

A Note on Using the C Compiler Package for the M16C MCU Series --With Using C-Language Startup Files--

Please take note of the following problem in using the C compiler package for the M16C MCU series:

- With using C-language startup files

1. Product and Versions Concerned

The C compiler package--M3T-NC30WA--for the M16C series*
V.5.42 Release 00 and V.5.43 Release 00

*M16C is the generic name of the M16C/60, /30, /20, /10, /Tiny,
and R8C/Tiny series.

2. Description

If the watchdog timer is made enabled after a reset of the MCU,
the execution of the C-language startup file may not be exited.

3. Conditions

This problem occurs if the following conditions are all satisfied:

- (1) A C-language startup file, cstartdef.h, is used.
- (2) Within this startup file, `__WATCH_DOG__` is set to 1 to enable the option Function Select Register.

```
-----  
#define __WATCH_DOG__ 1  
-----
```

Explanation:

When `__WATCH_DOG__` is set to 1 in the C-language startup file
"cstartdef.h", `'_asm(" .ofsreg OFFH");'` makes the setting

for starting the watchdog timer automatically after a reset of the MCU. Though the startup file periodically refreshes the watchdog timer at initializing each section, execution cannot be exited from the watchdog timer because the timing of refreshment is slow.

4. Workaround

Modify the section initialize definition file "initsct.h" for defining the initialization processing of each section as follows:

```
-----  
#if __WATCH_DOG__ == 1  
#pragma ASM  
scopy .macro FROM_,TO_  
    mov.b #00,0DH  
    mov.b #0ffH,0DH  
    mov.w #0000H,R0  
    .local M1  
M1:  
    cmp.w #sizeof TO_,R0  
    .local M2  
    jeq M2  
    ;cmp.w #0064H,R0 <- Commented out  
    ;.local M3 <- Commented out  
    ;jne M3 <- Commented out  
    mov.b #00,0DH  
    mov.b #0ffH,0DH  
;M3: <- Commented out  
    mov.w #(topof FROM_)&0ffffH,A0  
  
    mov.w #(topof TO_)&0ffffH,A1  
    add.w R0,A0  
    add.w R0,A1  
    mov.b [A0],[A1]  
    add.w #1,R0  
    jmp M1  
M2:  
    .endm  
  
N_BZERO .macro SECT_  
    mov.b #00,0DH  
    mov.b #0ffH,0DH  
    mov.w #0000H,R0  
    .local M1
```

```

M1:
    cmp.w    #sizeof SECT_,R0
    .local M2
    jeq     M2
    ;cmp.w  #0064H,R0 <- Commented out
    ;.local M3      <- Commented out
    ;jne    M3      <- Commented out
    mov.b   #00,0DH
    mov.b   #0ffH,0DH
;M3:          <- Commented out
    mov.w   #(topof SECT_)&0ffffH,A0
    add.w   R0,A0
    mov.b   #00H,[A0]
    add.w   #1H,R0
    jmp    M1
M2:
    .endm
#pragma ENDASM
#endif
-----

```

5. Schedule of Fixing the Problem

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

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