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A Note on Using C-Compiler Package M3T-NC30WA

Please take note of the following problem in using the M3T-NC30WA C-compiler package:

- On information about the stack when an interrupt function is declared
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1. Versions Concerned

M3T-NC30WA V.5.10 Release 1 through V.5.30 Release 1
for the M16C/60, M16C/30, M16C/Tiny, M16C/20, M16C/10, and R8C/Tiny series

2. Description

When the -finfo compile option is selected, information about the inspector is generated. However, the necessary sizes for saving and restoring the contents of the specified registers on and from the stack when an interrupt is generated are not provided as items of information about the inspector.

So, the stack-usage calculation utility STKViewer* cannot tell the necessary sizes.

- * Calculates the stack usage from information about the inspector generated by the compiler.

2.1 Conditions

This problem occurs if the following conditions are all satisfied:

- (1) An interrupt function is declared.
- (2) The compile option -finfo is selected.

3. Workaround

3.1 When an auto variable exist

The necessary sizes for saving and restoring the contents of the registers R0, R1, R2,

R3, A0 and A1 on and from the stack when an interrupt is generated are 12 and -12 respectively. So set these values in the asm() functions placed before and after the processing of an interrupt function using the assembler directive command ".stk" as shown below.

```
-----  
#pragma INTERRUPT i_func  
void i_func(void)  
{  
    asm( "        .stk  12" ); /* Necessary size for saving  
                               contents of registers  
                               R0, R1, R2, R3, A0 and A1 */  
    . . . . .  
  
    asm( "        .stk  -12" ); /* Necessary size for restoring  
                               contents of registers  
                               R0, R1, R2, R3, A0 and A1 */  
}  
-----
```

NOTE: The above statements do not affect the assembler source code generated.

3.2 When an auto variable doesn't exist

The necessary sizes for saving and restoring the contents of the registers R0, R1, R2, R3, A0, A1 and FB on and from the stack when an interrupt is generated are 14 and -14 respectively. So set these values in the asm() functions placed before and after the processing of an interrupt function using the assembler directive command ".stk" as shown below.

```
-----  
#pragma INTERRUPT i_func  
void i_func(void)  
{  
    asm( "        .stk  14" ); /* Necessary size for saving  
                               contents of registers  
                               R0, R1, R2, R3, A0, A1 and FB */  
    . . . . .  
  
    asm( "        .stk  -14" ); /* Necessary size for restoring  
                               contents of registers  
                               R0, R1, R2, R3, A0, A1 and FB */  
}  
-----
```

NOTE: The above statements do not affect the assembler source code generated.

4. **Schedule of Fixing the Problem**

This problem has already been resolved in the M3T-NC30WA V.5.30 Release 02.
So please revise your product to this online from the Software Download Site.

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