

LISTING PROGRAM

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This program was produced by the
CodeWizardAVR V2.05.3 Standard
Automatic Program Generator
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Project :
Version :
Date : 18/02/2016
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Company : Universitas Muhammadiyah Ponorogo
Comments: Alat Indikator Pemakaian Energi Listrik
Chip type : ATmega16A
Program type : Application
AVR Core Clock frequency: 16,000000 MHz
Memory model : Small
External RAM size : 0
Data Stack size : 256

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#include <mega16a.h>
#include <delay.h>
#include <alcd.h>
#include <stdlib.h>
#include <stdio.h>
#include <ctype.h>

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#define saklar PINB.0
#define relay PORTB.4

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unsigned int
temp,amperesat,amperepul,ampere,detiksatsat,detikpulsat,menitsat,menitpulsat,jamsat,jam
pulsat,jam,voltage,hari;
unsigned long data1,data2,temp1,KWH,tarif;
char data[8];

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void lcd_main()
{
    lcd_clear();
    temp=voltage;
    itoa(temp,data);
    lcd_gotoxy(0,0);
    lcd_puts(data);
    lcd_gotoxy(3,0);

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lcd_putsf("V/");
temp=hari;
itoa(temp,data);
lcd_gotoxy(5,0);
lcd_puts(data);
lcd_gotoxy(7,0);
lcd_putsf("/");
temp=jampul;
itoa(temp,data);
lcd_gotoxy(8,0);
lcd_puts(data);
temp=jamsat;
itoa(temp,data);
lcd_gotoxy(9,0);
lcd_puts(data);
lcd_gotoxy(10,0);
lcd_putsf(":");
temp=menitpul;
itoa(temp,data);
lcd_gotoxy(11,0);
lcd_puts(data);
temp=menitsat;
itoa(temp,data);
lcd_gotoxy(12,0);
lcd_puts(data);
lcd_gotoxy(13,0);
lcd_putsf(":");
temp=detikpul;
itoa(temp,data);
lcd_gotoxy(14,0);
lcd_puts(data);
temp=detiksat;
itoa(temp,data);
lcd_gotoxy(15,0);
lcd_puts(data);

temp=amperepul;
itoa(temp,data);
lcd_gotoxy(0,1);
lcd_puts(data);
lcd_gotoxy(1,1);

lcd_putsf(",");
temp=amperesat;
itoa(temp,data);
lcd_gotoxy(2,1);
lcd_puts(data);
lcd_gotoxy(3,1);
lcd_putsf("A Rp: ");
temp1=tarif;
ltoa(temp1,data);
lcd_gotoxy(10,1);
lcd_puts(data);
}

void lcd_450()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf(" SETTING METER ");
    lcd_gotoxy(0,1);
    lcd_putsf(" 450 VA ");
}

void lcd_900()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf(" SETTING METER ");
    lcd_gotoxy(0,1);
    lcd_putsf(" 900 VA ");
}

void lcd_protect()
{
    lcd_clear();
    lcd_gotoxy(0,0);
    lcd_putsf("OVERLOAD
PROTECT");
    lcd_gotoxy(0,1);

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    lcd_putsf("TUNGGU 10
    DETIK");
}

void main(void)
{
    PORTA=0x00;
    DDRA=0x00;

    PORTB=0b00001111;
    DDRB=0b11110000;

    PORTC=0x00;
    DDRC=0xFF;

    PORTD=0x00;
    DDRD=0xFF;

    lcd_init(16);

    relay=0;
    detiksat=0;
    detikpul=0;
    menitsat=0;
    menitpul=0;
    jamsat=0;
    jampul=0;
    hari=1;
    ADCSRA=0x84;

    if (saklar==0) {
        lcd_450();
        delay_ms(2000);
        tarif=7470;
        goto KWH450;
    };

    lcd_900();
    delay_ms(2000);
    tarif=21780;
    goto KWH900;

    KWH450:
    KWH=0;

    loop450:
        ADMUX=0x61;
        delay_us(10);
        ADCSRA|=0x40;
        while ((ADCSRA & 0x10)==0);
        ADCSRA|=0x10;
        ampere=ADCH;
        ampere=128-ampere;

        temp=ampere;
        temp=temp*2;
        temp/=10;
        ampere=ampere+temp;

        amperepul=ampere;
        amperepul/=10;
        amperesat=ampere;
        amperesat%=10;

        // if (ampere>=21) {
        //     relay=1;
        //     lcd_protect();
        //     delay_ms(10000);
        //     relay=0;
        // };

        KWH=KWH+ampere;

        ADMUX=0x62;
        delay_us(10);

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ADCSRA|=0x40;
while ((ADCSRA & 0x10)==0);
ADCSRA|=0x10;
voltage=ADCH;

delay_ms(1000);

detiksat=detiksat+1;
if (detiksat==10) {
detiksat=0;

// data1=KWH*22;
// data1=data1/10;
// data2=data1*415;
// data2=data2/1000;
// tarif=tarif+data2;
// KWH=0;

detikpul=detikpul+1;
};
if (detikpul==6) {
detikpul=0;
menitsat=menitsat+1;
};
if (menitsat==10) {
menitsat=0;
menitpul=menitpul+1;
};
if (menitpul==6) {
menitpul=0;

data1=KWH*22;
data1=data1/3600;
data2=data1*605;
data2=data2/1000;
tarif=tarif+data2;
KWH=0;

jamsat=jamsat+1;
jam=jampul;
jam=jam*10;

jam=jam+jamsat;
};
if (jamsat==10) {
jamsat=0;
jampul=jampul+1;
};
if (jam==24) {
jamsat=0;
jampul=0;
hari=hari+1;
};

lcd_main();

goto loop450;

KWH900:
loop900:
ADMUX=0x61;
delay_us(10);
ADCSRA|=0x40;
while ((ADCSRA & 0x10)==0);
ADCSRA|=0x10;
ampere=ADCH;
ampere=128-ampere;

temp=ampere;
temp=temp*2;
temp/=10;
ampere=ampere+temp;

amperepul=ampere;
amperepul/=10;
amperesat=ampere;
amperesat%=10;

// if (ampere>=41) {
// relay=1;
// lcd_protect();
// delay_ms(10000);

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// relay=0;
// };

KWH=KWH+ampere;

ADMUX=0x62;
delay_us(10);
ADCSRA|=0x40;
while ((ADCSRA & 0x10)==0);
ADCSRA|=0x10;
voltage=ADCH;

delay_ms(1000);

detiksat=detiksat+1;
if (detiksat==10) {
detiksat=0;

// data1=KWH*22;
// data1=data1/10;
// data2=data1*605;
// data2=data2/1000;
// tarif=tarif+data2;
// KWH=0;

data2=data2/1000;
tarif=tarif+data2;
KWH=0;

jamsat=jamsat+1;
jam=jampul;
jam=jam*10;
jam=jam+jamsat;
};
if (jamsat==10) {
jamsat=0;
jampul=jampul+1;
};
if (jam==24) {
jamsat=0;
jampul=0;
hari=hari+1;
};

lcd_main();

goto loop900;
}

detikpul=detikpul+1;
};
if (detikpul==6) {
detikpul=0;
menitsat=menitsat+1;
};
if (menitsat==10) {
menitsat=0;
menitpul=menitpul+1;
};
if (menitpul==6) {
menitpul=0;

data1=KWH*22;
data1=data1/3600;
data2=data1*605;

```