

LAMPIRAN A

PROGRAM CODEVISION AVR

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```
#include <mega16.h>
#include <delay.h>
#include <stdio.h>
int waktuX1 = 0;
int waktuX2 = 0;
int waktuX1X2 = 0;
int start = 0;
int end = 0;
float waktuTotal = 0;
float kecepatan = 0;
char buffer1[16];
char buffer2[16];

// Alphanumeric LCD Module functions
#asm
.equ __lcd_port=0x15 ;PORTC
#endasm
#include <lcd.h>

// Declare your global variables here
void ulang()
{
start = 0;
end = 0;
waktuX1 = 0;
waktuX2 = 0;
waktuX1X2 = 0;
kecepatan = 0;
waktuTotal = 0;
lcd_clear();
PORTB = 0xff;
}
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
```

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// 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=0xff;

// 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=0x00;
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=FFh
// OCO output: Disconnected
TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: Timer 1 Stopped
// Mode: Normal top=FFFFh
// OC1A output: Discon.
// OC1B output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer 1 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: Timer 2 Stopped
// Mode: Normal top=FFh
// 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;

// Analog Comparator initialization
// Analog Comparator: Off
// Analog Comparator Input Capture by Timer/Counter 1: Off
ACSR=0x80;
SFIOR=0x00;

// LCD module initialization
lcd_init(16);

while (1)
{
    lcd_gotoxy(0,0);
    lcd_putsf("Waiting... ");
    delay_ms(50);
}

```

```

while(PINA.0 == 0)
{
waktuX1 += 1;
delay_ms(10);
start = 1;
}
while(start == 1)
{
while(PINA.7 == 1)
{
waktuX1X2 += 1;
delay_ms(10);
}
start = 2;
}
while(start == 2)
{
while(PINA.7 == 0)
{
waktuX2 += 1;
delay_ms(10);
}
end = 1;
start = 0;
}
while(end == 1)
{
waktuTotal = ((float)waktuX1 + (float)waktuX2 + (float)waktuX1X2) / 100;
kecepatan = 1 / waktuTotal;
sprintf(buffer1,"V: %0.002f Km/H ",kecepatan*3.6);
lcd_gotoxy(0,0);
lcd_puts(buffer1);
delay_ms(10);
sprintf(buffer2,"S: %0.002f cm ",kecepatan*((float)waktuX1));
lcd_gotoxy(0,1);
lcd_puts(buffer2);
//masukin program if di baris ini bt buzzer
if(kecepatan > 1.1)PORTB=0xfe;
delay_ms(2000);
ulang();
}
};
}

```

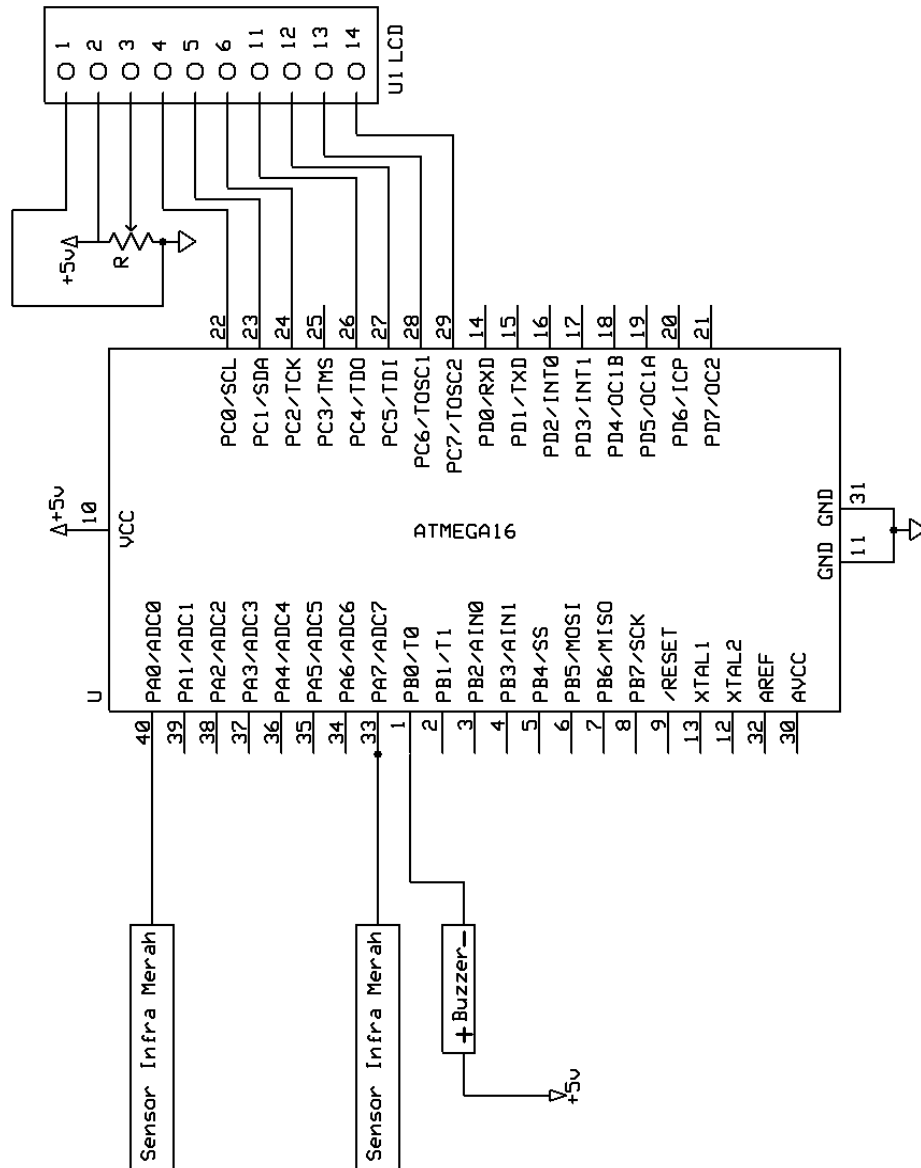
LAMPIRAN B

DIAGRAM SKEMATIK

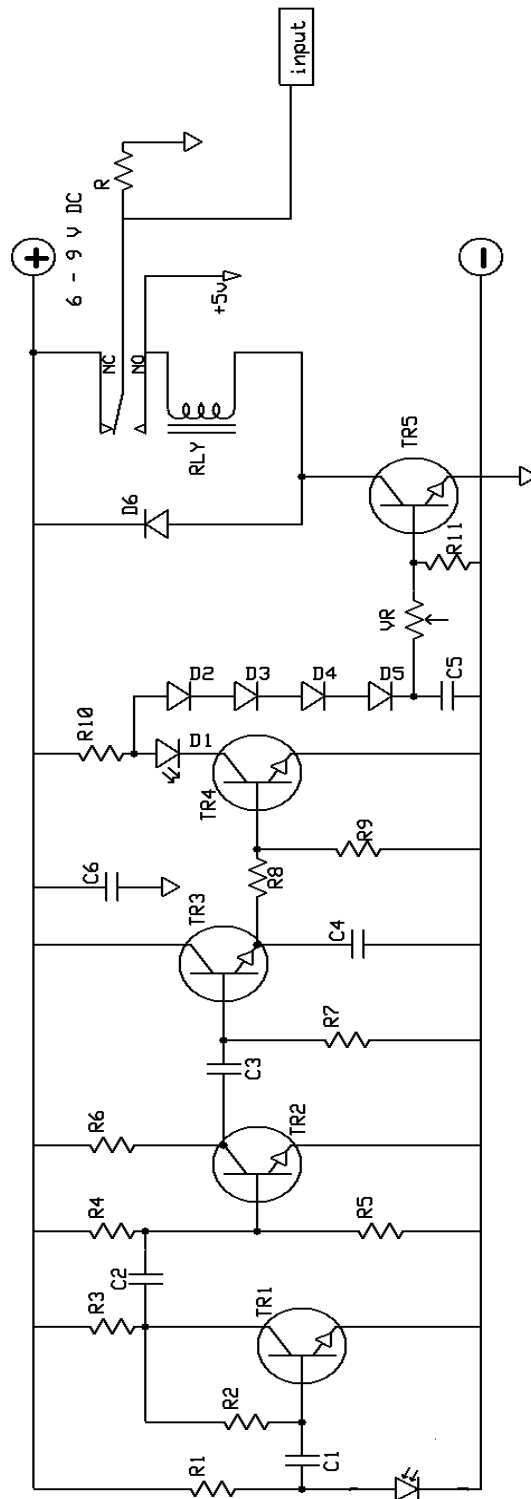
LAMPIRAN B

DIAGRAM SKEMATIK

B.1. ATmega 16



B.2. Receiver Infra Merah



R1 = 1 K Ω

R2 = 470 K Ω

R3 = 3.9 K Ω

R4 = R7 = 180 K Ω

R5 = R9 = R11 = 47 K Ω

R6 = 22 K Ω

R8 = 470 Ω

R10 = 1 K Ω

VR = 10 K

C1 = 4.7KpF 50 V

C2 = 10KpF 50 V

C3 = 33KpF 50 V

C4 = 10 μ F 16 V

C5 = C6 = 100 μ F 16 V

TR1 = TR2 = TR3 = TR4 = CS9014

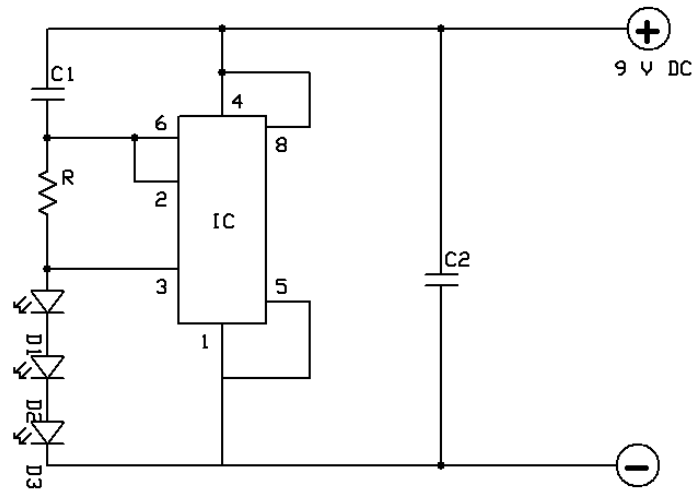
TR5 = CS9013

D1 = LED

D2 = D3 = D4 = D5 = D6 = 1N4148

Relay = 6 V D

B.3. Transmitter Infra Merah



$R1 = 220\text{ K}$

$C1 = 1\text{KpF } 50\text{ V}$

$C2 = 100\text{KpF } 50\text{ V}$

$IC = 17555$

$D1 = \text{LED}$

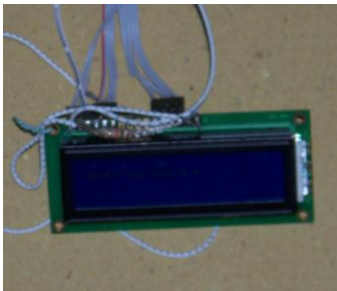
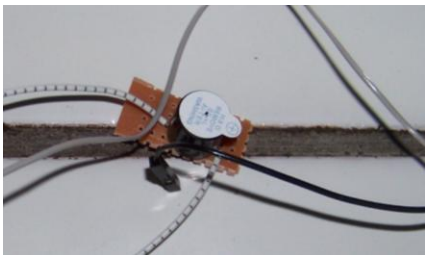
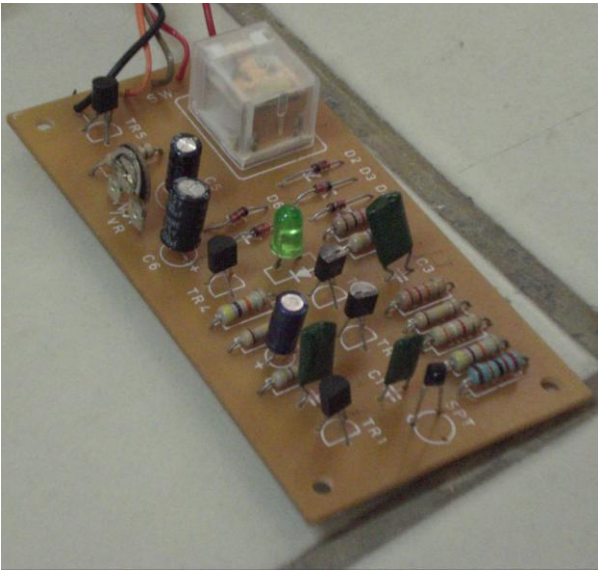
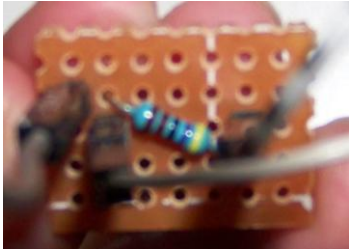
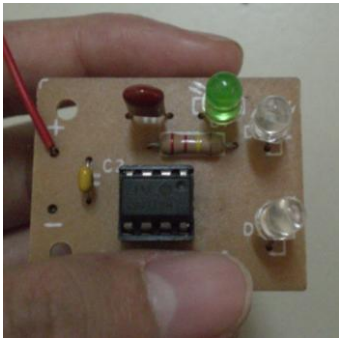
$D2 = D3 = \text{INFRA RED}$

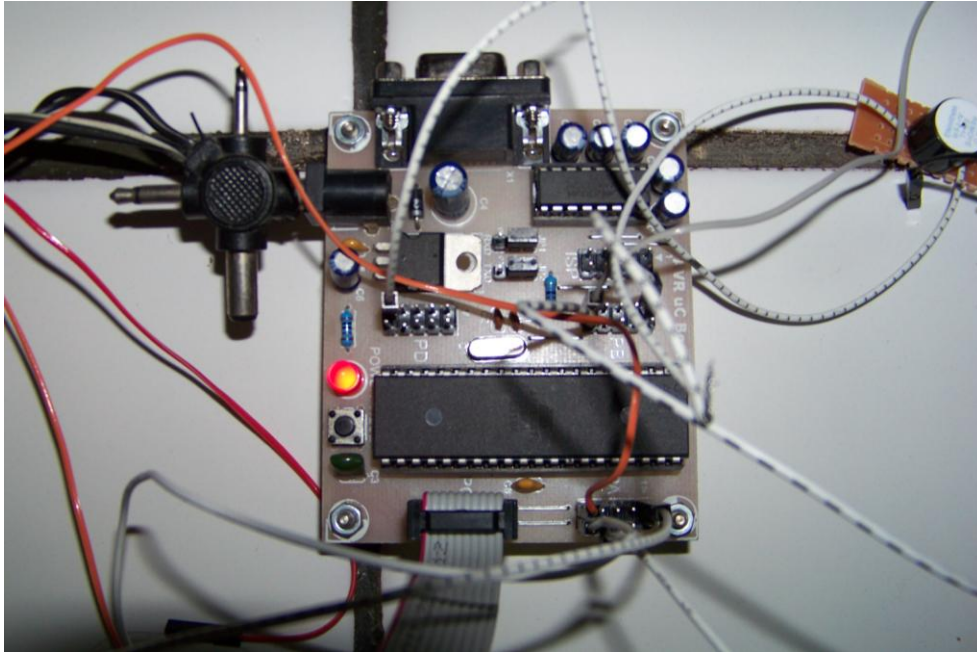
LAMPIRAN C

FOTO ALAT

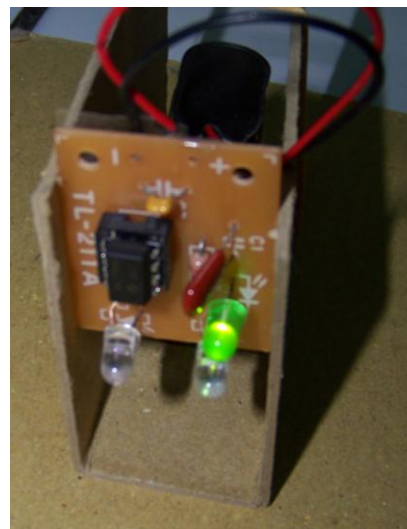
LAMPIRAN C
FOTO ALAT

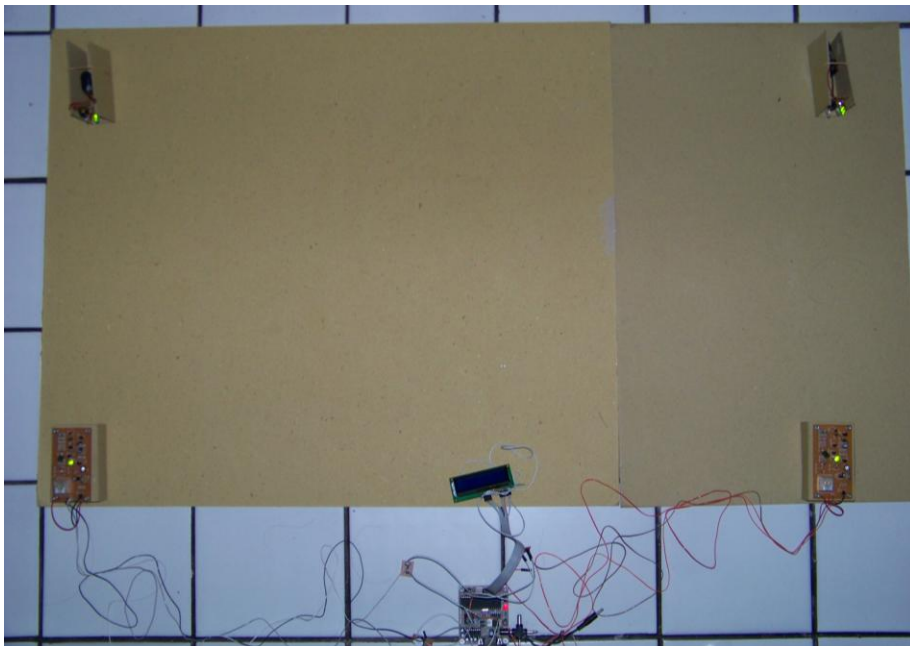
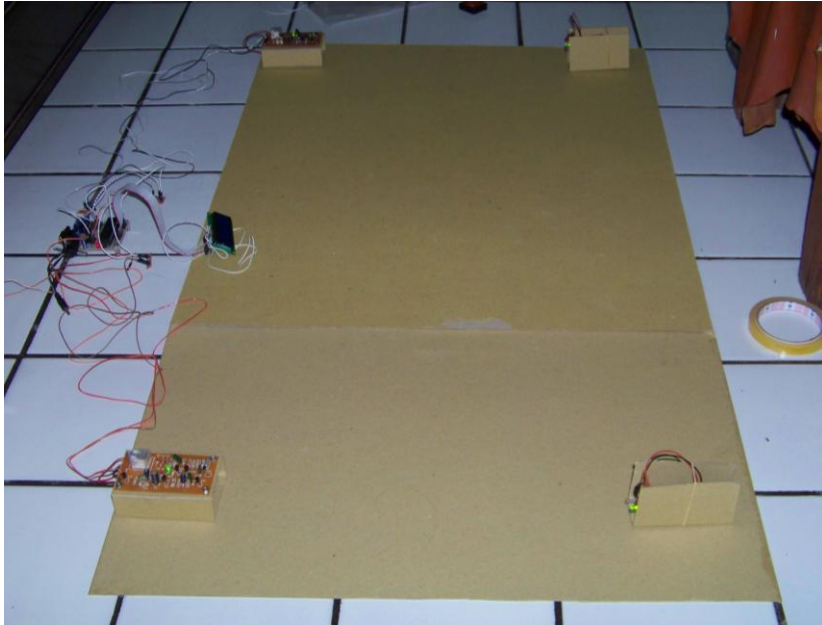
C.1. Hardware





C.2. Perancangan Maket





C.3. Tampilan Pada LCD

