CubeSuite+ RL78,78K0R Compiler CA78K0R V1.40
Release Note

R20UT2023EJ0100
Rev.1.00
11 Apr, 2012

Contents

Chapter 1. Target Devices 2

Chapter 2. User's Manuals 3

Chapter 3. Key Word for Uninstallation 4

Chapter 4. Changes 5
4.1 Changes of CA78K0R 5
4.1.1 Improved of Code of Interrupt function 5
4.1.2 Improved of Translation Limit 5
4.1.3 Support for function addition of On-chip debug tool 5

Chapter 5. Cautions 6
5.1 Cautions for Assembler 6
5.1.1 Caution for the data flash area 6
5.1.2 Caution for the External Bus Interface 6
5.1.3 Caution for *ASM* statements 7
5.1.4 Caution for Relink function 8

Chapter 6. Restrictions 9
6.1 Restrictions for the CA78K0R 9

Chapter 7. Changes in User's Manual 10
7.1 Modifications in Build 10
7.1.1 Added description about [Memory Model] category of the [Compile Options]tab 10
7.1.2 Added description about [CRC Operation] category of the [Object Convert Options] tab 10

Chapter 1. Target Devices

The target devices supported by the CA78K0R are listed on the Website.

Please see this URL.

CubeSuite+ Product Page:

http://www.renesas.com/cubesuite+

Chapter 2. User's Manuals

Please read the following user's manuals together with this document.

Manual Name	Document Number
CubeSuite+ V1.02.00 RL78, 78K0R Coding Edition	R20UT0977EJ0100
CubeSuite+ V1.01.00 RL78, 78K0R Build Edition	R20UT0730EJ0100
CubeSuite+ V1.02.00 Message	R20UT0980EJ0100

Chapter 3. Key Word for Uninstallation

There are two ways to uninstall this product.

- Use the integrated uninstaller (uninstalls CubeSuite+)
- Use separate uninstaller (uninstalls this product only)

To use the separate uninstaller, select the following from the Control Panel:

- Add/Remove Programs (Windows XP)
- Programs and Features (Windows Vista, Windows 7)

Then select "CubeSuite+ CA78K0R V1.40".

Chapter 4. Changes

This chapter describes change from V1.30 to V1.40.

There is a possibility that the code is changed by the following.

4.1 Changes of CA78K0R

This section describes the changes in the compiler specifications.

4.1.1 Improved of Code of Interrupt function

The code of an interrupt function has been improved and processing time was made quickly.

4.1.2 Improved of Translation Limit

- Number of “case” labels for one “switch” statement
- Number of characters in one logical source line
- Number of macro identifiers simultaneously defined in one translation unit
- Number of members of a single structure or single union

4.1.3 Support for function addition of On-chip debug tool

It supported to the on-chip debug function with trace RAM and hot plug-in RAM.

Chapter 5. Cautions

This section describes cautions for using CA78K0R V1.40.

5.1 Cautions for Assembler

5.1.1 Caution for the data flash area

1. The arranging method data to the data flash area is the following.

```
ex) R5F100LE
----assembler source-----
PUBLIC     data_flash

FLDAT       DSEG AT 0F1000H
data_flash:  DB 11H, 22H, 33H, 44H

END
----directive-----------------
MEMORY  DATFL (0F1000H, 1000H)
```

2. CA78K0R does not output the code corresponding to a data flash area.
   Access by description by an assembler.
   When C source describes, access as 8 bit data.

5.1.2 Caution for the External Bus Interface

It does not supported to the external memory of the device corresponding to an external bus interface.
When use by 8-bit bus mode, access by description by an assembler.
When C source describes, access as 8 bits data.
Moreover, access is impossible using a standard library.

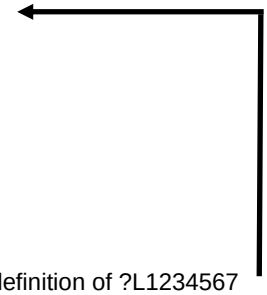
5.1.3 Caution for *ASM* statements

In the following cases, it becomes E3405 error.
(1) Make an external definition / an external reference declaration of the symbol besides CC78K0R management by "#asm" with C source,
(2) When the symbol name length who did the external definition / the external reference is nine or more characters, generate OMF of unjust symbol information and it becomes an error.

```
---------source1.c---------
unsigned char uch_Tmp1;
unsigned char uch_Tmp2;
void func1( void )
{
  ;
}
---------source2.c---------
void func2( void )
{
#asm
   EXTRN _uch_Tmp1
?L1234567:
   MOV A,!_uch_Tmp1
   br !?L1234567
#endasm
}
void func3( void )
{
#asm
   EXTRN _uch_Tmp2
   MOV A,!_uch_Tmp2
#endasm
}
--------------------------
```

[Workarounds]
It is avoidable by one of the following measures.
- An external definition / an external reference declaration in an *asm* statement are made before a definition/reference of all symbol.
- The symbol name length in an asm sentence who does an external definition is made into eight or less characters.

```
---------source2.c---------
void func2( void )
{
#asm
   EXTRN  _uch_Tmp1
   EXTRN  _uch_Tmp2
?L1234567:
   MOV A, !_uch_Tmp1
   br  !?L1234567
#endasm
}
void func3( void )
{
#asm
   ;EXTRN  _uch_Tmp2        ; It moves before the definition of ?L1234567
   MOV A, !_uch_Tmp2
#endasm
}
```



5.1.4 Caution for Relink function

By a relink function, when [Variable/Function Relocation Option] is enable, in the project of a flash area, a function is a callt function and may become an error by linker.
In this case, disable [Variable/Function Relocation Option]

Chapter 6. Restrictions

This section describes the restrictions for the CA78K0R.

6.1 Restrictions for the CA78K0R

None.

Chapter 7. Changes in User's Manual

This section describes errata in CubeSuite+ documentation. The same content is also contained in the Help file, and should be replaced by this content.

7.1 Modifications in Build

7.1.1 Added description about [Memory Model] category of the [Compile Options] tab

[Location] Page 182 → [Output object for flash]

[After addition] Select whether to output the object for flash.

This corresponds to the -zf option of the compiler.

If [Yes (-zf)] is selected

- **On the [Compiler Options] tab, in the [Startup] category, if the [Use standard startup] property is not set to [No], it is set to [Yes (for Flash area)].**
- **On the [Link Options] tab, in the [Device] category, set the [Set Flash start address] property to [No].**

7.1.2 Added description about [CRC Operation] category of the [Object Convert Options] tab

[Location] Page 221 → [Range of CRC]

[After addition] This property is displayed only when [Yes(-crc)] in the [Operate CRC] property is selected.

When "high-speed CRC" is chosen as the CRC operation type, refer to the user's manual of a device for the range of CRC operation.

[Location] Page 222 → [Type of CRC] → [Restriction]→ [High-speed-CRC]

[Before] Outputs the result of the high-speed CRC operation.

The initial value of CRC is 0H.

[After] **Outputs the result of the high-speed CRC operation.**

The CRC generator polynomial used complies with "X16 + X12 + X5 + 1" of CRC-16-CCITT .

[Location] Page 222 → [Initial value of CRC]

[After addition] This property is displayed only when [Yes(-crc)] in the [Operate CRC] property is selected and [General-purpose CRC] in the [Type of CRC] property is selected.

Set up the same value as the initial value of a CRCD register.

[Location] Page 547 → [Description]

[Before]

- Specify the initial value for the operation for the initial value.
  The range that can be specified for the initial value is 0H to 0FFFFH.
  If "HIGH" is specified for the operation method, the specification of the initial value is omitted and it is assumed that "0H" has been specified.

[After]

- Specify the initial value for the operation for the initial value.
The range that can be specified for the initial value is 0H to 0FFFFH.
If "HIGH" is specified for the operation method, the specification of the initial value is invalid.

Notice

1. All information included in this document is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Renesas Electronics products listed herein, please confirm the latest product information with a Renesas Electronics sales office. Also, please pay regular and careful attention to additional and different information to be disclosed by Renesas Electronics such as that disclosed through our website.
2. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
3. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part.
4. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
5. When exporting the products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You should not use Renesas Electronics products or the technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations.
6. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
7. Renesas Electronics products are classified according to the following three quality grades: "Standard", "High Quality", and "Specific". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below. You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application categorized as "Specific" without the prior written consent of Renesas Electronics. Further, you may not use any Renesas Electronics product for any application for which it is not intended without the prior written consent of Renesas Electronics. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for an application categorized as "Specific" or for which the product is not intended where you have failed to obtain the prior written consent of Renesas Electronics. The quality grade of each Renesas Electronics product is "Standard" unless otherwise expressly specified in a Renesas Electronics data sheets or data books, etc.
   - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots.
   - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; safety equipment; and medical equipment not specifically designed for life support.
   - "Specific": Aircraft; aerospace equipment; submersible repeaters; nuclear reactor control systems; medical equipment or systems for life support (e.g. artificial life support devices or systems), surgical implantations, or healthcare intervention (e.g. excision, etc.), and any other applications or purposes that pose a direct threat to human life.
8. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

RENESAS

SALES OFFICES Renesas Electronics Corporation http://www.renesas.com

Refer to "http://www.renesas.com/" for the latest and detailed information.

Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 harbourFront Avenue, #06-10, keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6278-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

Colophon 1.1