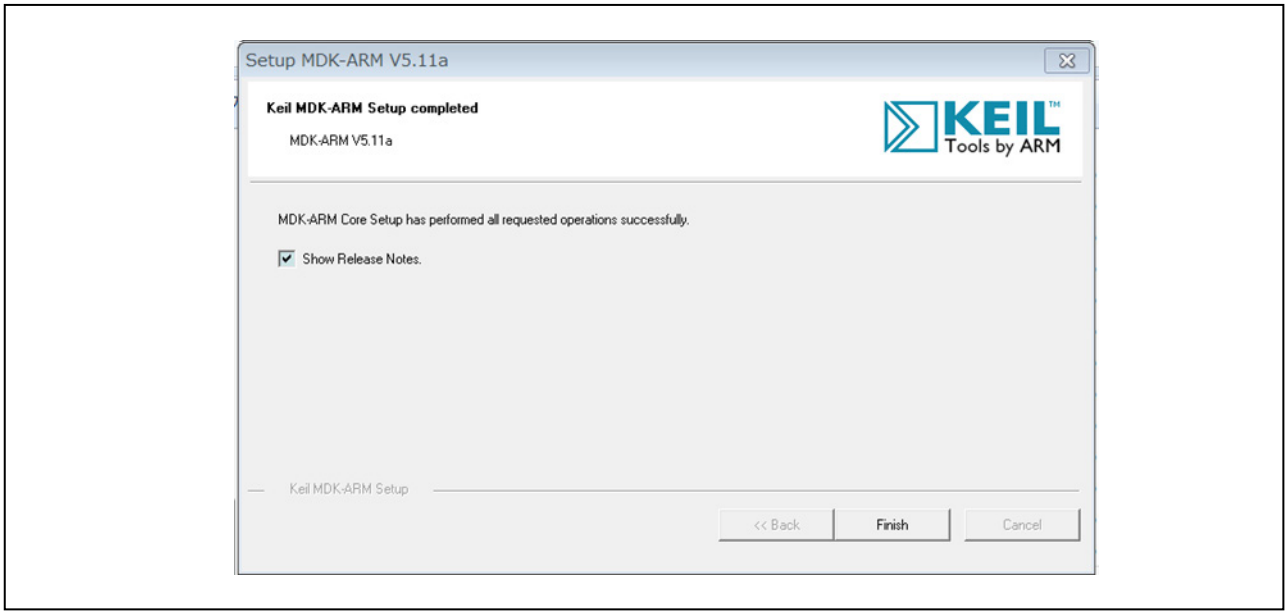

Enter Your Contact Information Below
First Name:
Last Name:
E-mail:
Company:
Address:
City:
State/Province:
Select Your State or Province
Zip/Postal Code:
Country:
Select Your Country
Phone:
I am using devices from:
(Select all that apply)
Analog Devices
Atmel
Cypress
Energy Micro
Freescale
Fujitsu
Holtek
Infineon
Nuvoton
NXP
Other
Samsung
SiLabs
ST
TI
Toshiba
Other
Which ARM architectures are you using?
(Select all that apply)
Cortex-M0
Cortex-M1
Cortex-M3
Cortex-M4
Other
Do you have any questions or comments?
Submit
Reset


KEIL Tools by ARM
ARM
Products
Download
Events
Support
Videos
Search Keil.com...
Go
Product Information
Software & Hardware Products
ARM Development Tools
C166 Development Tools
C51 Development Tools
C251 Development Tools
Debug Adapters
Evaluation Boards
Product Brochures
Newsletters
Device Database®
Device List
Compliance Testing
ISO/ANSI Compliance
Validation and Verification
Distributors
Overview
Home / Product Downloads
MDK-ARM
MDK-ARM Version 5.11a
Version 5.11a
Review the hardware requirements before installing this software.
Note the limitations of the evaluation tools.
Further installation instructions for MDK5
(MD5: 9A0159C0CC5E30B406861D2CC7E1DEAB)
To install the MDK-ARM Software...
Right-click on MDK511A.EXE and save it to your computer.
PDF files may be opened with Acrobat Reader.
ZIP files may be opened with PKZIP or WINZIP.
MDK511A.EXE (308,242K)
Wednesday, June 18, 2014
Estimated File Download Time:
< 22.6 Hours: 56Kb Modem
< 9.9 Hours: 128Kb ISDN
< 49 Minutes: T1/Broadband
If you are evaluating the tools, be sure to request a quote for the full version of the tools.

7.3 Install MDK-ARM

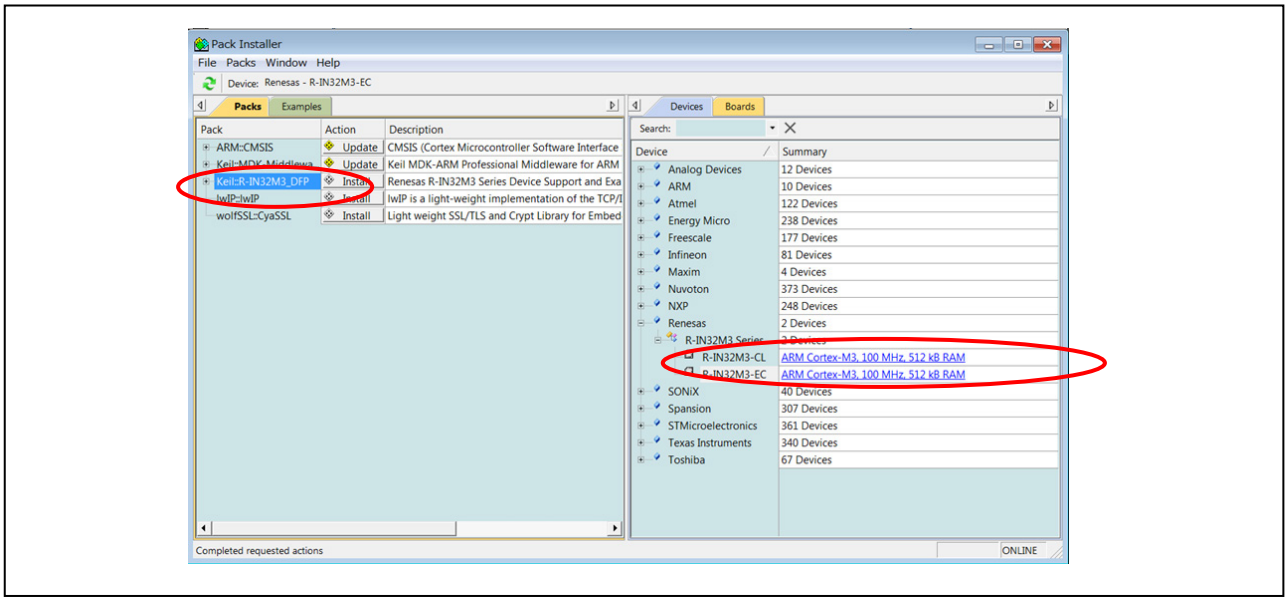
7.3.1 Install tools

Install MDK-ARM by executing “MDK5xxx.EXE” (xxx is a version).



7.3.2 Install Device Family Pack (DFP)

After install tools, “Pack Installer” window is opened[Note]. In this window, select “R-IN32M3-CL” in “Devices” tab and press the install button with “Keil::R-IN32M3_DFP” in “Packs” tab.



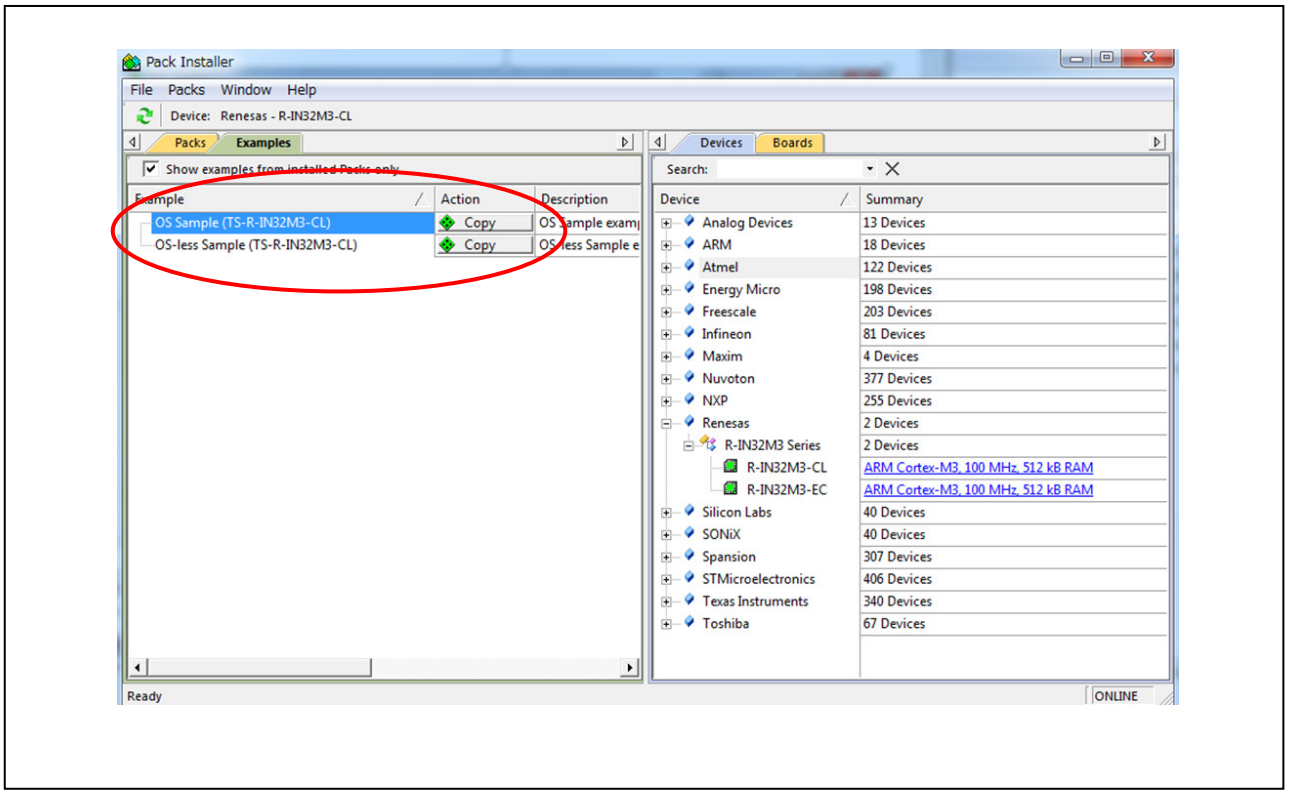
Note: The window is also opened by [Project]->[Manage]->[Pack Installer...] from tools bar.

7.3.3 Copy sample program

There are two ways to get sample program. The one way is to get from “Pack Installer”, the other way is from Renesas web page.

(1) The Pack Installer case

Select sample program in “Examples” tab, and press the “Copy” button.



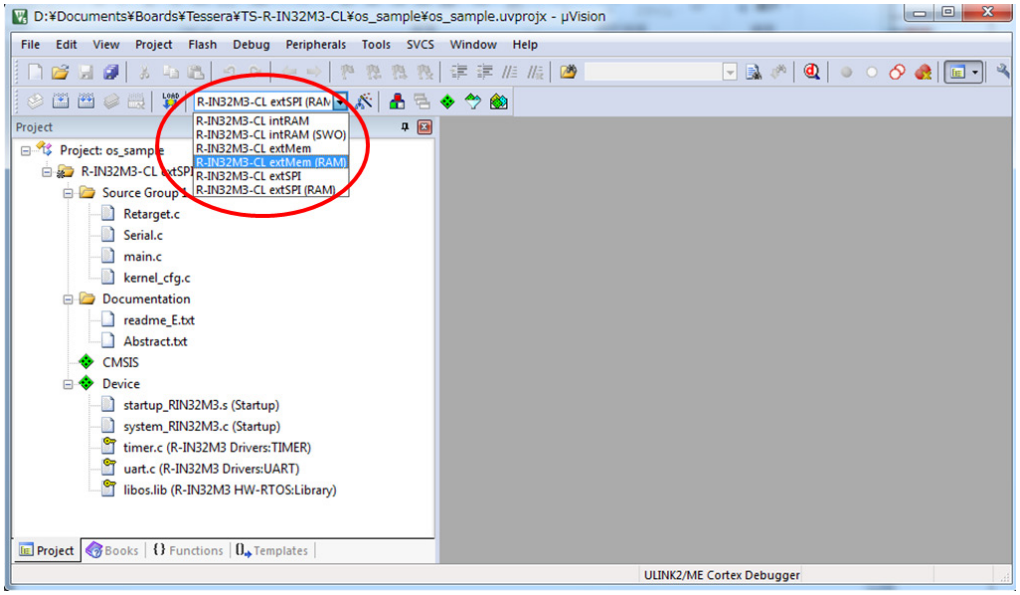
(2) The Renesas web case

Please visit Renesas web page and get “Driver/Middleware” sample software.
http://www.renesas.com/products/soc/assp/fa_lsi/multi_protocol_communication/r-in32m3/peer/sample_software.jsp

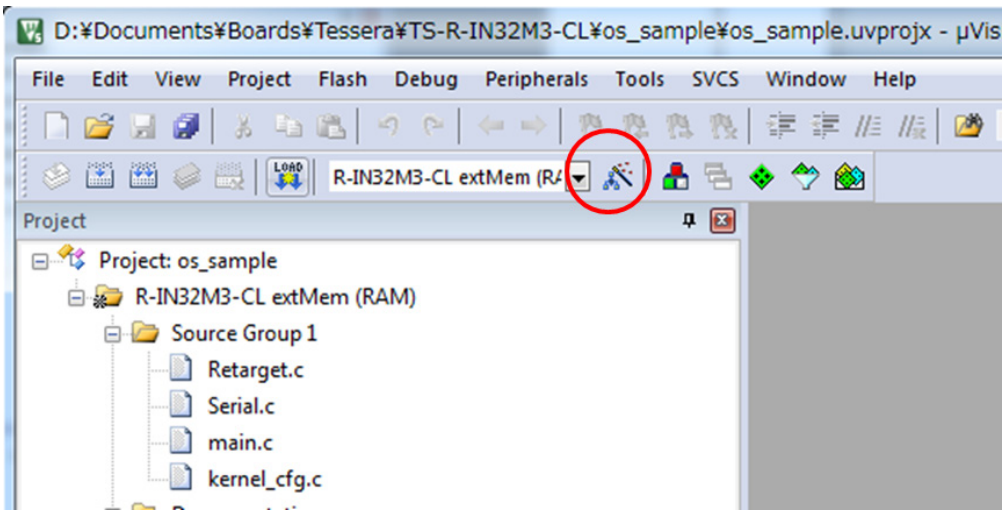
7.4 How to operate MDK-ARM

7.4.1 μVision5 settings

μVision5 is started by double clicking the project file "*.uvprojx".
After booting μVision5, select the target setting for the device and boot mode.



By pressing "Options for Target..." button, target settings can be customizedchanged. For example, flash loader can be changed.



Target setting name is different between the one get from Pack Installer and the one get from Renesas web.

(1) Sample project from Pack Installer

Table7.1 μVisioin5 target setting (sample project from Pack Installer)

Target name	Settings		
	ROM code placed in	Instruction code executed in	Flash loader
R-IN32M3-CL intRAM	Instruction RAM	Instruction RAM	Not used
R-IN32M3-CL intRAM(SWO)	Instruction RAM	Instruction RAM	Not used
R-IN32M3-CL extMem	External Memory	External Memory	For S29GL128S
R-IN32M3-CL extMem(RAM)	External Memory	Instruction RAM	For S29GL128S
R-IN32M3-CL extSPI	Serial Flash	Serial Flash	For S25FL064P
R-IN32M3-CL extSPI(RAM)	Serial Flash	Instruction RAM	For S25FL064P

(2) Sample project from Renesas web

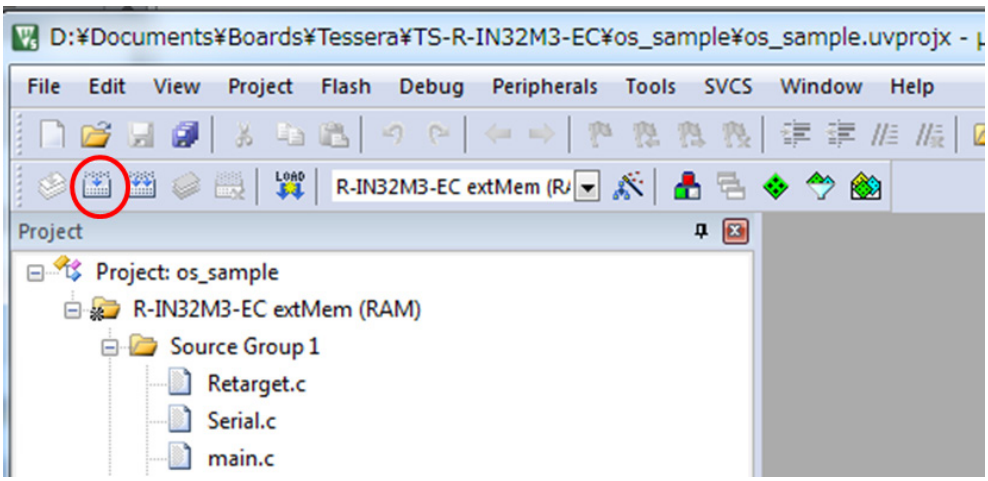
Table7.2 μVisioin5 target setting (sample project from Renesas web)

Target name	Settings		
	ROM code placed in	Instruction code executed in	Flash loader
RAM Debug - CL Board	Instruction RAM	Instruction RAM	Not used
NOR Boot - CL Board	External Memory	Instruction RAM	For S29GL128S
Serial Flash Boot - CL Board	Serial Flash	Instruction RAM	For S25FL064P

7.4.2 μVision5 operation

7.4.2.1 ROM code generation

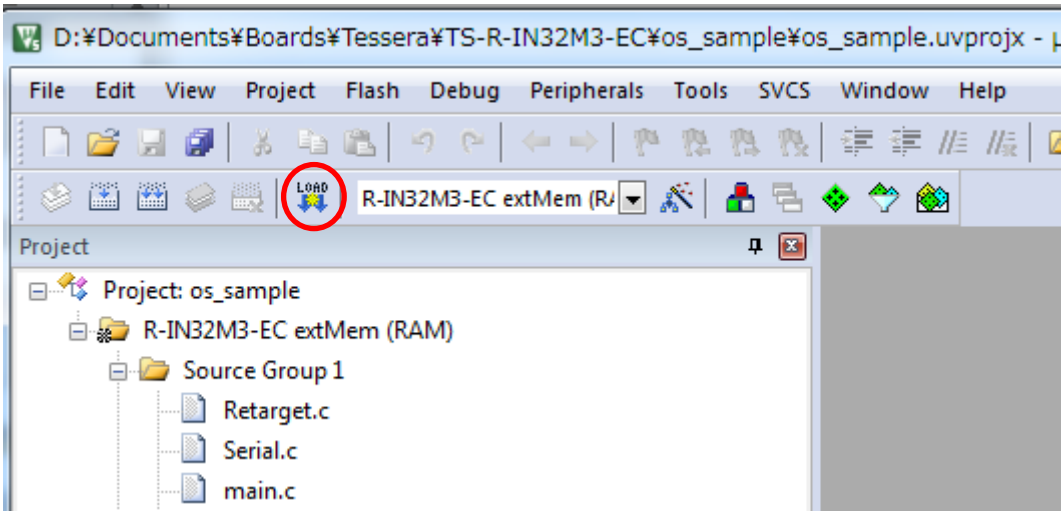
Build the program and generate ROM code by pressing “Build” button, after target settings.



7.4.2.2 Download ROM code to flash memory

If the internal RAM boot is selected, jump to “7.4.2.3 Start debugger” section.

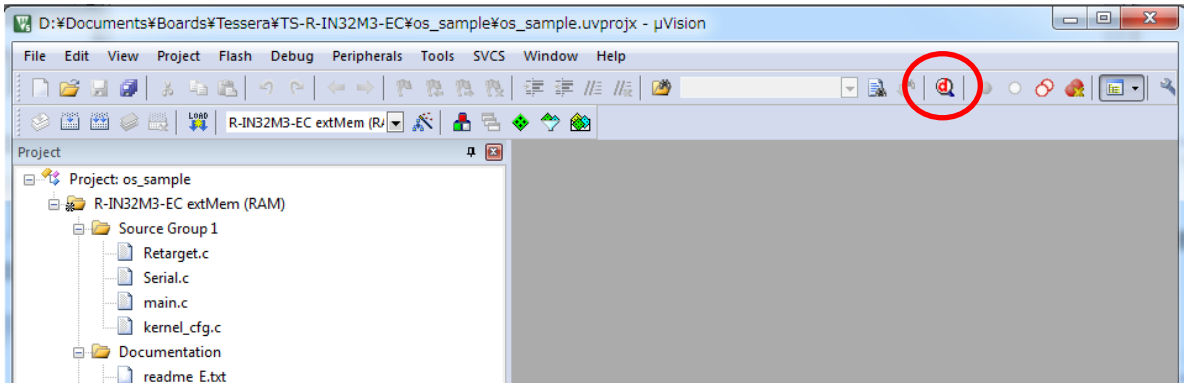
If the other boot mode is selected, press “Download” button to download ROM code to flash memory. This operation uses flash loader set by target setting.



In the case of success, “Erase Done”, “Programming Done”, “Verify OK” messages are showed in the Log.

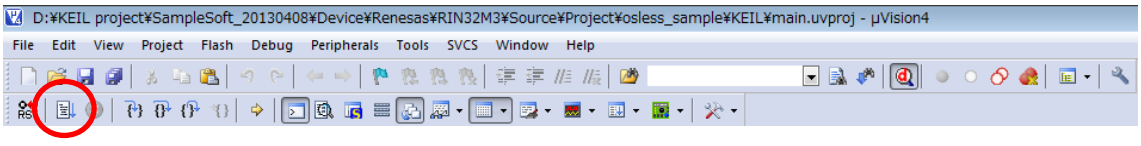
7.4.2.3 Start debugger

By pressing ”Start/Stop Debug Session” button (or [Ctrl]+[F5] key), debugger starts.



7.4.2.4 Start debugging

By pressing “Run” button, program run and start debugging.



7.4.2.5 Stop debugger

By pressing ”Start/Stop Debug Session” button (or [Ctrl]+[F5] key) again, debugger stops.

REVISION HISTORY	R-IN32M3 Series StarterKit Setup Procedure

Rev.	Date	Description	
		Page	Summary
1.00	Dec 26,2013	—	First Edition issued
1.01	Feb 07,2014	P4	Add important note about IAR SW version 6.70 for SEGGER debuggers
1.02	MAR 13,2014	P30	Add 5.Connection with PLC(MELSEC-Q　Series) from MITSUBISHI
2.00	DEC 25,2014	—	Add new section “*6.KEIL MDK-ARM Setup*”.
2.01	Apr 19,2019		Update broken links, etc.

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)
   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.
2. Processing at power-on
   The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.
3. Input of signal during power-off state
   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.
4. Handling of unused pins
   Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.
5. Clock signals
   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin
   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).
7. Prohibition of access to reserved addresses
   Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.
8. Differences between products
   Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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