

## NY8 系列動態更新 Timer Data & PWM Duty 應用注意事項

**內容：** NY8 系列動態更新 Timer Data & PWM Duty 操作說明。

**原因：** 動態更新 PWM 頻率，應在 Timer 發生溢位時進行 Timer Data & PWM Duty 更新，確保 PWM 輸出符合預期。

**方法：** NY8 系列動態更新 Timer Data & PWM Duty 說明步驟如下。

1. 設定 Timer Data & PWM Duty 初值。需注意 PWM Duty 不可大於 Timer Data。
2. 打開 Timer 中斷。
3. 在中斷服務迴圈更新 Timer Data & PWM Duty。多個中斷應用時，需優先確認該 Timer 的溢位旗標。

### 範例一: ASM 範例程式

```

V_MAIN:
  movia  0x00
  iostb  IOSTB                ; Set PortB as output
  disi   ; Disable all interrupts

  movia  0x00
  movar  TMRH
  movia  0xFF
  sfun   TMR1                ; Load 0xFF to TMR1 (Timer1[9:0]=0x0FF)
  movia  0x80
  sfun   PWM1DUTY           ; Load 0x80 to PWM1DUTY LB register ( PWM1DUTY[9:0]=0x080 )

  movia  C_PWM1_En | C_TMR1_Reload | C_TMR1_En
  sfun   T1CR1              ; Enable Timer1, Initial value reloaded from TMR1, Non-stop mode
  movia  C_TMR1_ClkSrc_Inst
  sfun   T1CR2              ; Timer1 clock source = instruction clock

  movia  C_INT_TMR1
  movar  INTE                ; Enable Timer1 overflow interrupt
  eni    ; Enable all unmasked interrupts
;-----
L_MAIN_LOOP:
  clrwdt
  fgoto  L_MAIN_LOOP
;-----
V_INT:
  movar  R_AccBuf            ; Store ACC value
  swapr  R_AccBuf,C_SaveToReg
  movr   STATUS,C_SaveToAcc
  movar  R_StatusBuf        ; Store STATUS value
;-----
L_TIME1_INT:
  btrss  INTF,C_INT_TMR1_Bit ; Skip next instruction, if T1IF=1
  lgoto  L_RET2Main

  movia  0x01
  xorar  PORTB,1            ; PB0 Toggle
  movia  ~C_INT_TMR1
  movar  INTF                ; Clear T1IF (Timer1 overflow interrupt flag bit)

  movia  0x00
  movar  TMRH
  movia  0x80
  sfun   TMR1                ; Load 0x80 to TMR1 (Timer1[9:0]=0x0FF)
  movia  0x40
  sfun   PWM1DUTY           ; Load 0x40 to PWM1DUTY LB register ( PWM1DUTY[9:0]=0x080 )
L_RET2Main:
  movr   R_StatusBuf,C_SaveToAcc
  movar  STATUS              ; Restore STATUS value
  swapr  R_AccBuf,C_SaveToAcc ; Restore ACC value
  retie  ; Return from interrupt and enable interrupt globally
  
```

**範例二: C 範例程式**

```

void main(void)
{
    IOSTB = 0; // Set PortB as output

    DISI(); // Disable all interrupts

    TMRH = 0; // Load 0xFF to TMR1 (Timer1[9:0]=0x0FF)
    TMR1 = 0xFF; // Load 0x80 to PWM1DUTY LB register ( PWM1DUTY[9:0]=0x080 )
    PWM1DUTY = 0x80;

    T1CR1 = C_PWM1_En | C_TMR1_Reload | C_TMR1_En; // Enable Timer1, initial value reloaded from TMR1, Non-stop mode
    T1CR2 = C_TMR1_ClkSrc_Inst; // Timer1 clock source = instruction clock

    INTE = C_INT_TMR1; // Enable Timer1 overflow interrupt
    ENI(); // Enable all unmasked interrupts

    while(1)
    {
        CLRWDI();
    }

    //interrupt service routine
    void isr(void) __interrupt(0)
    {
        if(INTFbits.T1IF)
        {
            PORTB ^= 1; // PB0 Toggle
            INTF= (unsigned char)~(C_INT_TMR1); // Clear T1IF flag bit

            TMRH = 0; // Update 0x80 to TMR1 (Timer1[9:0]=0x080)
            TMR1 = 0x80; // Update 0x40 to PWM1DUTY LB register ( PWM1DUTY[9:0]=0x040 )
            PWM1DUTY = 0x40;
        }
    }
}

```

適用 IC Body 如下：

1. **NY8A 系列**：NY8A051F / NY8A051G / NY8A051H / NY8A052E / NY8A053E / NY8A054A / NY8A054E / NY8AE51F。
2. **NY8B 系列**：NY8B060D / NY8B062A / NY8B062F / NY8BM62D / NY8BE62D / NY8BE64A。
3. **NY8T 系列**：NY8TM52D / NY8TE64A。