

RENESAS TOOL NEWS on September 5, 2007: 070905/tn1

The C/C++ Compiler Package for the H8SX, H8S, and H8 MCU Families Revised to V.6.02 Release 00

We have revised the C/C++ compiler package for the H8SX, H8S, and H8 MCU families from V.6.01 Release 03 to V.6.02 Release 00.

1. Descriptions of Revision

1.1 High-performance Embedded Workshop Updated

The High-performance Embedded Workshop included in the package has been updated to V.4.03.00. For details of this version, see RENESAS TOOL NEWS Document No. 070701/tn3, published on July 1, 2007, at <http://tool-support.renesas.com/eng/toolnews/070701/tn3.htm>

1.2 Functions Introduced in the Compiler

- (1) Option `divs_inst` introduced: It expands division expressions to division instructions without using shift operations and is used for MCUs capable of executing division instructions at high speed of the H8SX family.
- (2) Option `align=4` can be used for the H8S MCU family.
- (3) Reduced has been the object sizes of mathematical functions `sinf()`, `cosf()`, `tanf()`, `expf()`, `logf()`, `sqrtf()`, and `atanf()`, which handle single-precision floating-point numbers, in order to improve speed and precision in operations.

1.3 Functions Introduced in the Optimizing Linkage Editor

The following options have been introduced in the optimizing linkage editor (hereafter abbreviated as the linker):

- (1) `total_size`: Outputs the total size of sections to the standard output type by type of section listed below.
 - Executable section
 - ROM-allocated data section

- RAM-allocated data section

(2) show=total_size: Outputs the above total size of sections to the linkage list.

1.4 Problems Fixed

1.4.1 In High-performance Embedded Workshop

The problem reported in the following item of news has been fixed:

(1) RENESAS TOOL NEWS Document No. 070701/tn2, published on July 1, 2007, at <http://tool-support.renesas.com/eng/toolnews/070701/tn2.htm>

1.4.2 In the Compiler

The following problems have been fixed:

(1) Those reported in the following items of news:

(a) RENESAS TOOL NEWS Document No. RSO-H8C_2-060601D, published on June 1, 2006, at

<http://tool-support.renesas.com/eng/toolnews/060601/tn6.htm>

(b) RENESAS TOOL NEWS Document No. 070901/tn4, published on September 1, 2007, at

<http://tool-support.renesas.com/eng/toolnews/070901/tn4.htm>

(2) The problem that option cpu=300L or cpu=300 cannot be selected with option structreg at the same time

(3) The problem that the results of execution of standard library functions sscanf() and realloc() are incorrect

(4) The problems that may cause the C4980, C332, C3027, C4633, and C4979 errors to arise

(5) The problem that the debugger may reference incorrect members of a structure and union.

(6) We have fixed a problem that double-type constant is not registered to the specified section. (This content was added on June 9, 2010.)

Conditions:

This problem occur if the following conditions are all satisfied.

1. Any one of the following CPU type is selected:

2000N, 2000A, 2600N, 2600A, H8SXN, H8SXM, H8SXA, H8SXX and AE5.

That is, the cpu option corresponding to the CPU type is selected out of the following:

-cpu=2000n, =2000a, =2600n, =2600a, =h8sxn, =h8sxm, =h8sxa, =h8sxx and =ae5

2. The Compatibility of output code option (-LEgacy=V4) is not selected.

3. Any one of the following conditions is met.

3.1 A directive #pragma section is used.

3.2 A directive #pragma abs16 section is used. And the Short

- absolute addressing mode option -abs16 is selected.
4. The substance of a function is described in the scopes of #pragma statement in 3.
 5. A double-type constant is referred in the function in 4.

Example:

C source

```

-----
#pragma section X    /* Condition 3 */
char *test(double *d) /* Condition 4 */
{
    *d = 1.2;          /* Condition 5 */
    return "string";
}
-----

```

Generated codes

```

-----
        .section C,data    ; Section is not CX.
C_00000000:
        .data.l h'3ff33333
        .data.l h'33333333
;
-----

```

1.4.3 In the Linker

- (1) For the message numbers L0300, L1330, L2220, and L3110, the method of displaying messages has been improved as follows:

If the file causing to dispatch a message of these types is a specific library module in the library files, the library module's name can be provided in the linker V.9.03.00 or later.

Example of a message before improved (V.9.02.00 or earlier)

```
** L3110 (F) Illegal cpu type "<CPU type>" in "<library name>"
```

Example of a message after improved (V.9.03.00 or later)

```
** L3110 (F) Illegal cpu type "<CPU type>" in "<library name>
(<module name>)"
```

To check for the version number of your linker, use the following procedure:

- (a) In High-performance Embedded Workshop, open the Tools menu and select Administration. The Tool Administration dialog box appears.
- (b) Select the compiler package you are using among Toolchains in the Registered Components list of the above dialog box;

then click the Properties button. The Properties dialog box opens.

- (c) In the Information tab of this dialog box, the version numbers of your tools will be shown.

Example of a linker: Optimizing Linkage Editor (V.9.00.02)

- (2) Fixed has been the problem that Call Walker, the stack analyzing tool, provides a smaller value of the program's stack usage than the actual one.

This problem may occur if the following conditions are all satisfied:

- (a) Optimizing option `-optimize=1` is selected at compilation.
- (b) In the C source file exists a function calling another one that immediately follows it.

Example of C source file:

```
-----  
void f()  
{  
    .....  
    g(); /* Function f calls g, which follows f */  
}  
void g()  
{  
    .....  
}  
-----
```

- (3) Fixed has been the problem that the register to be saved and that to be restored are different from each other when an option enabling the optimization of saving and restoring registers (for example, `optimize=register`) is used.

This problem may occur if the following conditions are all satisfied:

- (a) Option "goptimize" is selected at compilation.
- (b) Any of the following CPU options is selected at compilation:
300, 300reg, 300hn, 300ha, 2000n, 2000a, 2600n, and 2600a
Note that 2000n, 2000a, 2600n, and 2600a are involved if each of them is used together with compiler option `legacy=v4`.
- (c) The version of your linker is V.9.00.01 or later.
- (d) Any option enabling the optimization of saving and restoring registers (for example, `optimize=register`) is used at linking.

- (4) The problems causing the following internal errors have been fixed:

- L4000 (-) Internal Error : (1153)
- L4000 (-) Internal Error : (3081)
- L4000 (-) Internal Error : (8870)
- L4000 (-) Internal Error : (8957)

2. How to Update Your Product and Purchase the Revised One

2.1 Free-of-Charge Update

Free-of-charge online update is available. Update yours using AutoUpdate Utility or download the update program from the Web site at

http://www.renesas.com/h8c_download

and execute it (this site will be opened from September 5 on).

2.2 First Ordering

If you place an order for the product, please supply the following items of information to your local Renesas Technology sales office or distributor:

Product Type: The C/C++ compiler package for the H8SX, H8S, and H8 MCU families

Version No.: V.6.02

Release No.: Release 00

Host OS: Windows XP or Windows 2000

For the price of the product, also contact the above.

3. Notice when using the MISRA C Rule Checker SQMlint

V.1.02 Release 00 through V.1.03 Release 00

Refer to RENESAS TOOL NEWS Document No. 070901/tn2, published on September 3, 2007, if you are using the MISRA C Rule Checker SQMlint V.1.02 Release 00 through V.1.03 Release 00

<http://tool-support.renesas.com/eng/toolnews/070901/tn2.htm>.

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