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Human sensing LED driver by DC boost with PIC16F785
By nobcha all right reserved
Ver 0.1 02/21/2011 for PIC12F675
Ver 0.2 03/06/2011 for PIC12F683
Ver 0.3 05/15/2011 for PIC16F785

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PIC16F785 + Infrared ceramic sencer + photo Diode
PIN Assign
#20 Vss
#17 RA2:Monitor LED
#15 RC1/AN5:焦電型センサー増幅後信号
#14 RC2/OP2
#13 RB4/OP2-
#12 RB5/OP2+
#10 RB7:DCブーストトランジスタ駆動
#9 RC7/OP1+:焦電型センサー入力
#8 RC6/OP1-
#7 RC3/OP1
#4 RA3/MCLR:Pull up
#3 RA4/AN3:フォトダイオード入力
#1 Vdd

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OSC internal RC 4MHz

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Development Circumstance
MPLAB IDE V8.60 HiTECH C V9.71a

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#define pic_clk 8000000

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#define MHz 000000

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#define _XTAL_FREQ 8MHz

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#include <htc.h>
#include "delay.h"
#include <pic.h>

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__CONFIG(BORDIS & UNPROTECT & DUNPROTECT & PWRTEN & WDTDIS & MCLREN & INTIO & FCMDIS & IESODIS);

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/* void init_a2d(char ch){ // ch AN0-11
ch= ch <<2; // ch select -> CHS
ADCON0=(ch || 0x81); // Select right justify result AD port config0
ADCON1=0x10; // FOSC/8
PEIE=0; // Inhibit Interrupt
}
unsigned short read_a2d( char ch){
ch=( ch <<2) & 0x3C ; // ch select -> CHS
ADCON0=(ch || 0x83); // ADC start
while(GODONE){ // Wait ADC
return ((short)(ADRESH&0x03)*256 + (short)(ADRESL));
}
}
*/

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void main(){
unsigned short i, j, adc_data;
unsigned char k;

GIE=0; // INT disable

PORTA=0x00; // PORTA initialize
PORTB=0x00; // PORTB
PORTC=0x00; // PORTC

TRISA=0x3B; // PORTA all input without RA2:MON
TRISB=0x70; // PORTB all input without RB7:BOOST
TRISC=0xCE; // PORTC all input without RC0, 4, 5

ANSEL0=0x04; // RA4/ANS3 is assigned as ADC port
ANSEL1=0x00; // ANS8-11 digital

OSCCON=0b01110000; // IRCF=8MHz:111, OSTS:0, HTS:1

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785_human

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OPA1CON=0x80;          // OP-AMP1 enable
OPA2CON=0x80;          // OP-AMP2 enable
ADCON1=0x10;          // FOSC/8

RA2=1;                 // Turn on the monitor LED for checking
for(j=1000;j>0;j--){   // Turn on LED testing
    __delay_ms(1);     // for 1 second
    RB7=1;             // DC boost dark
    RB7=0;
}

RA2=0;                 // LED off

while(1){

    if(RC1==0){        // Sencer signal checking
        __delay_ms(2); // Still sencer on
        if(RC1==0){
            RA2=1;     // monitor LED on
            for(i=167;i>0;i--){ // 167*2000*10μ = 3.3S
                ADCON0=0x8F; // ADFM, AN3, GODONE, ADON ADC start
                __delay_ms(1); // Wait ADC
                while(GODONE){}
                adc_data=((short)((ADRESH&0x03)*256) + (short)(ADRESL));

// ADC value calcurating
                if(adc_data<10){ // Dark checking
                    for(j=2000;j>0;j--){ // DC boost LED drive
                        RB7=1; // Short inductor
                        asm("nop"); // Short period stretching
                        RB7=0; // Release
                        for(k=7;k>0;k--){} // dummy timing
                    }
                }
                __delay_ms(1);
            }
            RA2=0; // monitor LED off
            __delay_ms(1);
        }
        __delay_ms(1);
    }
}

```