

**Listing Program CodeVision AVR Rancang Bangun Alat Otomasi Limit Pengisian Udara Menggunakan Sensor Tekanan Berbasis Mikrokontroler Atmega 16 :**

```
/******
```

```
This program was produced by the  
CodeWizardAVR V2.05.3 Standard  
Automatic Program Generator  
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```

```
Project :  
Version :  
Date : 22-Apr-2016  
Author : ananta7  
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 <delay.h>  
  
// Standard Input/Output functions  
#include <stdio.h>  
#define ban_depan PINC.0  
#define ban_belakang PINC.1  
  
int a;  
#define ADC_VREF_TYPE 0x40  
// program define  
#define kompresor PORTD.2  
int datasensor;  
int tekanan;  
char buff [16];
```

```

// 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

```

```

int datasensor;
int tekanan;

```

```

    int ulang;

```

```

#define sw1 PINB.1
#define sw2 PINB.0
int motordpn=1;
int motorblk=2;
int mode=0;

```

```

void kompresor_on()
{kompresor=1;
}

```

```

void kompresor_off()
{kompresor=0;
PORTD.3=1;
delay_ms(500);
PORTD.3=0;

```

```

delay_ms(500);

```

```

PORTD.3=1;

```

```

delay_ms(500);

```

```

PORTD.3=0;

delay_ms(500);
}

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=0x00;

// 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=0xFF;
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=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out
// Func0=Out
// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0
PORTD=0x00;
DDRD=0xFF;

// 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: Timer1 Stopped
// Mode: Normal top=0xFFFF
// OC1A output: Discon.
// OC1B output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer1 Overflow Interrupt: Off
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
TCCR1A=0x00;
TCCR1B=0x00;
TCNT1H=0x00;
TCNT1L=0x00;
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=0x00;

// USART initialization
// Communication Parameters: 8 Data, 1 Stop, No Parity
// USART Receiver: On
// USART Transmitter: On
// USART Mode: Asynchronous
// USART Baud Rate: 9600
UCSRA=0x00;
UCSRB=0x18;
UCSRC=0x86;
UBRRH=0x00;
UBRRL=0x33;

// 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: AVCC pin
// ADC Auto Trigger Source: ADC Stopped
ADMUX=ADC_VREF_TYPE & 0xff;
ADCSRA=0x83;

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

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

printf("hello test kirim");
putchar(13);
```

```

while (1)
{
// Place your code here
if(!sw1){a=1;printf("depan");delay_ms(1000);}

if(!sw2){a=2;printf("belakang");delay_ms(1000);}

// if(mode==0){PORTD=0x00;printf("stop!!!");}

if(a==1){
// lcd_gotoxy (0,1);
//  lcd_puts("motor A");
//  delay_ms(100);
for(ulang=1;ulang<=10;ulang++){
datasensor=read_adc(0);
delay_ms(10);
datasensor= datasensor-167;
if(datasensor<=0){datasensor=0;}
tekanan=tekanan+datasensor;
}

tekanan=tekanan/10;

tekanan=tekanan/8;

sprintf (buff, "#$%d?$0?$0?$0?$0?$0?$0?$0?&@",tekanan);
printf("%s",buff);
putchar(13);

delay_ms(500);

if(tekanan<=2){tekanan=0;}

if(tekanan<29) {kompresor_on();}

if(tekanan>=29) {kompresor_off();tekanan=29;a=0;}

}
if(a==2){
// lcd_gotoxy (0,1);

```

```

//  lcd_puts("motor B");
    delay_ms(100);
    delay_ms(100);
for(ulang=1;ulang<=10;ulang++){
    datasensor=read_adc(0);
    delay_ms(10);
    datasensor= datasensor-167;
    if(datasensor<=0){datasensor=0;}
    tekanan=tekanan+datasensor;
    }

    tekanan=tekanan/10;

    tekanan=tekanan/8;

    sprintf (buff, "#$%d?%0?%0?%0?%0?%0?%0?%0?&@",tekanan);
    printf("%s",buff);
    putchar(13);
    delay_ms(500);

    if(tekanan<=2){tekanan=0;}
    if(tekanan<33) {kompresor_on(); }

if(tekanan>=33) {tekanan=33;kompresor_off();mode=0;delay_ms(5000);
    }

    }

}
}
}

```

**Listing Program Visual Basic Rancang Bangun Alat Otomasi Limit Pengisian Udara Menggunakan Sensor Tekanan Berbasis Mikrokontroler Atmega 16 :**

```
Private Sub Form_Load()  
    'membuat garis bantu  
    picGrafik.Refresh  
    picGrafik.Cls  
    picGrafik.DrawStyle = 0  
    picGrafik.DrawWidth = 1  
  
    SerialCon  
    LoadDataAwal  
    SetVariabel  
    '---Log---  
    With msLog  
        .Rows = 1  
        .ColWidth(0) = 600  
        .TextMatrix(0, 0) = "Time"  
        .ColWidth(1) = Lebar  
        .TextMatrix(0, 1) = "tekanan"  
        '.ColWidth(2) = Lebar  
        '.TextMatrix(0, 2) = "LM35"  
        '.ColWidth(3) = Lebar  
        '.TextMatrix(0, 3) = "DHT-11"  
        '.ColWidth(4) = Lebar  
        '.TextMatrix(0, 4) = "ADC4"  
        '.ColWidth(5) = Lebar  
        '.TextMatrix(0, 5) = "ADC5"  
        '.ColWidth(6) = Lebar  
        '.TextMatrix(0, 6) = "ADC6"  
        '.ColWidth(7) = Lebar  
        '.TextMatrix(0, 7) = "ADC7"  
        '.ColWidth(8) = Lebar  
        '.TextMatrix(0, 8) = "ADC8"  
    End With  
  
End Sub  
Sub SetVariabel()  
    Lebar = 900  
    StepBatas = 100  
    TitikNoLY = 5000
```



TitikNoIX = 500

X1a = TitikNoIX

X1b = X1a

Y1a = TitikNoY

Y1b = Y1a

X2a = X1a

X2b = X1b

Y2a = Y1a

Y2b = Y1b

X3a = X1a

X3b = X1b

Y3a = Y1a

Y3b = Y1b

X4a = X1a

X4b = X1b

Y4a = Y1a

Y4b = Y1b

X5a = X1a

X5b = X1b

Y5a = Y1a

Y5b = Y1b

X6a = X1a

X6b = X1b

Y6a = Y1a

Y6b = Y1b

X7a = X1a

X7b = X1b

Y7a = Y1a

Y7b = Y1b

X8a = X1a

X8b = X1b

Y8a = Y1a

Y8b = Y1b

```
StepGrap = 150
```

```
End Sub
```

```
Sub LoadDataAwal()
```

```
End Sub
```

```
Sub Awal()
```

```
Dim i As Integer
```

```
With picGrafik
```

```
    .FontName = "verdana"
```

```
    ' .ForeColor = RGB(125, 125, 125)
```

```
    .FontSize = 8
```

```
End With
```

```
picGrafik.DrawWidth = 2
```

```
'sumbu x
```

```
picGrafik.Line (500, 5000)-(picGrafik.Width, 5000), RGB(125, 125, 125)
```

```
picGrafik.DrawStyle = 2
```

```
picGrafik.DrawWidth = 1
```

```
For i = 1 To 9
```

```
    picGrafik.Line (500, i * 500)-(picGrafik.Width, i * 500), RGB(125, 125, 125)
```

```
    picGrafik.CurrentY = i * 500
```

```
    picGrafik.CurrentX = 1
```

```
    picGrafik.Print 5000 - (i * 500)
```

```
Next i
```

```
picGrafik.CurrentY = 5000
```

```
picGrafik.CurrentX = 300
```

```
picGrafik.Print 0
```

```
picGrafik.CurrentY = 10
```

```
picGrafik.CurrentX = 1
```

```
picGrafik.Print 5000
```

```
picGrafik.DrawStyle = 0
```

```
picGrafik.DrawWidth = 2
```

```
'sumbu y
```

```
picGrafik.Line (500, 0)-(500, 5000), RGB(125, 125, 125)
```

```
picGrafik.DrawStyle = 1
```

```
picGrafik.DrawWidth = 1
```

```
For i = 1 To 14
```

```
    picGrafik.Line (500 + i * 1000, 0)-(500 + i * 1000, 5000), RGB(125, 125, 125)
```

```
Next i
picGrafik.DrawStyle = 2
picGrafik.DrawWidth = 1
For i = 1 To 14
    picGrafik.Line (i * 1000, 0)-(i * 1000, 5000), RGB(125, 125, 125)
Next i
```

```
'Tulisan sumbu Y
picGrafik.DrawStyle = 0
picGrafik.DrawWidth = 2
    picGrafik.Line (13250, 700)-(13750, 700), RGB(125, 0, 0)
    picGrafik.Line (13250, 1200)-(13750, 1200), RGB(125, 125, 0)
    picGrafik.Line (13250, 1700)-(13750, 1700), RGB(125, 125, 125)
```

```
    picGrafik.CurrentX = 13850
    picGrafik.CurrentY = 600
    picGrafik.Print "tekanan"
' picGrafik.CurrentX = 13850
' picGrafik.CurrentY = 1100
' picGrafik.Print "DHT11"
' picGrafik.CurrentX = 13850
' picGrafik.CurrentY = 1600
' picGrafik.Print "LM35"
```

```
End Sub
```

```
Private Sub Form_Unload(Cancel As Integer)
If Serial.PortOpen = True Then
    Serial.PortOpen = False
End If
End Sub
```

```
Private Sub lblSetBawah3_Click()
```

```
End Sub
```

```
Private Sub Label1_Click()
```

```
End Sub
```

```
Private Sub mnExit_Click()  
Unload Me  
End Sub
```

```
Private Sub mnPort_Click()  
Dim kom As Integer
```

```
kom = InputBox("Masukkan No COM yang digunakan (1,2,3 atau 4)", "koneksi")  
SaveSetting App.Title, "SettingValue", "Port", kom  
End Sub
```

```
Private Sub mnSampling_Click()  
Dim waktu As Integer
```

```
waktu = InputBox("Masukkan waktu sampling yang digunakan (dalam ms)", "Waktu  
Sampling")  
SaveSetting App.Title, "SettingValue", "Waktu", waktu  
End Sub
```

```
Private Sub mnStart_Click()  
If Timer4.Enabled = False Then  
    Timer4.Interval = GetSetting(App.Title, "SettingValue", "Waktu", 1000)  
    Timer4.Enabled = True  
    mnStart.Caption = "S&" + "top"  
Elseif Timer4.Enabled = True Then  
    Timer4.Enabled = False  
    mnStart.Caption = "S&" + "tart"  
End If  
End Sub
```

```
Private Sub picGrafik_Click()  
  
End Sub
```

```
Private Sub Timer1_Timer()  
Awal  
Timer1.Enabled = False  
End Sub
```

```
Private Sub Timer3_Timer()  
Serial.Output = "r" + Chr(10)
```

End Sub

```
Private Sub Timer4_Timer()  
Dim PaketPecah As String  
Dim Kres As Integer, At As Integer  
Dim Dollar As Integer, Tanya As Integer
```

```
'Serial.Output = "r" + Chr(10)
```

```
DataSerial = Serial.Input  
'Text1 = DataSerial
```

```
If DataSerial <> "" Then  
    PaketData = ""  
    PaketData = DataSerial
```

```
'#@$?data
```

```
Kres = InStr(PaketData, "#")  
At = InStr(PaketData, "@")  
If (Kres > 0) And (At > 0) Then  
    If Left(PaketData, 1) = "#" Then  
        'ADC 1  
        PaketPecah = Mid$(PaketData, Kres + 1, At - 2)  
        Dollar = InStr(PaketPecah, "$")  
        Tanya = InStr(PaketPecah, "?")  
        ADC1 = Mid$(PaketPecah, Dollar + 1, Tanya - 2)
```

```
'ADC1 = ADC1 * 10
```

```
lblADC1 = ADC1  
PaketPecah = Mid$(PaketPecah, Tanya + 1, Len(PaketPecah) - Tanya)
```

```
'ADC 2  
Dollar = InStr(PaketPecah, "$")  
Tanya = InStr(PaketPecah, "?")  
ADC2 = Mid$(PaketPecah, Dollar + 1, Tanya - 2)  
lblADC2 = ADC2  
PaketPecah = Mid$(PaketPecah, Tanya + 1, Len(PaketPecah) - Tanya)
```

```
'ADC 3
Dollar = InStr(PaketPecah, "$")
Tanya = InStr(PaketPecah, "?")
ADC3 = Mid$(PaketPecah, Dollar + 1, Tanya - 2)
```

```
ADC3 = ADC3 / 100
```

```
lblADC3 = ADC3
PaketPecah = Mid$(PaketPecah, Tanya + 1, Len(PaketPecah) - Tanya)
```

```
Grafik
' CekBatas
End If
End If
End If
End Sub
Sub Grafik()
```

```
Dim Jumlah As Integer, Nilai1 As Integer
```

```
Jumlah = msLog.Rows
```

```
With msLog
.Rows = Jumlah + 1
.TextMatrix(Jumlah, 0) = Val(Jumlah)
.TextMatrix(Jumlah, 1) = ADC1
' .TextMatrix(Jumlah, 0) = Val(Jumlah)
' .TextMatrix(Jumlah, 2) = ADC2
' .TextMatrix(Jumlah, 0) = Val(Jumlah)
' .TextMatrix(Jumlah, 3) = ADC3

End With
Label15.Caption = "T(" & Jumlah & ")-Tekanan:" & ADC1 & "psi"
':" & ADC2 & "-DHT11:" & ADC3 & "- ADC4:" & ADC4 & "- ADC5:" & ADC5 & "- ADC6:"
& ADC6 & "- ADC7:" & ADC7 & "- ADC8:" & ADC8
```

```
ADC2 = ADC2 / 2
```

ADC3 = ADC3 \* 50

ADC1 = ADC1 \* 50

Y1b = TitikNoLY - ADC1

Y2b = TitikNoLY - ADC2

Y3b = TitikNoLY - ADC3

If X1a < 14000 Then

X1b = X1b + StepGrap

X2b = X2b + StepGrap

X3b = X3b + StepGrap

X4b = X4b + StepGrap

X5b = X5b + StepGrap

X6b = X6b + StepGrap

X7b = X7b + StepGrap

X8b = X8b + StepGrap

Elseif X1a >= 14000 Then

X1a = TitikNoIX

X2a = TitikNoIX

X3a = TitikNoIX

X4a = TitikNoIX

X5a = TitikNoIX

X6a = TitikNoIX

X7a = TitikNoIX

X8a = TitikNoIX

X1b = TitikNoIX

X2b = TitikNoIX

X3b = TitikNoIX

X4b = TitikNoIX

X5b = TitikNoIX

X6b = TitikNoIX

X7b = TitikNoIX

X8b = TitikNoIX

picGrafik.Cls

Awal

End If

picGrafik.Line (X1a, Y1a)-(X1b, Y1b), RGB(125, 0, 0)

```
picGrafik.Line (X2a, Y2a)-(X2b, Y2b), RGB(125, 125, 0)
picGrafik.Line (X3a, Y3a)-(X3b, Y3b), RGB(125, 125, 125)
picGrafik.Line (X4a, Y4a)-(X4b, Y4b), RGB(255, 0, 0)
picGrafik.Line (X5a, Y5a)-(X5b, Y5b), RGB(255, 125, 0)
picGrafik.Line (X6a, Y6a)-(X6b, Y6b), RGB(255, 125, 125)
picGrafik.Line (X7a, Y7a)-(X7b, Y7b), RGB(255, 255, 0)
picGrafik.Line (X8a, Y8a)-(X8b, Y8b), RGB(255, 255, 255)
X1a = X1b
Y1a = Y1b

X2a = X2b
Y2a = Y2b

X3a = X3b
Y3a = Y3b

X4a = X4b
Y4a = Y4b

X5a = X5b
Y5a = Y5b

X6a = X6b
Y6a = Y6b

X7a = X7b
Y7a = Y7b

X8a = X8b
Y8a = Y8b
End Sub

Private Sub Toolbar1_ButtonClick(ByVal Button As MSComctlLib.Button)
End Sub
```