



Alat Pendeteksi dan Pengirim Peringatan Kebakaran Via HP

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Judul      : Alat Pendeteksi dan Pengirim Peringatan Kebakaran via HP
Chip type  : ATmega8535
Clock frequency : 12.000000 MHz
Memory model : Small
External SRAM size : 0
Data Stack size : 128
*****/

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#include <mega8535.h>
#include <delay.h>
#include <stdio.h>
#include <lcd.h>

#asm
.equ __lcd_port=0x18 ;PORTB
#endasm
#include <lcd.h>
#define ADC_VREF_TYPE 0x20

unsigned char read_adc(unsigned char adc_input)
{
    ADMUX=adc_input | (ADC_VREF_TYPE & 0xff);
    delay_us(10);
    ADCSRA|=0x40;
    while ((ADCSRA & 0x10)==0);
    ADCSRA|=0x10;
    return ADCH;
}

#define RXB8 1
#define TXB8 0
#define UPE 2
#define OVR 3
#define FE 4
#define UDRE 5
#define RXC 7

#define FRAMING_ERROR (1<<FE)
#define PARITY_ERROR (1<<UPE)
#define DATA_OVERRUN (1<<OVR)
#define DATA_REGISTER_EMPTY (1<<UDRE)
#define RX_COMPLETE (1<<RXC)

bit rx_buffer_overflow;

interrupt [USART_RXC] void usart_rx_isr(void)
{
    char status,data;
    status=UCSRA;
    data=UDR;
    if ((status & (FRAMING_ERROR | PARITY_ERROR | DATA_OVERRUN))==0)
    {
        rx_buffer[rx_wr_index]=data;
        if (++rx_wr_index == RX_BUFFER_SIZE) rx_wr_index=0;
        if (++rx_counter == RX_BUFFER_SIZE)
        {
            rx_counter=0;
            rx_buffer_overflow=1;
        };
    };
}

// Write a character to the USART Transmitter
#ifndef _DEBUG_TERMINAL_IO_
#define _ALTERNATE_PUTCHAR_
#pragma used+
void putchar(char c)
{

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while ((UCSRA & DATA_REGISTER_EMPTY)==0);
UDR=c;
}
#pragma used-
#endif

#include <stdio.h>

char data;
char alamat[40];
char scan_karakter();
void tampilan_hp(char a);
void tampilan_hp2(char a);
void tampilan_hp3(char a);
void tampilan_alamat(char b);
void ketik_nohandphone1();
void ketik_nohandphone2();
void ketik_alamat();
int index,i,j,tanda;
char enter,adc,adc_now,adc_next;
char menu;
char pesan[90];
char ubah,sms1,sms2,kode1,kode2;
void balik_nohp(char e);
void balik_nohp2(char e);
char no_hp[25], no_hp2[25];
char no_hape[15], no_hape2[15], no_hape3[15];
char next, now, ubah_data, akhir, akhir1, akhir2, tutup1, tutup2;
void tampilan_smscenter(char c);
char sms_center[15];
void ketik_smscenter();
void balik_smscenter(char f);
char no_center[15];
void ascii_to_pdu (char g);
void kirim_sms();
void kirim_sms2();
void set_ate0();
char data_adc[5];
void tampilan_adc();
void baca_adc();
void pilih_no_hp();

void main(void)
{
PORTA=0xE0;
DDRA=0xE0;
PORTB=0x08;
DDRB=0x00;
PORTC=0xFF;
DDRC=0x00;
PORTD=0xFC;
DDRD=0x7C;
TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

TCCR1A=0x00;
TCCR1B=0x00;
TCNT1H=0x00;
TCNT1L=0x00;
ICR1H=0x00;
ICR1L=0x00;
OCR1AH=0x00;
OCR1AL=0x00;
OCR1BH=0x00;
OCR1BL=0x00;

ASSR=0x00;
TCCR2=0x00;

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TCNT2=0x00;
OCR2=0x00;

MCUCR=0x00;
MCUCSR=0x00;

TIMSK=0x00;

UCSRA=0x00;
UCSRB=0x98;
UCSRC=0x86;
UBRRH=0x00;
UBRRL=0x26;
SFIO=0x00;

lcd_init(16);

#asm("sei")

ADMUX=ADC_VREF_TYPE & 0xff;
ADCSRA=0x87;
SFIO=0xEF;

while (1)
{
    lcd_gotoxy(0,0);
    lcd_putsf("Fire Detector");

    adc=read_adc(2);
    //tegangan_adc = adc-50;

    tampilan_adc();
    if (adc>130)
    {
        sample=0;
        baca_adc();
        if ((adc_next>=adc_now||jumlah_adc<5)&&no_hp[0]!='1')
        {
            baca_adc();
            if (adc_next>=adc_now||jumlah_adc<3)
            {
                while (tanda==0)
                {
                    tanda=1;
                    kirim_sms();
                    delay_ms(600);
                    kirim_sms2();
                }
            }
            sample=0;
        }
    }
    else if (adc<129)
    {
        tanda=0;
        lcd_gotoxy(10,1);
        lcd_putsf("NORMAL");
    }

    enter=0x31;
    scan_karakter();
    switch (menu)
    {
        case 0x7f : lcd_clear();
                    lcd_gotoxy(0,0);
                    lcd_putsf("Handphone");
                    //menu_lock=0;
                    pilih_no_hp();

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        scan_karakter();
        menu=0x31;
        break;
    case 0x7d : lcd_clear();
                lcd_gotoxy(0,0);
                lcd_putsf("Alamat");
                ketik_alamat();
                scan_karakter();
                menu=0x31;
                break;
    case 0x7a : lcd_clear();
                lcd_gotoxy(0,0);
                lcd_putsf("SMS CENTER");
                ketik_smscenter();
                scan_karakter();
                menu=0x31;
                break;
    };
}

void pilih_no_hp()
{
    if (menu==0x7f)
    {
        if (pilih_hp!=3) pilih_hp++;
        else pilih_hp=1;
        delay_ms(100);
    }
    switch (pilih_hp)
    {
        case 1 : { lcd_clear();
                    lcd_putsf("HP 1");
                    delay_ms(500);
                    ketik_nohandphone1();
                    break;
                }
        case 2 : { lcd_clear();
                    lcd_putsf("HP 2");
                    delay_ms(500);
                    ketik_nohandphone2();
                    break;
                }
    }
}

/*----- SUB FUNGSI-----*/

/*-----Scan Karakter-----*/
char scan_karakter()
{
    PORTD.2=0;
    PORTD.3=1;
    PORTD.4=1;
    PORTD.5=1;
    PORTD.6=1;
    delay_ms(1);
    if (PIND.7==0) data=0x31; else //1

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if (PINC.7==0) data=0x32; else //2
if (PINC.6==0) data=0x33; else //3
if (PINC.5==0) data=0x34; else //4
if (PINC.4==0) data=0x35; else //5
if (PINC.3==0) data=0x36; else //6
if (PINC.2==0) data=0x37; else //7
if (PINC.1==0) data=0x38; else //8
if (PINC.0==0) data=0x39; else //9
if (PINB.3==0) data=0x30; else //0
{PORTD.2=1;
PORTD.3=0;
PORTD.4=1;
PORTD.5=1;
PORTD.6=1;
delay_ms(1);
if (PIND.7==0) data=0x51; else //Q
if (PINC.7==0) data=0x57; else //W
if (PINC.6==0) data=0x45; else //E
if (PINC.5==0) data=0x52; else //R
if (PINC.4==0) data=0x54; else //T
if (PINC.3==0) data=0x59; else //Y
if (PINC.2==0) data=0x55; else //U
if (PINC.1==0) data=0x49; else //I
if (PINC.0==0) data=0x4f; else //O
if (PINB.3==0) data=0x50; else //P
{PORTD.2=1;
PORTD.3=1;
PORTD.4=0;
PORTD.5=1;
PORTD.6=1;
delay_ms(1);
if (PIND.7==0) data=0x41; else //A
if (PINC.7==0) data=0x53; else //S
if (PINC.6==0) data=0x44; else //D
if (PINC.5==0) data=0x46; else //F
if (PINC.4==0) data=0x47; else //G
if (PINC.3==0) data=0x48; else //H
if (PINC.2==0) data=0x4a; else //J
if (PINC.1==0) data=0x4b; else //K
if (PINC.0==0) data=0x4c; else //L
if (PINB.3==0) data=0x91; else //!
{PORTD.2=1;
PORTD.3=1;
PORTD.4=1;
PORTD.5=0;
PORTD.6=1;
delay_ms(1);
if (PIND.7==0) data=0x5a; else //Z
if (PINC.7==0) data=0x58; else //X
if (PINC.6==0) data=0x43; else //C
if (PINC.5==0) data=0x56; else //V
if (PINC.4==0) data=0x42; else //B
if (PINC.3==0) data=0x4e; else //N
if (PINC.2==0) data=0x4d; else //M
if (PINC.1==0) menu=0x7a; else //,
if (PINC.0==0) menu=0x7f; else //.
if (PINB.3==0) menu=0x7d; else //?
{PORTD.2=1;
PORTD.3=1;
PORTD.4=1;
PORTD.5=1;
PORTD.6=0;
delay_ms(1);
if (PINC.4==0) data=32; else //' '
if (PINB.3==0) data=0x90; else //@
data=0x61;
};
};
};

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    };
    return data;
}

*/-----
-----Tampilan LCD-----
*/

void tampilan_hp(char a)
{
    lcd_gotoxy(a,1);
    lcd_putchar(no_hape[a]);
}

void tampilan_hp2(char a)
{
    lcd_gotoxy(a,1);
    lcd_putchar(no_hape2[a]);
}

void tampilan_alamat(char b)
{
    if (index==0)
    {
        lcd_clear();
        lcd_gotoxy(0,0);
        lcd_putchar(alamat[b]);
    }
    else if (b<16)
    {
        lcd_gotoxy(b,0);
        lcd_putchar(alamat[b]);
    }
    else if (b<32)
    {
        lcd_gotoxy(b-16,1);
        lcd_putchar(alamat[b]);
    }
    else if(index==32)
    {
        lcd_clear();
        lcd_gotoxy(b-32,0);
        lcd_putchar(alamat[b]);
    }
    else
    {
        lcd_gotoxy(b-32,0);
        lcd_putchar(alamat[b]);
    }
}

void tampilan_smscenter(char c)
{
    lcd_gotoxy(c,1);
    lcd_putchar(sms_center[c]);
}

/*-----
-----memesukkan SMS Center-----
*/

void ketik_smscenter()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("SMS Center");
    lcd_gotoxy(0,1);
    lcd_puts(sms_center);
    scan_karakter();
    for (index=0;index<15;index++)
    {

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scan_karakter();
delay_ms(100);
if (data==0x91)
{
    i=0;
    while(no_center[i]!='')
    {
        no_center[i]='';
        sms_center[i]='';
        i++;
    }
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("Data Terhapus");
    delay_ms(1000);
    lcd_clear();
    lcd_putsf("SMS Center");
    lcd_gotoxy(0,1);
    index=-1;
}
if (data==0x90)
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("data tersimpan");
    delay_ms(2000);
    break;
}
while (data==0x61)
{
    scan_karakter();
}
delay_ms(150);
if (data!=0x90&&data!=91)
{
    sms_center[index]=data;
    delay_ms(150);
    balik_smscenter(index);
    tampilan_smscenter(index);
}
scan_karakter();
}

/*-----
-----memesukkan no HP-----
-----*/

void ketik_nohandphone1()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("Nomor HP 1");
    lcd_gotoxy(0,1);
    lcd_puts(no_hape);
    scan_karakter();
    for (index=0;index<17;index++)
    {
        scan_karakter();
        delay_ms(1000);
        if (data==0x91)
        {
            i=0;
            while(no_hp[i]!='')
            {
                no_hp[i]='';
                no_hape[i]='';
                i++;
            }
            lcd_clear();

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        lcd_gotoxy(0,0);
        lcd_putsf("Data Terhapus");
        delay_ms(1000);
        lcd_clear();
        lcd_putsf("Nomor HP 1");
        lcd_gotoxy(0,1);
        index=-1;
    }
    if (data==0x90)
    {
        lcd_clear();
        lcd_gotoxy(0,0);
        lcd_putsf("data tersimpan");
        delay_ms(2000);
        break;
    }
    while (data==0x61)
    {
        scan_karakter();
    }
    delay_ms(150);
    if (data!=0x90&&data!=0x91)
    {
        no_hape[index]=data;
        delay_ms(150);
        balik_nohp(index);
        tampilan_hp(index);
    }
    scan_karakter();
}
}

```

```

void ketik_nohandphone2()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("Nomor HP 2");
    lcd_gotoxy(0,1);
    lcd_puts(no_hape2);
    scan_karakter();
    for (index=0;index<17;index++)
    {
        scan_karakter();
        delay_ms(1000);
        if (data==0x91)
        {
            i=0;
            while(no_hp2[i]!='')
            {
                no_hp2[i]='';
                no_hape2[i]='';
                i++;
            }
            lcd_clear();
            lcd_gotoxy(0,0);
            lcd_putsf("Data Terhapus");
            delay_ms(1000);
            lcd_clear();
            lcd_putsf("Nomor HP 2");
            lcd_gotoxy(0,1);
            index=-1;
        }
        if (data==0x90)
        {
            lcd_clear();
            lcd_gotoxy(0,0);
            lcd_putsf("data tersimpan");

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        delay_ms(2000);
        break;
    }
    while (data==0x61)
    {
        scan_karakter();
    }
    delay_ms(150);
    if (data!=0x90&&data!=0x91)
    {
        no_hape2[index]=data;
        delay_ms(150);
        balik_nohp2(index);
        tampilan_hp2(index);
    }
    scan_karakter();
}

/*-----
-----memasukkan Alamat-----*/
void ketik_alamat()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("Pesan");
    lcd_gotoxy(0,1);
    lcd_puts(alamat);
    for (index=0;index<50;index++)
    {
        scan_karakter();
        delay_ms(1000);
        if (data==0x91)
        {
            i=0;
            while(pesan[i]!='\0')
            {
                pesan[i]='\0';
                alamat[i]='\0';
                i++;
            }
            lcd_clear();
            lcd_gotoxy(0,0);
            lcd_putsf("Data Terhapus");
            delay_ms(1000);
            lcd_clear();
            lcd_putsf("Pesan");
            lcd_gotoxy(0,0);
            index=-1;
        }
    }
    if (data==0x90)
    {
        lcd_clear();
        lcd_gotoxy(0,0);
        lcd_putsf("Data Tersimpan");
        delay_ms(2000);
        break;
    }
    while (data==0x61)
    {
        scan_karakter();
    }
    delay_ms(150);
    if (data!=0x90&&data!=0x91)
    {
        alamat[index]=data;
        ascii_to_pdu(index);
        delay_ms(150);
    }
}

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        tampilan_alamat(index);
    }
    scan_karakter();
}

void ascii_to_pdu (char g)
{
    j=g&0x01;
    if ( g==0 ) next = data;
    else if (g<0x09) { now = next>>g-1 ; next= data;
    }
    else if (g<17) { now = next>>g-9 ; next= data;
    }
    else if (g<25) { now = next>>g-17 ; next= data;
    }
    else if (g<33) {now = next>>g-25 ; next= data;
    }
    else {now = next>>g-33 ; next= data;
    }
    //-----ubah data masuk-----//
    if (g<0x09) ubah_data = next<<8-g;
    else if (g<17) ubah_data = next<<16-g;
    else if (g<25) ubah_data = next<<24-g;
    else if (g<32) ubah_data = next<<32-g;
    else ubah_data = next<<40-g;
    ubah = now | ubah_data;
    sms1 = ubah>>4;
    sms2 = ubah&0x0f;
    if (sms1<0x0a) kode1 = sms1 + 0x30; else
        kode1 = sms1 + 0x37;
    if (sms2<0x0a) kode2 = sms2 + 0x30; else
        kode2 = sms2 + 0x37;

    //-----ubah data terakhir-----//
    if (g<0x09) akhir = next >>g;
    else if (g<17) akhir = next >>g-8;
    else if (g<25) akhir = next >>g-16;
    else if (g<33) akhir = next >>g-24;
    else akhir = next >>g-32;
    akhir1 = akhir>>4;
    akhir2 = akhir&0x0f;
    if (akhir1<0x0a) tutup1 = akhir1 + 0x30; else
        tutup1 = akhir1 + 0x37;
    if (akhir2<0x0a) tutup2 = akhir2 + 0x30; else
        tutup2 = akhir2 + 0x37;

    //-----masukkan pdu ke variabel pesan---//
    pesan [0]= '0';
    pesan [1]= '0';
    pesan [2]= '0';
    pesan [3]= '0';
    pesan [4]= 'A';
    pesan [5]= 'A';
    if (g<15) pesan [6]= '0'; else
    if (g<31) pesan [6]= '1'; else
        pesan [6]= '2';
    if (g<0x09) pesan [7]= g + 0x31; else
    if (g<15) pesan [7]= g + 0x38; else
    if (g<25) pesan [7]= g-16 + 0x31; else
    if (g<31) pesan [7]= g-16 + 0x38; else
        pesan [7]= g-32 + 0x31;
    if (g!=0&&g<0x09)
    {
        pesan [2*index+6] = kode1; pesan [2*index+8]= tutup1;
        pesan [2*index+7] = kode2; pesan [2*index+9]= tutup2;
    }
    else if (g<17)

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        {
            pesan [2*index+4] = kode1; pesan [2*index+6]= tutup1;
            pesan [2*index+5] = kode2; pesan [2*index+7]= tutup2;
        }
        else if (g<25)
        {
            pesan [2*index+2] = kode1; pesan [2*index+4]= tutup1;
            pesan [2*index+3] = kode2; pesan [2*index+5]= tutup2;
        }
        else if (g<33)
        {
            pesan [2*index] = kode1; pesan [2*index+2]= tutup1;
            pesan [2*index+1] = kode2; pesan [2*index+3]= tutup2;
        }
        else
        {
            pesan [2*index-2] = kode1; pesan [2*index] = tutup1;
            pesan [2*index-1] = kode2; pesan [2*index+1]= tutup2;
        }
    }
}

```

```

void balik_nohp(char e)
{
    j=e&0x01;
    //----- setting sms -----//
    no_hp [0]= '1';
    no_hp [1]= '1';
    no_hp [2]= '0';
    no_hp [3]= '0';

    //-----jumlah no hp-----//
    no_hp [4]= '0';
    if (e<0x09) no_hp [5]= e+0x31; else
    no_hp [5]= e+0x38;
    no_hp [6]= '9';
    no_hp [7]= '1';

    //-----balik no hp-----//
    if (j==0)
    { no_hp[index+9]=data; no_hp[index+8]='F';
      }
    if (j==1) no_hp[index+7]=data;
}

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```

void balik_nohp2(char e)
{
    j=e&0x01;
    //----- setting sms -----//
    no_hp2 [0]= '1';
    no_hp2 [1]= '1';
    no_hp2 [2]= '0';
    no_hp2 [3]= '0';

    //-----jumlah no hp-----//
    no_hp2 [4]= '0';
    if (e<0x09) no_hp2 [5]= e+0x31; else
    no_hp2 [5]= e+0x38;
    no_hp2 [6]= '9';
    no_hp2 [7]= '1';

    //-----balik no hp-----//
    if (j==0)
    { no_hp2[index+9]=data; no_hp2[index+8]='F';
      }
    if (j==1) no_hp2[index+7]=data;
}

```

```

void balik_nohp3(char e)
{
    j=e&0x01;
    //----- setting sms -----//
    no_hp3 [0]= '1';
    no_hp3 [1]= '1';
    no_hp3 [2]= '0';
    no_hp3 [3]= '0';

    //-----jumlah no hp-----//
    no_hp3 [4]= '0';
    if (e<0x09) no_hp3 [5]= e+0x31; else
    no_hp3 [5]= e+0x38;
    no_hp3 [6]= '9';
    no_hp3 [7]= '1';

    //-----balik no hp-----//
    if (j==0)
    { no_hp3[index+9]=data; no_hp3[index+8]='F';
    }
    if (j==1) no_hp3[index+7]=data;
}

void balik_smscenter(char f)
{
    j=f&0x01;

    //-----jumlah pasang no operator-----//
    if (j==0) i=(f+2)/2;
    if (j==1) i=(f+1)/2;
    no_center[0]= '0';
    no_center[1]= i+0x31;
    no_center[2]= '9';
    no_center[3]= '1';

    //-----balik no operator-----//
    if (j==0)
    { no_center[index+5]=data; no_center[index+4]='F';
    }
    if (j==1) no_center[index+3]=data;
}

void kirim_sms()
{
    lcd_clear();
    lcd_putsf("Send Message");
    delay_ms(500);
    set_ate0();
    printf("at");
    putchar(13);
    while (getchar()!='O');
    if (getchar()=='K')
    {
        lcd_clear();
        lcd_putsf("Ponsel Connected");
        delay_ms(500);
    }
    printf("at+cmgs=140");
    putchar(13);
    while (getchar()!='>');
    i=0;
    while (no_center[i]!='')
    {
        printf("%c",no_center[i]);
        i++;
    }
}

```

```

printf("%p", smsc);
i=0;
while (no_hp[i]!='')
{
    printf("%c", no_hp[i]);
    i++;
}
i=0;
while (pesan[i]!='')
{
    putchar (pesan[i]);
    i++;
}
putchar(26);
lcd_clear();
lcd_putsf("Message Sent");
delay_ms(500);
}

void kirim_sms2()
{
    lcd_clear();
    lcd_putsf("Send Message");
    delay_ms(500);
    set_at0();
    printf("at");
    putchar(13);
    while (getchar()!='\0');
    if (getchar()=='K')
    {
        lcd_clear();
        lcd_putsf("Ponsel Connected");
        delay_ms(500);
    }
    printf("at+cmgs=140");
    putchar(13);
    while (getchar()!='>');
    printf("%p", smsc);
    i=0;
    while (no_hp2[i]!='')
    {
        printf("%c", no_hp2[i]);
        i++;
    }
    i=0;
    while (pesan[i]!='')
    {
        putchar (pesan[i]);
        i++;
    }
    putchar(26);
    lcd_clear();
    lcd_putsf("Message Sent");
    delay_ms(500);
}

void set_at0()
{
    printf("ate0");
    putchar(13);
    while (getchar()!='\0');
    if (getchar()=='K')
    {
        printf("ate0");
        putchar(13);
    };
    #asm("cli")
}

```

```
        delay_ms(500);
        #asm("sei")
    }

void tampilan_adc()
{
    sprintf(data_adc,"%d",adc);
    lcd_gotoxy(0,1);
    lcd_putsf("Level:");
    if (adc>99) lcd_gotoxy(6,1);
    else
    {
        lcd_gotoxy(6,1);
        lcd_putsf("0");
        lcd_gotoxy(7,1);
    }
    lcd_puts(data_adc);
}

void baca_adc()
{
    while (sample<4000)
    {
        adc = read_adc(2);
        if (sample==3000) adc_now=adc;
        else if (sample>2000) adc_next = adc;
        sample ++;
        adc=read_adc(2);
        tampilan_adc();
    }
    jumlah_adc = adc_now - adc_next;
    if (adc_next>=adc_now||jumlah_adc<3)
    {
        lcd_gotoxy(10,1);
        lcd_putsf(" POS");
    }
    else
    {
        lcd_gotoxy(10,1);
        lcd_putsf(" NEG");
    }
}
```

