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## Chapter 1. Target Devices

The target devices supported by the CX 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+ V2.00.00 Integrated Development Environment User's Manual: Coding for CX compiler	R20UT2659EJ0100
CubeSuite+ V1.03.00 Integrated Development Environment User's Manual: Build for CX compiler	R20UT2142EJ0100
CubeSuite+ V2.01.00 Integrated Development Environment User's Manual: Message	R20UT2687EJ0100

## Chapter 3. Key Points for Selecting Uninstallation Method

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+ CX V1.31".

## Chapter 4. Changes

This chapter describes changes of CX.

### 4.1 Changes of CX

This section describes changes of CX from Ver.1.30 to Ver.1.31.

#### 4.1.1 Improved output code

In case all optimization option except for -Osize is designated and the switch statement includes many case statement, the output code might have been increased. In this version, this code had been improved.

#### 4.1.2 Removal of restrictions

Two restriction below has been removed.

#### No. 13 [Precaution about looking in structure elements](#)

[Description] When all the following five conditions are met, the wrong access to the structure/union members or array elements will be occurred.

<Conditions>

1. The version is V1.20 or later.
2. The process of 1-bit manipulation for structure/union member or integer array element is consecutive at four times or more and eight times or less.
3. More than one relevant bit location which is manipulated is away more than 1 byte from the variable's start address.
4. The values of "relevant bit location % 8" are serial number. If they are serial number when rearranging, it corresponds to this condition too.
5. All the consecutive 1-bit manipulations are all "set1" or "clr1".

**No. 14**      **Comparison involving type conversion and typedef**

[Description]      When an operand of a relational operator (>, >=, =, <=, =, !=) satisfies both of the following conditions 1 and 2, type conversion will not be done and the operation result will be incorrect in some cases.

## &lt;Conditions&gt;

1. The type of the left-hand operand has been converted to a 4-byte integer type and the type before conversion is an integer type declared using typedef.
2. The right-hand operand satisfies either condition (a) or (b) below.
  - (a) The operand has been converted to the same 4-byte integer type as that described in condition 1, and the type before conversion is the same integer type declared using typedef as that described in condition 1.
  - (b) The operand is an integer constant that is not greater than the maximum value of the integer type declared using typedef that is described in condition 1.

## Chapter 5. Cautions

This section describes cautions for using CX V1.31.

### 5.1 Handling of r1 register in interrupt function

The assembler uses the r1 register as a temporary register when expanding an instruction. Consequently, the r1 register may be used through instruction expansion even if there is no description on the r1 register in an assembler source file.

Save/restore the r1 register contents when describing interrupt functions with the assembler.

### 5.2 Debug information

Debug information is not output to codes in a file specified by the `$bininclude` quasi directive, codes in a macro defined by the `.macro` quasi directive.

### 5.3 The access to bit field with structure packing

If the width of a bit field is less than the data type of a member when the bit field is accessed during structure packing, the bit field is read as having the width of the data type of that member. Consequently, an area outside the object (an area where there is no data) is also accessed. This access is usually executed correctly but it might be invalid if I/O is mapped.

Example:

```
struct S {  
    int x:21;  
} subj; /* 3 bytes */  
subj.x = 1;
```

### 5.4 Specifying far jump calls for static functions

When specifying a static function in the far jump calling function list file, please add a period (".") and number after the function name.

At compile time, CX converts the names of the static functions to label names consisting of the function name followed by the period and number. For this reason, even if you specify a static function in the far jump calling function list file, you must specify a period and number after the function name. Please output the assembler source file, and check this label name.

Example: Function "func" with "static" is called via far jump

1. Search for the call to function "func" in the assembler source file, and check the converted label name.  
jarl \_func.0, lp <- It has been converted to a label name with a period and number added
2. In the far jump calling function list file, enter the label name you checked in 1.

[func.fjp]

3. Use the "-Xfar\_jump" option to specify the far jump calling function list file you created in step 2.  
>cx.exe -Cf3507 -Xfar\_jump=func.fjp main.c
4. The call to function "func" is converted to code using the jarl32 or jr32 instruction.

## 5.5 Symbol information file with variable defined in assembly source

In an application where a variable is defined in the assembly source and that variable is referenced in the C source, an error occurs if the symbol information file is generated by symbol file generator.

Please delete the variable in the assembly source from the symbol information file.

## 5.6 Assembler instructions written within #pragma directive

CX can't support .macro, .rept, .irp macro directives within #pragma directive. If these macro directives are written, compiler error will occur.

## 5.7 -Xdelete\_func option

This option deletes the function which is called from only the assembler source file as the unnecessary function.

## 5.8 Influence to debugging by subroutinization

When applying automatic subroutinization, there is a possibility that the program can't be debugged right.

- A break point can't be set near the subroutinized code.
- Step execution can't be done near the subroutinized code or the line status isn't correct.
- Variable value isn't correct after subroutinized code.

## 5.9 Caution for using Flash Memory Self Programming Library

You cannot access internal ROM in a flash environment when using Self Programming library. CX may output the code which accesses the internal ROM in initializing aggregate automatic variable, so please be careful.

## Chapter 6. Restrictions

This chapter describes the restrictions of the CX.

### 6.1 Restrictions of CX

Below is a list of restrictions of the CX V1.31.

No.	Restrictions
1	Specifying the "-Xno_romize" and "-Xtwo_pass_link" options simultaneously causes an error
2	Input file names containing non-ASCII characters

### 6.2 Restrictions on Using V1.31

The following restrictions apply to CX V1.31.

#### No. 1 [Specifying the "-Xno\\_romize" and "-Xtwo\\_pass\\_link" options simultaneously causes an error](#)

[Description] When the "-Xno\_romize" and "-Xtwo\_pass\_link" options are specified simultaneously, then an F0562003 error will occur if a file with the same name as the output load module file already exists.

F0562003:"*file*" is not ELF file.

[Workaround] Delete any file with the same name as the output load module file before running.

#### No. 2 [Input file names containing non-ASCII characters](#)

[Description] If the file name (including the path) contains no-ASCII characters, one of 1 or 2 below will occur if "-Xpass\_source" is specified.

1. C source lines output as comments in the assembler source file will be invalid
2. An E0592018 error will occur

E0592018:Failed to open an list file "*file*".

[Workaround] Change the file name (including the path) to one that does not contain non-ASCII characters.

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