

A Note on Using the C Compiler Packages for the R8C and M16C MCU Families --With Using Compile Option -OGJ--

When you use the C compiler package for the R8C and M16C MCU families, take note of the following problem:

- With using compile option -OGJ, which optimizes external variables
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1. Products and Versions Concerned

- The C compiler package for the R32C MCU series V.1.02 Release 01
- The C compiler package for the M32C MCU series V.5.42 Release 00
- The C compiler package for the M16C series, R8C family of MCUs V.5.45 Release 01

NOTE :

The above three compiler packages are included in "the C compiler package for the R8C and M16C families 2010.04."

2. Description

If you create a project on High-performance Embedded Workshop and make a build with compile option -OGJ selected, the temporary assembler file generated by the compiler is identified as the source file and assembled.

Condition:

This problem arises if you select compile option -OGJ as follows:

- (1) You open the Build menu and select Renesas *** Standard Toolchain.... The Renesas *** Standard Toolchain dialog box appears. Here, symbol *** denotes the type of toolchain for the compiler package you use.
- (2) You select Optimization from the Categories list in the C tab and check the following check box in the Optimizing Options list:

[-OGJ] Optimizes the branch instruction which refers to the global label.

In addition to the above condition, if the conditions described below are all satisfied, another problem accompanies: the relocatable module file r30 generated by compilation and the one generated by assembling are different from each other, the latter is overwritten by the former, and the overwritten file is linked, so correct object code cannot be generated.

Conditions:

- (1) Asm functions are included in the C source file, and conditional assembling is performed.

Example of C source file:

```
-----  
void func(void)  
{  
  #pragma asm  
  .if ABC==0  
    NOP  
  .else  
    MOV.W r0,r1  
  .endif  
  #pragma endasm  
}  
-----
```

- (2) As a compiler option, -OGJ -as30 "-D ABC=1" is input.
- (3) As an assembler and linker option, -JOPT is selected.
- (4) Then builds are made.

3. Workaround

To avoid the problem, select option -OGJ by following these steps:

- (1) Open the Build menu and select Renesas *** Standard Toolchain....
The Renesas *** Standard Toolchain dialog box appears.
- (2) In this dialog box, click the C tab.
- (3) Select Optimization from the Categories list. If the -OGJ check box has been checked in the Optimizing Options list, uncheck it.
- (4) Select Others from the Categories list.
- (5) Type -OGJ into the User-defined options text box.
- (6) Click OK.
- (7) Select Tuning from the Categories list in the Assembler tab and make sure that the following check box in the Options list has been checked:
[-JOPT] Optimizes the branch instruction which refers to the global label.

If unchecked, check it.

(8) Select Tuning from the Categories list in the Linker tab and make sure that the following check box in the Options list has been checked:

[-JOPT] Optimizes the branch instruction which refers to the global label.

If unchecked, check it.

NOTICES:

1. If you select either of the following options, the -OGJ check box is automatically checked, so uncheck it:

- Maximum optimization of ROM size followed by speed
- Maximum optimization of speed followed by ROM size

You can select either of them from the Size of speed list, which appears when you select Optimization from the Categories list in the C tab.

2. You need not delete the temporary assembler file involved because this file does not cause another problem. If you want to delete it, do it directly. The following commands cannot delete the file:

- Clean Current Project in the Build menu
- Clean Active Projects in the Build menu

4. Bug Fix Release

We are supplying the patch for eliminating this problem. We will inform you when and how we supply it in RENESAS TOOL NEWS.

5. Schedule of Fixing the Problem

We plan to fix this problem in the next release of the compiler packages.

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