

VENTCAT

Anexos



Código de programación:

```
#include <18f4550.h>
#fuses
XTPLL,MCLR,NOWDT,NOPROTECT,NOLVP,NODEBUG,USBDIV,PLL1,CPUDIV1,VR
E
GEN
#use delay(clock=4000000)
#define USB_HID_DEVICE FALSE //deshabilitamos el uso de las
directivas HID
#define USB_EP1_TX_ENABLE USB_ENABLE_BULK //turn on EP1(EndPoint1)
for IN bulk/interrupt transfers
#define USB_EP1_RX_ENABLE USB_ENABLE_BULK //turn on EP1(EndPoint1)
for OUT bulk/interrupt transfers
#define USB_EP1_TX_SIZE 1 //size to allocate for the tx endpoint 1
buffer
#define USB_EP1_RX_SIZE 2 //size to allocate for the rx endpoint 1
buffer
#include <LCD.C>
#include <pic18_usb.h> //Microchip PIC18Fxx5x Hardware layer for CCS's
PIC USB driver#include <PicUSB.h> //Configuración del USB y los descriptores
para este

dispositivo
#include <usb.c> //handles usb setup tokens and get descriptor reports
#use fast_io(c)
#BYTE TRISB = 0xF81
#BYTE PORTB = 0xF81
#byte PORTC=0xF82
#byte PORTA=0xf80
int16 counter=0;
int8 veleta,
pos,pose,i=0,posi=0,rot=0,mem=0,mem2=0,comp=0,comp2=0,envia[4];
float count, veleta2;
#define LEDV PIN_A2
#define LEDR PIN_A3
#define LED_ON output_high
#define LED_OFF output_low
//*****INT TIMER1 CONTADOR*****
#int_TIMER1
void TIMER1_fsr(void){
counter=get_timer0(); //lectura contador TMRO
count=(counter*2*60)/24;
//*60 para pasar a segundos, y 24 numero pulsos por vuelta*2=1/0,5 s
set_timer0(0); //reinicia cuenta
//count=(counter*2*120)/24;
```

```

set_timer1(3036); //recarga a 0.5 s 3036
//count=counter;
}
//*****
//*****PROGRAMA PRINCIPAL*****
void main()

{

delay_ms(1000);
lcd_init();
TRISB = 0xFF; // entradas
set_tris_c(0);
PORTC=0x00;
enable_interrupts(int_timer1);
enable_interrupts(global); //habilitacion interrupciones
setup_timer_0(rtcc_ext_l_to_h|RTCC_DIV_2); //configuración TMRO
setup_timer_1(T1_internal|T1_DIV_BY_8); //configuración TMR1
set_timer0(0); //reinicia cuenta
set_timer1(3036); //recarga a 0.5 s 3036
setup_timer_0(RTCC_INTERNAL);
//*****USB*****
//disable_interrupts(GLOBAL); //deshabilitamos todas las interrupciones
LED_OFF(LEDV); //Apagamos led Verde
LED_ON(LEDV); //Encendemos led Rojo
usb_init(); //inicializamos el USB
usb_task(); //habilita periferico usb e interrupciones
usb_wait_for_enumeration(); //esperamos hasta que el PicUSB sea
configurado por el host
//setup_port_a( ALL_ANALOG ); //habilitamos el puerto a para entrada
analogica
//setup_adc(ADC_CLOCK_INTERNAL); //Utilizamos el reloj interno
LED_OFF(LEDV); //Apagamos el led Rojo
LED_ON(LEDV); //encendemos led verde
//*****
if (i<pos){
rot = 0;
mem = 1;}
if (i>pos){
rot = 1;
mem2 = 1;}
if (i==pos){

rot = 2;}
while (TRUE)
{

```

```
delay_ms(50);
veleta = PORTB;
switch (veleta){
//asignación posición
case 30:
veleta2 = 0.000;
pos=0;
break;
case 158:
veleta2 = 2.813;
pos=1;
break;
case 154:
veleta2 = 5.625;
pos=2;
break;
case 146:
veleta2 = 8.438;
pos=2;
break;
case 144:
veleta2 = 11.250;
pos=3;
break;
case 16:
veleta2 = 14.063;
pos=4;
break;
case 48:
veleta2 = 16.875;
pos=5;
break;
case 49:
veleta2 = 19.688;
pos=5;
break;
case 113:
veleta2 = 22.500;
pos=6;
break;
case 112:
veleta2 = 25.313;
pos=7;
break;
case 116:
```

```
veleta2 = 28.125;
pos=8;
break;
case 124:
veleta2 = 30.938;
pos=8;
break;
case 126:
veleta2 = 33.750;
pos=9;
break;
case 61:
veleta2 = 47.813;
pos=13;
break;
case 53:
veleta2 = 50.625;
pos=14;
break;
case 37:
veleta2 = 53.438;
pos=14;
break;
case 33:
veleta2 = 56.250;
pos=15;
break;
case 224:
veleta2 = 70.313;
pos=19;
break;
case 232:
veleta2 = 73.125;
pos=20;
break;
case 248:
veleta2 = 75.938;
pos=20;
break;
case 252:
veleta2 = 78.750;
pos=21;
break;

case 254:
```

```
veleta2 = 36.563;
pos=10;
break;
case 190:
veleta2 = 39.375;
pos=11;
break;
case 188:
veleta2 = 42.188;
pos=11;
break;
case 60:
veleta2 = 45.000;
pos=12;
break;
case 32:
veleta2 = 59.063;
pos=16;
break;
case 96:
veleta2 = 61.875;
pos=17;
break;
case 98:
veleta2 = 64.688;
pos=17;
break;
case 226:
veleta2 = 67.500;
pos=18;
break;
case 253:
veleta2 = 81.563;
pos=22;
break;
case 125:
veleta2 = 84.375;
pos=23;
break;
case 121:
veleta2 = 87.188;
pos=23;
break;
case 120:
veleta2 = 90.000;
```

```
pos=24;
break;
switch (veleta){
//asignación posición
case 30:
veleta2 = 0.000;
pos=0;
break;
case 158:
veleta2 = 2.813;
pos=1;
break;
case 154:
veleta2 = 5.625;
pos=2;
break;
case 146:
veleta2 = 8.438;
pos=2;
break;
case 144:
veleta2 = 11.250;
pos=3;
break;
case 16:
veleta2 = 14.063;
pos=4;
break;
case 48:
veleta2 = 16.875;
pos=5;
break;
case 49:
veleta2 = 19.688;
pos=5;
break;
case 113:
veleta2 = 22.500;
pos=6;
break;
case 112:
veleta2 = 25.313;
pos=7;
break;
case 116:
```

case 61:
veleta2 = 47.813;
pos=13;
break;

case 53:
case 224:
veleta2 = 70.313;
pos=19;
break;
case 232:

veleta2 = 28.125;
pos=8;
break;

case 124:
veleta2 = 30.938;
pos=8;
break;

case 126:
veleta2 = 33.750;
pos=9;
break;

case 254:
veleta2 = 36.563;
pos=10;
break;

case 190:
veleta2 = 39.375;
pos=11;
break;

case 188:
veleta2 = 42.188;
pos=11;
break;

case 60:
veleta2 = 45.000;
pos=12;
break;

veleta2 = 50.625;
pos=14;
break;

case 37:
veleta2 = 53.438;
pos=14;
break;


```
case 33:
veleta2 = 56.250;
pos=15;
break;
case 32:
veleta2 = 59.063;
pos=16;
break;
case 96:
veleta2 = 61.875;
pos=17;
break;
case 98:
veleta2 = 64.688;
pos=17;
break;
case 226:
veleta2 = 67.500;
pos=18;
break;
veleta2 = 73.125;
pos=20;
break;
case 248:
veleta2 = 75.938;
pos=20;
break;
case 252:
veleta2 = 78.750;
pos=21;
break;
case 253:
veleta2 = 81.563;
pos=22;
break;
case 125:
veleta2 = 84.375;
pos=23;
break;
case 121:
veleta2 = 87.188;
pos=23;
break;
case 120:
veleta2 = 90.000;
```

```
pos=24;
break;
case 131:
veleta2 = 160.313;
pos=43;
break;
case 163:
veleta2 = 163.125;
pos=44;
break;
case 233:
veleta2 = 182.813;
pos=49;
break;
case 169:
veleta2 = 185.625;
pos=50;
break;
case 7:
veleta2 = 205.313;
pos=55;
break;
case 71:
veleta2 = 208.125;
pos=56;
break;

case 227:
veleta2 = 165.938;
pos=45;
break;
case 243:
veleta2 = 168.750;
pos=45;
break;
case 247:
veleta2 = 171.563;
pos=46;
break;
case 245:
veleta2 = 174.375;
pos=47;
break;
case 229:
veleta2 = 177.188;
```

```
pos=48;
break;
case 225:
veleta2 = 180.000;
pos=48;
break;
case 41:
veleta2 = 188.438;
pos=51;
break;
case 9:
veleta2 = 191.250;
pos=51;
break;
case 1:
veleta2 = 194.063;
pos=52;
break;
case 3:
veleta2 = 196.875;
pos=53;
break;
case 19:
veleta2 = 199.688;
pos=54;
break;
case 23:
veleta2 = 202.500;
pos=54;
break;
case 199:
veleta2 = 210.938;
pos=57;
break;
case 231:
veleta2 = 213.750;
pos=57;
break;
case 239:
veleta2 = 216.563;
pos=58;
break;
case 235:
veleta2 = 219.375;
pos=59;
```

```
break;
case 203:
veleta2 = 222.188;
pos=60;
break;
case 195:
veleta2 = 225.000;
pos=60;
break;
case 211:
veleta2 = 227.813;
pos=61;
break;
case 83:
veleta2 = 230.625;
pos=62;
break;
case 82:
veleta2 = 233.438;
pos=63;
case 14:
veleta2 = 250.313;
pos=67;
break;
case 142:
veleta2 = 253.125;
pos=68;
break;
case 143:
veleta2 = 255.938;
pos=69;
case 167:
veleta2 = 272.813;
pos=73;
break;
case 166:
veleta2 = 275.625;
pos=74;
break;
case 164:
veleta2 = 278.438;
pos=75;

break;
case 18:
```

```
veleta2 = 236.250;
pos=63;
break;
case 2:
veleta2 = 239.063;
pos=64;
break;
case 6:
veleta2 = 241.875;
pos=65;
break;
case 38:
veleta2 = 244.688;
pos=66;
break;
case 46:
veleta2 = 247.500;
pos=66;
break;
break;
case 207:
veleta2 = 258.750;
pos=69;
break;
case 223:
veleta2 = 261.563;
pos=70;
break;
case 215:
veleta2 = 264.375;
pos=71;
break;
case 151:
veleta2 = 267.188;
pos=72;
break;
case 135:
veleta2 = 270.000;
pos=72;
break;
break;
case 36:
veleta2 = 281.250;
pos=76;
break;
```

case 4:
veleta2 = 284.063;
pos=76;
break;
case 12:
veleta2 = 286.875;
pos=77;
break;
case 76:
veleta2 = 289.688;
pos=78;
break;
case 92:
veleta2 = 292.500;
pos=79;
break;
case 28:
veleta2 = 295.313;
pos=79;
break;
case 29:
veleta2 = 298.125;
pos=80;
break;
case 31:
veleta2 = 300.938;
pos=81;
break;
case 159:
veleta2 = 303.750;
case 79:
veleta2 = 317.813;
pos=85;
break;
case 77:
veleta2 = 320.625;
pos=86;
break;
case 73:
veleta2 = 323.438;
pos=87;
break;
case 72:
veleta2 = 326.250;
case 56:

veleta2 = 340.313;
pos=91;
break;
case 58:
veleta2 = 343.125;
pos=92;
break;
case 62:
veleta2 = 345.938;
pos=93;
break;
case 63:
veleta2 = 348.750;

pos=82;
break;
case 191:
veleta2 = 306.563;
pos=82;
break;
case 175:
veleta2 = 309.375;
pos=83;
break;
case 47:
veleta2 = 312.188;
pos=84;
break;
case 15:
veleta2 = 315.000;
pos=85;
break;
pos=88;
break;
case 8:
veleta2 = 329.063;
pos=88;
break;
case 24:
veleta2 = 331.875;
pos=89;
break;
case 152:
veleta2 = 334.688;
pos=90;

```

break;
case 184:
veleta2 = 337.500;
pos=91;
break;
pos=94;
break;
case 127:
veleta2 = 351.563;
pos=94;
break;
case 95:
veleta2 = 354.375;
pos=95;
break;
case 94:
veleta2 = 357.188;
pos=96;
break;
default:break;
}
}
//y=i;
//r=rot;
//*****VISUALIZACION*****
printf(lcd_putc, "Pos. \f%f grados", veleta2);
printf(lcd_putc, "\nVel.= %frpm", count);
//printf(lcd_putc, "Pos. \f%f grados", r);
//printf(lcd_putc, "\nVel.= %frpm", y);
//*****
//*****Control Freno*****
//if (0<=count<=65){
if (count==0){
output_high(PIN_A0);
output_high(PIN_A1);
delay_us(700);

output_low(PIN_A0);
output_low(PIN_A1);
delay_us(19300);
}
//if (70<=count<=160){
/*if (count<=160){
output_high(PIN_A0);
delay_us(1500);

```



```

output_low(PIN_A0);
delay_us(18500);
}*/
//if (165<=count<=250){
if (count>=165){
output_high(PIN_A0);
output_high(PIN_A1);
delay_us(2300);
output_low(PIN_A0);
output_low(PIN_A0);
delay_us(17700);

//*****
//*****USB*****
if(usb_enumerated()) //Si el PicUSB está configurado
{
WHILE (TRUE){
envia[0]=veleta2;

delay_us(10); //retardo de 10 ms
envia[1]=count;
delay_us(10);
envia[2]=rot;
delay_us(10);
envia[3]=pos;
delay_us(10);
usb_put_packet(1,envia,4,USB_DTS_TOGGLE); //enviamos el paquete de
tamaño 1byte del EP1 al PC
}
}
//*****
****
} //while
} //void

```