

**LAMPIRAN**



## Listing Program Keseluruhan

```
This program was produced by the
CodeWizardAVR V2.05.3 Standard
Automatic Program Generator
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Project :
Version :
Date    : 10/04/2018
Author  : hp
Company :
Comments:
Chip type           : ATmega16
Program type        : Application
AVR Core Clock frequency: 8,000000 MHz
Memory model        : Small
External RAM size   : 0
Data Stack size     : 256
*****/
#include <mega16.h>
#include <stdlib.h>
#include <delay.h>
#include <stdio.h>
#include <alcd.h>
#define ok    PINC.0
#define set   PINC.1
#define up    PINC.2
#define down  PINC.3
#define heater PORTA.1
#define buzzer PORTA.2
```

```

unsigned char menu,suhu=40;

float celcius;

int baca,menit=5;

long sum = 0;

int i,detik;

char buf[33];

// Timer1 overflow interrupt service routine
interrupt [TIM1_OVF] void timer1_ovf_isr(void)
{
// Reinitialize Timer1 value
TCNT1H=0xD23A >> 8;
TCNT1L=0xD23A& 0xff;

detik--;
}

#define ADC_VREF_TYPE 0x00
// Read the AD conversion result
unsigned int read_adc(unsigned char adc_input)
{
ADMUX=adc_input | (ADC_VREF_TYPE & 0xff);

// Delay needed for the stabilization of the ADC input voltage
delay_us(10);

// Start the AD conversion
ADCSRA|=0x40;

// Wait for the AD conversion to complete
while ((ADCSRA & 0x10)==0);

ADCSRA|=0x10;

return ADCW;
}

// Declare your global variables here

```

```
void setwaktu()
{
    lcd_gotoxy(0,0);
    sprintf(buf," Temp:%d ",suhu);
    lcd_puts(buf);
    lcd_putchar(0xdf);
    lcd_putsf("C");
    lcd_gotoxy(0,1);
    sprintf(buf,">Time:%d ",menit);
    lcd_puts(buf);

    if(!up) {delay_ms(500);menit=menit+5;}
    if(!down){delay_ms(500);menit=menit-5;}
    if(menit>20){menit=5;}
    if(menit<5){menit=20;}

}

void setsuhu()
{
    lcd_gotoxy(0,0);
    sprintf(buf,">Temp:%d ",suhu);
    lcd_puts(buf);
    lcd_putchar(0xdf);
    lcd_putsf("C");
    lcd_gotoxy(0,1);
    sprintf(buf," Time:%d ",menit);
    lcd_puts(buf);

    if(!up) {delay_ms(500);suhu=suhu+3;}
    if(!down){delay_ms(500);suhu=suhu-3;}
    if(suhu>43){suhu=40;}
}
```

```
if (suhu<40) {suhu=43;}

}

void run()

{

setsuhu();

setwaktu();

lcd_clear();

detik=0;

while(1)

{

baca = read_adc(0);

celcius = (float)baca*500/1023;

    // ambil nilai rata-rata adc

for(i=0; i<30; i++)

{

    sum +=baca;

}

sum = sum / 30;

lcd_gotoxy(0,0);

ftoa(celcius,1,buf);

lcd_puts(buf);

lcd_gotoxy(5,0);

lcd_putchar(0xdf);

lcd_putsf("C");

lcd_gotoxy(0,1);

sprintf(buf,"%d:%d ",menit,detik);

lcd_puts(buf);

if(detik<0){delay_ms(200);menit=menit-1;detik=59;}

//if(detik==60){delay_ms(500);menit=menit-1;}
```

```
        if(!ok){delay_ms(500);break;}

        if(celcius>suhu){heater=1;}

        if(celcius<suhu){heater=0;}

        delay_ms(200);

        lcd_clear();

    }

}

void main(void)

{

// Declare your local variables here

// Input/Output Ports initialization

// Port A initialization

// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In
    Func0=In

// State7=T State6=T State5=T State4=T State3=T State2=T State1=T
    State0=T

PORTA=0x00;

DDRA=0x06;

// Port B initialization

// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In
    Func0=In

// State7=T State6=T State5=T State4=T State3=T State2=T State1=T
    State0=T

PORTB=0x00;

DDRB=0x00;

// Port C initialization

// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In
    Func0=In

// State7=T State6=T State5=T State4=T State3=T State2=T State1=T
    State0=T

PORTC=0xFF;

DDRC=0x00;
```

```
// Port D initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In
  Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T
  State0=T

PORTD=0x00;
DDRD=0x00;

// Timer/Counter 0 initialization
// Clock source: System Clock
// Clock value: Timer 0 Stopped
// Mode: Normal top=0xFF
// OC0 output: Disconnected
TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: 125,000 kHz
// Mode: Normal top=0xFFFF
// OC1A output: Discon.
// OC1B output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer1 Overflow Interrupt: On
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
TCCR1A=0x00;
TCCR1B=0x05;
TCNT1H=0xD2;
TCNT1L=0x3A;
```



```
ICR1H=0x00;
ICR1L=0x00;
OCR1AH=0x00;
OCR1AL=0x00;
OCR1BH=0x00;
OCR1BL=0x00;
// Timer/Counter 2 initialization
// Clock source: System Clock
// Clock value: Timer2 Stopped
// Mode: Normal top=0xFF
// OC2 output: Disconnected
ASSR=0x00;
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;
// External Interrupt(s) initialization
// INT0: Off
// INT1: Off
// INT2: Off
MCUCR=0x00;
MCUCSR=0x00;
// Timer(s)/Counter(s) Interrupt(s) initialization
TIMSK=0x04;
// USART initialization
// USART disabled
UCSRB=0x00;
// Analog Comparator initialization
// Analog Comparator: Off
// Analog Comparator Input Capture by Timer/Counter 1: Off
ACSR=0x80;
```

```
SFIOR=0x00;

// ADC initialization
// ADC Clock frequency: 1000,000 kHz
// ADC Voltage Reference: AREF pin
ADMUX=ADC_VREF_TYPE & 0xff;
ADCSRA=0x83;

// SPI initialization
// SPI disabled
SPCR=0x00;

// TWI initialization
// TWI disabled
TWCR=0x00;

// Alphanumeric LCD initialization
// Connections are specified in the
// Project|Configure|C Compiler|Libraries|Alphanumeric LCD menu:
// RS - PORTD Bit 2
// RD - PORTD Bit 1
// EN - PORTD Bit 3
// D4 - PORTD Bit 4
// D5 - PORTD Bit 5
// D6 - PORTD Bit 6
// D7 - PORTD Bit 7
// Characters/line: 16
lcd_init(16);

// Global enable interrupts
#asm("sei")
delay_ms(1000);
while (1)
{
```

```
// Place your code here

heater=1;

if(!set){delay_ms(500);menu=menu+1;}

if(menu==0){setwaktu();}



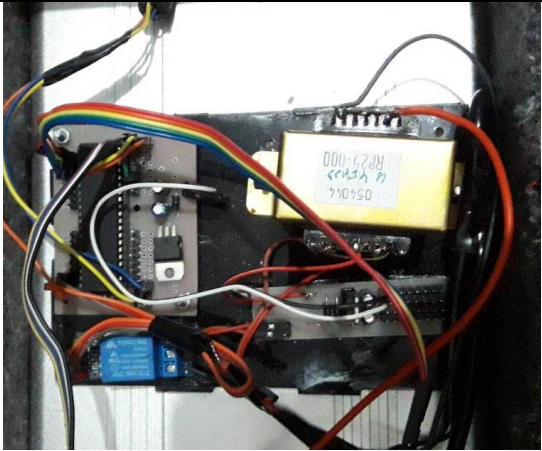
if(menu==1){setsuhu();}


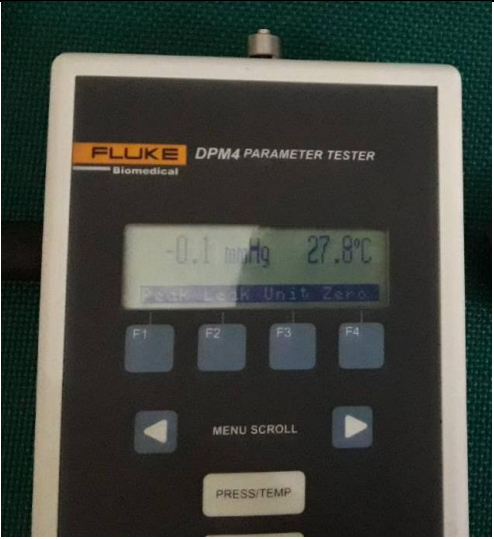

if(menu>1){menu=0;}

if(!ok){delay_ms(500);run();}

}
```

### Lampiran Foto

NO	Gambar	Keterangan
1		<p>Gambar Keseluruhan alat</p>
2		<p>Gambar depan alat</p>
3		<p>Gambar Rangkaian alat</p>

4		Gambar pada saat tampilan awal.
5		Gambar alat pembanding DPM4 parameter
6		Gambar pengukuran kebisingan suara pada bantal