



Use M6117D GPIO

2005-06-30

The controller of 16-bit GPIO function is built-in the CPU 6117D of 386 SBC series. These 16-bit GPIO can be set as 16-bit input or output, or 8-bit input & 8-bit output, etc.

Below is technical table list for reference:

Index for port 22 Hex		Data for port 23 Hex
GPIO Register Setting: 13 Hex		Lock register: 00 Hex Unlock register: 0C5 Hex
GPIO [7-0] Direction Setting: 4E Hex		Input: 00 Hex (Note 1) Output: 0FF Hex (Note 2)
GPIO [15-8] Direction Setting: 4F Hex		Input: 00 Hex (Note 3) Output: 0FF Hex (Note 4)
Read/write data thru GPIO [7-0]		
	Index for port 22 Hex	Data for port 23 Hex
Note 1	46 Hex	Read 1 byte data
Note 2	47 Hex	Write 1 byte data
Read/write data thru GPIO [15-8]		
	Index for port 22 Hex	Data for port 23 Hex
Note 3	4C Hex	Read 1 byte data
Note 4	4D Hex	Write 1 byte data

Usage: Send index number to port 22 Hex for latch function. Then, send data number to port 23 Hex for function work.

DOS Assembler Example Code

```
.286
.model small
.code      ;

;----- Demo how to unlock GPIO register for re-programming
mov al,13h ;
out 22h,al ; Send Index 13 Hex to port 22 Hex for latch
mov al,0c5h ;
out 23h,al ; Send data 0C5 Hex to port 23 Hex for unlock

;----- Demo how to set GPIO [7-0] as output direction
```



```
mov al,4eh ; Enable GPIO[7-0] is output pin.
out 22h,al ; Send Index 4E Hex to port 22 Hex for latch
mov al,0ffh ; If AL fill "FF", then GPIO[7-0] set as output pin.
out 23h,al ; Send data 0FF Hex to port 23 Hex as OUT direction.

;----- Demo how to set GPIO [15-8] as input direction
mov al,4fh ; Enable GPIO[15-8] is input pin
out 22h,al ; Send Index 4F Hex to port 22 Hex for latch
mov al,00 ; If AL fill "00", then GPIO[15-8] set as input pin.
out 23h,al ; Send data 00 Hex to port 23 Hex as IN direction.

;----- Demo how to output data to GPIO [7-0]
mov al,47h ; GPIO[7-0] already be enabled as OUT
out 22h,al ; Send Index 47 Hex to port 22 Hex for latch
mov al,55h ;
out 23h,al ; Send data 55 Hex to port 23 Hex

;----- Demo how to input data to GPIO [15-8]
mov al,4ch ; GPIO[15-8] already be enabled as IN
out 22h,al ; Send Index 4C Hex to port 22 Hex for latch
in al,23h ; Read data in from port 23 Hex

..... continue program .....

;----- Demo how to lock GPIO register for end of programming
mov al,13h ;
out 22h,al ; Send Index 13 Hex to port 22 Hex for latch
mov al,0 ;
out 23h,al ; Send data 00 Hex to port 23 Hex for lock

end
```

DOS C Example Code

```
#include <dos.h>

void set_GPIO(unsigned char index, unsigned char data)
{
    outportb(0x22, index);
    outportb(0x23, data);
}
```



```
}

void main()
{
    /* unlock GPIO register for re-programming */
    set_GPIO(0x13, 0xc5);

    /* set GPIO[7-0] as output direction */
    set_GPIO(0x4e, 0xff);

    /* set GPIO[15-8] as input direction */
    set_GPIO(0x4f, 0x00);

    /* output data to GPIO[7-0] */
    set_GPIO(0x47, 0x55); /* send data 0x55 */

    /* input data from GPIO[15-8] */
    outportb(0x22, 0x4c);
    inportb(0x23);

    /* lock GPIO register for end of programming */
    set_GPIO(0x13, 0x0);
}
```

Linux C Example Code

```
#include <stdio.h>
#include <sys/io.h>

#define outportb(a,b) outb(b,a)
#define inportb(a)    inb(a)

void set_GPIO(unsigned char index, unsigned char data)
{
    outportb(0x22, index);
    outportb(0x23, data);
}

void main()
{
```



```
iopl(3);

/* unlock GPIO register for re-programming */
set_GPIO(0x13, 0xc5);

/* set GPIO[7-0] as output direction */
set_GPIO(0x4e, 0xff);

/* set GPIO[15-8] as input direction */
set_GPIO(0x4f, 0x00);

/* output data to GPIO[7-0] */
set_GPIO(0x47, 0x55); /* send data 0x55 */

/* input data from GPIO[15-8] */
outportb(0x22, 0x4c);
inportb(0x23);

/* lock GPIO register for end of programming */
set_GPIO(0x13, 0x0);
}
```

DOS QBasic Example Code

```
DIM Value

' Unlock GPIO register for re-programming
OUT &h32, &h23
OUT &h33, &HC5

' Set GPIO[7-0] as output direction
OUT &h32, &h5E
OUT &h33, &HFF

' Set GPIO[15-8] as input direction
OUT &h32, &h5F
OUT &h33, &H55

' Output data to GPIO[7-0]
OUT &h32, &h57
```



```
OUT &h33, &HFF

' Input data from GPIO[15-8]
OUT &h32, &h5C
Value = INP(&h33)
PRINT "Value = ", Value

' Lock GPIO register for end of programming
OUT &h32, &h23
OUT &h33, &H0
```

Technical Support

For more technical support, please visit <http://www.dmp.com.tw/tech> or mail to tech@dmp.com.tw.