

[Notes]

R20TS0583EJ0100

Rev.1.00

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**C Compiler Package for RH850 Family**

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Jun. 01, 2020

**Outline**

When using the C compiler package for RH850 CC-RH, note the following point.

1. Note on writing the constant value 0 to a 2-byte area (No.29)

Note: The number following the note is an identification number for the precaution.

**1. Note on Writing the Constant Value 0 to a 2-Byte Area (No.29)****1.1 Applicable Products**

CC-RH V1.00.00 to V2.02.00

**1.2 Details**

When you compile a source code that writes the constant value "0" to a 2-byte long memory area, a code that writes to an address shifted by 1 byte off the intended address is generated.

Executing this code leads to an unintended execution result or generates a misaligned access exception.

If this is the case, a warning message with either of the following numbers is output at the time of building.

W0550010 (V1.02.00 or earlier)

W0550019 (V1.03.00 or later)

**1.3 Conditions**

This problem arises if the following conditions are all met:

- (1) Either a structure type variable having a 2-byte type element (member) or a 2-byte type array is used. (Here, "2-byte type" also includes a 16-bit bit field and \_\_fp16 type.)
- (2) The constant value "0" is assigned to the 2-byte element (1) by using either of the following formats:
  - (2-1) Through a pointer ((\*p).m or p->m format)
  - (2-2) A subscript operator whose element specification is not a constant expression (p[i] format)
- (3) In (2), the value is assigned to an element other than the first member of the type (1).

Note: The above condition might apply when a packing value is specified as 2 via an Xpack option or #pragma pack directive, in which case a 4-byte or 8-byte member is also accessed in units of 2 bytes.

## 1.4 Examples

Below is an example of the error. The parts corresponding to the error conditions are shown in red.

ccrh -Osize tp.c

```
/* tp.c */
struct ST {
    char m1;
    char m2;
    short m3;          /* (1),(3) */
    short m4;          /* (1),(3) */
};

void func(struct ST *pst) {
    int i;
    for (i=0;i<10;++i) {
        (pst + i)->m2 = 1;
        (pst + i)->m3 = 0;    /* (2-1) */
        pst[i].m4 = 0;       /* (2-2) */
    }
}
```

When the constant value "0" is written to members m3 and m4, the value is written to an address shifted by 1 byte.

## 1.5 Workaround

Change the relevant members to a type other than the 2-byte type.

If the above condition applies due to the use of the structure type packing function, remove the packing.

## 1.6 Schedule for Fixing the Problem

This problem will be fixed in CC- RH V2.03.00. The release date has not yet been determined.

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Jun.01.20	-	First edition issued

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