

LIST

```
;=====
;  MPASM PIC16F877 processor include
;
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;=====
```

NOLIST

```
;=====
;  This header file defines configurations, registers, and other useful
;  bits of information for the PIC16F877 microcontroller.  These names
;  are taken to match the data sheets as closely as possible.
;
;  Note that the processor must be selected before this file is included.
;  The processor may be selected the following ways:
;
;      1. Command line switch:
;          C:\MPASM MYFILE.ASM /PIC16F877
;      2. LIST directive in the source file
;          LIST    P=PIC16F877
;      3. Processor Type entry in the MPASM full-screen interface
;      4. Setting the processor in the MPLAB Project Dialog
;=====
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```
;=====
;
;      Verify Processor
;
;=====
      IFNDEF __16F877
          MESSG "Processor-header file mismatch.  Verify selected processor."
      ENDIF
```

```
;=====
;
;      Register Definitions
;
;=====
```

```
W          EQU  H'0000'
F          EQU  H'0001'
```

```
;----- Register Files -----
```

```
;-----Bank0-----
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```
INDF      EQU  H'0000'
TMR0      EQU  H'0001'
PCL       EQU  H'0002'
STATUS    EQU  H'0003'
FSR       EQU  H'0004'
PORTA     EQU  H'0005'
PORTB     EQU  H'0006'
PORTC     EQU  H'0007'
PORTD     EQU  H'0008'
PORTE     EQU  H'0009'
PCLATH    EQU  H'000A'
INTCON    EQU  H'000B'
PIR1      EQU  H'000C'
PIR2      EQU  H'000D'
TMR1L     EQU  H'000E'
TMR1H     EQU  H'000F'
T1CON     EQU  H'0010'
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TMR2            EQU  H'0011'
T2CON           EQU  H'0012'
SSPBUF          EQU  H'0013'
SSPCON          EQU  H'0014'
CCPR1           EQU  H'0015'
CCPR1L          EQU  H'0015'
CCPR1H          EQU  H'0016'
CCP1CON         EQU  H'0017'
RCSTA           EQU  H'0018'
TXREG           EQU  H'0019'
RCREG           EQU  H'001A'
CCPR2           EQU  H'001B'
CCPR2L          EQU  H'001B'
CCPR2H          EQU  H'001C'
CCP2CON         EQU  H'001D'
ADRESH          EQU  H'001E'
ADCON0          EQU  H'001F'

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;-----Bank1-----
OPTION_REG      EQU  H'0081'
TRISA           EQU  H'0085'
TRISB           EQU  H'0086'
TRISC           EQU  H'0087'
TRISD           EQU  H'0088'
TRISE           EQU  H'0089'
PIE1            EQU  H'008C'
PIE2            EQU  H'008D'
PCON            EQU  H'008E'
SSPCON2         EQU  H'0091'
PR2             EQU  H'0092'
SSPAD          EQU  H'0093'
SSPSTAT         EQU  H'0094'
TXSTA           EQU  H'0098'
SPBRG           EQU  H'0099'
ADRESL          EQU  H'009E'
ADCON1          EQU  H'009F'

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;-----Bank2-----
EEDATA          EQU  H'010C'
EEADR           EQU  H'010D'
EEDATH          EQU  H'010E'
EEADRH          EQU  H'010F'

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;-----Bank3-----
EECON1          EQU  H'018C'
EECON2          EQU  H'018D'

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;----- STATUS Bits -----
C               EQU  H'0000'
DC              EQU  H'0001'
Z               EQU  H'0002'
NOT_PD          EQU  H'0003'
NOT_TO          EQU  H'0004'
IRP             EQU  H'0007'

RP0             EQU  H'0005'
RP1             EQU  H'0006'

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;----- PORTA Bits -----
RA0             EQU  H'0000'
RA1             EQU  H'0001'
RA2             EQU  H'0002'
RA3             EQU  H'0003'
RA4             EQU  H'0004'
RA5             EQU  H'0005'

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;----- PORTB Bits -----
RB0      EQU  H'0000'
RB1      EQU  H'0001'
RB2      EQU  H'0002'
RB3      EQU  H'0003'
RB4      EQU  H'0004'
RB5      EQU  H'0005'
RB6      EQU  H'0006'
RB7      EQU  H'0007'

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;----- PORTC Bits -----
RC0      EQU  H'0000'
RC1      EQU  H'0001'
RC2      EQU  H'0002'
RC3      EQU  H'0003'
RC4      EQU  H'0004'
RC5      EQU  H'0005'
RC6      EQU  H'0006'
RC7      EQU  H'0007'

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;----- PORTD Bits -----
RD0      EQU  H'0000'
RD1      EQU  H'0001'
RD2      EQU  H'0002'
RD3      EQU  H'0003'
RD4      EQU  H'0004'
RD5      EQU  H'0005'
RD6      EQU  H'0006'
RD7      EQU  H'0007'

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;----- PORTE Bits -----
RE0      EQU  H'0000'
RE1      EQU  H'0001'
RE2      EQU  H'0002'

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;----- INTCON Bits -----
RBIF      EQU  H'0000'
INTF      EQU  H'0001'
T0IF      EQU  H'0002'
RBIE      EQU  H'0003'
INTE      EQU  H'0004'
T0IE      EQU  H'0005'
PEIE      EQU  H'0006'
GIE       EQU  H'0007'

TMR0IF     EQU  H'0002'
TMR0IE     EQU  H'0005'

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;----- PIR1 Bits -----
TMR1IF     EQU  H'0000'
TMR2IF     EQU  H'0001'
CCP1IF     EQU  H'0002'
SSPIF      EQU  H'0003'
TXIF       EQU  H'0004'
RCIF       EQU  H'0005'
ADIF       EQU  H'0006'
PSPIF      EQU  H'0007'

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;----- PIR2 Bits -----
CCP2IF      EQU  H'0000'
BCLIF       EQU  H'0003'
EEIF        EQU  H'0004'

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;----- T1CON Bits -----
TMR1ON      EQU  H'0000'
TMR1CS      EQU  H'0001'
NOT_T1SYNC  EQU  H'0002'
T1OSCEN     EQU  H'0003'

T1CKPS0     EQU  H'0004'
T1CKPS1     EQU  H'0005'

T1INSYNC    EQU  H'0002'

T1SYNC      EQU  H'0002'

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;----- T2CON Bits -----
TMR2ON      EQU  H'0002'

T2CKPS0     EQU  H'0000'
T2CKPS1     EQU  H'0001'
TOUTPS0     EQU  H'0003'
TOUTPS1     EQU  H'0004'
TOUTPS2     EQU  H'0005'
TOUTPS3     EQU  H'0006'

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;----- SSPCON Bits -----
CKP         EQU  H'0004'
SSPEN       EQU  H'0005'
SSPOV       EQU  H'0006'
WCOL        EQU  H'0007'

SSPM0       EQU  H'0000'
SSPM1       EQU  H'0001'
SSPM2       EQU  H'0002'
SSPM3       EQU  H'0003'

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;----- CCP1CON Bits -----
CCP1Y       EQU  H'0004'
CCP1X       EQU  H'0005'

CCP1M0      EQU  H'0000'
CCP1M1      EQU  H'0001'
CCP1M2      EQU  H'0002'
CCP1M3      EQU  H'0003'

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;----- RCSTA Bits -----
RX9D        EQU  H'0000'
OERR         EQU  H'0001'
FERR         EQU  H'0002'
ADDEN        EQU  H'0003'
CREN         EQU  H'0004'
SREN         EQU  H'0005'
RX9          EQU  H'0006'
SPEN         EQU  H'0007'

RCD8         EQU  H'0000'
RC9          EQU  H'0006'

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NOT_RC8          EQU  H'0006'

RC8_9            EQU  H'0006'

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;----- CCP2CON Bits -----
CCP2Y            EQU  H'0004'
CCP2X            EQU  H'0005'

CCP2M0           EQU  H'0000'
CCP2M1           EQU  H'0001'
CCP2M2           EQU  H'0002'
CCP2M3           EQU  H'0003'

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;----- ADCON0 Bits -----
ADON             EQU  H'0000'
GO_NOT_DONE      EQU  H'0002'

GO               EQU  H'0002'
CHS0             EQU  H'0003'
CHS1             EQU  H'0004'
CHS2             EQU  H'0005'
ADCS0            EQU  H'0006'
ADCS1            EQU  H'0007'

NOT_DONE         EQU  H'0002'

GO_DONE          EQU  H'0002'

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;----- OPTION_REG Bits -----
PSA             EQU  H'0003'
T0SE            EQU  H'0004'
T0CS            EQU  H'0005'
INTEDG          EQU  H'0006'
NOT_RBPU        EQU  H'0007'

PS0             EQU  H'0000'
PS1             EQU  H'0001'
PS2             EQU  H'0002'

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;----- TRISA Bits -----
TRISA0          EQU  H'0000'
TRISA1          EQU  H'0001'
TRISA2          EQU  H'0002'
TRISA3          EQU  H'0003'
TRISA4          EQU  H'0004'
TRISA5          EQU  H'0005'

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;----- TRISB Bits -----
TRISB0          EQU  H'0000'
TRISB1          EQU  H'0001'
TRISB2          EQU  H'0002'
TRISB3          EQU  H'0003'
TRISB4          EQU  H'0004'
TRISB5          EQU  H'0005'
TRISB6          EQU  H'0006'
TRISB7          EQU  H'0007'

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;----- TRISC Bits -----
TRISC0          EQU  H'0000'
TRISC1          EQU  H'0001'

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TRISC2      EQU  H'0002'
TRISC3      EQU  H'0003'
TRISC4      EQU  H'0004'
TRISC5      EQU  H'0005'
TRISC6      EQU  H'0006'
TRISC7      EQU  H'0007'

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;----- TRISD Bits -----
TRISD0      EQU  H'0000'
TRISD1      EQU  H'0001'
TRISD2      EQU  H'0002'
TRISD3      EQU  H'0003'
TRISD4      EQU  H'0004'
TRISD5      EQU  H'0005'
TRISD6      EQU  H'0006'
TRISD7      EQU  H'0007'

```

```

;----- TRISE Bits -----
TRISE0      EQU  H'0000'
TRISE1      EQU  H'0001'
TRISE2      EQU  H'0002'
PSPMODE     EQU  H'0004'
IBOV        EQU  H'0005'
OBF         EQU  H'0006'
IBF         EQU  H'0007'

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;----- PIE1 Bits -----
TMR1IE      EQU  H'0000'
TMR2IE      EQU  H'0001'
CCP1IE      EQU  H'0002'
SSPIE       EQU  H'0003'
TXIE        EQU  H'0004'
RCIE        EQU  H'0005'
ADIE        EQU  H'0006'
PSPIE       EQU  H'0007'

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;----- PIE2 Bits -----
CCP2IE      EQU  H'0000'
BCLIE       EQU  H'0003'
EEIE        EQU  H'0004'

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;----- PCON Bits -----
NOT_BOR     EQU  H'0000'
NOT_POR     EQU  H'0001'

NOT_BO      EQU  H'0000'

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;----- SSPCON2 Bits -----
SEN          EQU  H'0000'
RSEN         EQU  H'0001'
PEN          EQU  H'0002'
RCEN         EQU  H'0003'
ACKEN        EQU  H'0004'
ACKDT        EQU  H'0005'
ACKSTAT      EQU  H'0006'
GCEN         EQU  H'0007'

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;----- SSPSTAT Bits -----
BF           EQU  H'0000'

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UA            EQU    H'0001'
R_NOT_W      EQU    H'0002'
S            EQU    H'0003'
P            EQU    H'0004'
D_NOT_A      EQU    H'0005'
CKE          EQU    H'0006'
SMP          EQU    H'0007'

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R            EQU    H'0002'
D            EQU    H'0005'

```

```

I2C_READ     EQU    H'0002'
I2C_START    EQU    H'0003'
I2C_STOP     EQU    H'0004'
I2C_DATA     EQU    H'0005'

```

```

NOT_W        EQU    H'0002'
NOT_A        EQU    H'0005'

```

```

NOT_WRITE    EQU    H'0002'
NOT_ADDRESS  EQU    H'0005'

```

```

R_W          EQU    H'0002'
D_A          EQU    H'0005'

```

```

READ_WRITE   EQU    H'0002'
DATA_ADDRESS EQU    H'0005'

```

```

;----- TXSTA Bits -----

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```

TX9D         EQU    H'0000'
TRMT         EQU    H'0001'
BRGH         EQU    H'0002'
SYNC         EQU    H'0004'
TXEN         EQU    H'0005'
TX9          EQU    H'0006'
CSRC         EQU    H'0007'

```

```

TXD8         EQU    H'0000'
NOT_TX8      EQU    H'0006'

```

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TX8_9        EQU    H'0006'

```

```

;----- ADCON1 Bits -----

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ADFM         EQU    H'0007'

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```

PCFG0        EQU    H'0000'
PCFG1        EQU    H'0001'
PCFG2        EQU    H'0002'
PCFG3        EQU    H'0003'

```

```

;----- EECON1 Bits -----

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```

RD           EQU    H'0000'
WR           EQU    H'0001'
WREN         EQU    H'0002'
WRERR        EQU    H'0003'
EEPGD        EQU    H'0007'

```

```

;=====
;
;      RAM Definitions
;

```

```

;=====
__MAXRAM    H'01FF'
__BADRAM    H'008F'-H'0090'
__BADRAM    H'0095'-H'0097'
__BADRAM    H'009A'-H'009D'
__BADRAM    H'0105'
__BADRAM    H'0107'-H'0109'
__BADRAM    H'0185'
__BADRAM    H'0187'-H'0189'
__BADRAM    H'018E'-H'018F'

;=====
;
;      Configuration Bits
;
;      NAME          Address
;      CONFIG        2007h
;
;=====

; The following is an assignment of address values for all of the
; configuration registers for the purpose of table reads
_CONFIG      EQU  H'2007'

;----- CONFIG Options -----
_LP_OSC      EQU  H'3FFC'      ; LP oscillator
_XT_OSC      EQU  H'3FFD'      ; XT oscillator
_HS_OSC      EQU  H'3FFE'      ; HS oscillator
_RC_OSC      EQU  H'3FFF'      ; RC oscillator

_WDT_OFF     EQU  H'3FFB'      ; WDT disabled
_WDT_ON      EQU  H'3FFF'      ; WDT enabled

_PWRT_ON     EQU  H'3FF7'      ; PWRT enabled
_PWRT_OFF    EQU  H'3FFF'      ; PWRT disabled

_CP_All      EQU  H'0FCF'      ; 0000h to 1FFFh code protected
_CP_HALF     EQU  H'1FDF'      ; 1000h to 1FFFh code protected
_CP_UPPER_256 EQU  H'2FEF'      ; 1F00h to 1FFFh code protected
_CP_OFF      EQU  H'3FFF'      ; Code protection off

_BODEN_OFF   EQU  H'3FBF'      ; BOR disabled
_BODEN_ON    EQU  H'3FFF'      ; BOR enabled

_LVP_OFF     EQU  H'3F7F'      ; RB3 is digital I/O, HV on MCLR must be used for programming
_LVP_ON      EQU  H'3FFF'      ; RB3/PGM pin has PGM function; low-voltage programming enabled

_CPD_ON      EQU  H'3EFF'      ; Data EEPROM memory code-protected
_CPD_OFF     EQU  H'3FFF'      ; Code Protection off

_WRT_ENABLE_OFF EQU  H'3DFF'      ; Unprotected program memory may not be written to by EECONW
_WRT_ENABLE_ON  EQU  H'3FFF'      ; Unprotected program memory may be written to by EECONW

_DEBUG_ON    EQU  H'37FF'      ; In-Circuit Debugger enabled, RB6 and RB7 are dedicated to In-Circuit Debugger
_DEBUG_OFF   EQU  H'3FFF'      ; In-Circuit Debugger disabled, RB6 and RB7 are general purpose I/O pins

;----- DEVID Equates -----
_DEVID1      EQU  H'2006'

;----- IDLOC Equates -----
_IDLOC0      EQU  H'2000'
_IDLOC1      EQU  H'2001'
_IDLOC2      EQU  H'2002'
_IDLOC3      EQU  H'2003'

```

LIST



