

Lampiran I

Program Alat Kendali Irigasi Sawah Menggunakan SMS berbasis Mikrokontroler ATmega16

```
/**
 *
 */

//=====
//buat variable
unsigned char buff[33];
unsigned char dataRX=0;
unsigned char no_hp[15]; //jumlah karakter no hp maksima 15
unsigned char kode[20]; //jumlah karakter kode maksima 20
unsigned char on_1[12]={'i','s','i',' ','s','a','w','a','h',' ','A','B'};
unsigned char on_2[12]={'i','s','i',' ','s','a','w','a','h',' ','A'};
unsigned char on_3[12]={'i','s','i',' ','s','a','w','a','h',' ','B'};
unsigned char on_4[12]={'c','e','k',' ','s','a','w','a','h',' ','A','B'};
unsigned char balas_sms;

//=====
//=====

void enter(void)
{
    putchar(13);
}

//=====

void kirim_no_hp(void)
{
    unsigned char a;
    unsigned char b;
    putchar('+');
    a=0;
    do
    {
        b=no_hp[a];
        putchar(b);
        a++;
    }
    while(b!=""); //+62
}

void pesan (void)
{
    if(balas_sms==0)
    {
        printf("Format salah");
    }
    if(balas_sms==1)
    {
        printf("pengairan sawah A dan B sedang diproses");
        enter();
    }
}
```

```

    }
    if(balas_sms==2)
    {
        printf("pengairan sawah A sedang diproses");
        enter();
    }
    if(balas_sms==3)
    {
        printf("pengairan sawah B sedang diproses");
        enter();
    }
    if(balas_sms==4)
    {
        if((kadar1<=1)&&(kadar2<=1))
        {
            printf("Sawah petak A dan B kondisi terisi air");
            enter();
        }
        if((kadar1>=1)&&(kadar2<=1))
        {
            printf("Sawah petak A kondisi kering dan petak B kondisi terisi air");
            enter();
        }
        if((kadar1<=1)&&(kadar2>=1))
        {
            printf("Sawah petak A kondisi terisi air dan petak B kondisi kering");
            enter();
        }
        if((kadar1>=1)&&(kadar2>=1))
        {
            printf("Sawah petak A dan petak B kondisi kering");
            enter();
        }
    }
}

if(balas_sms==5)
{
    printf("Sawah petak A dan B sudah penuh");
    enter();
    printf("proses pengairan selesai");
    enter();
}
if(balas_sms==6)
{
    printf("Sawah petak A sudah terisi penuh");
    enter();
    printf("proses pengairan selesai");
    enter();
}
if(balas_sms==7)
{
    printf("Sawah petak B sudah terisi penuh");
    enter();
    printf("proses pengairan selesai");
    enter();
}
if(balas_sms==8)

```

```

    {
    printf("Sawah petak A dan petak B kondisi kering");
    }

if(balas_sms==9)
    {
    printf("Pompa air bermasalah air tidak mengalir alat dimatikan");
    }
}

char isi_sawahA(void)
{
//isi sawah A
unsigned char e;
e=0;
while((kode[0]==on_2[0])&&(kode[1]==on_2[1])&&(kode[2]==on_2[2])&&(kode[3]==on_2[3])
&&(kode[4]==on_2[4])&&(kode[5]==on_2[5])&&(kode[6]==on_2[6])&&(kode[7]==on_2[7])&
&(kode[8]==on_2[8])&&(kode[9]==on_2[9])&&(kode[10]==on_2[10]))
{
lcd_gotoxy(0,0);
lcd_putsf(" ISI SAWAH A ");
balas_sms=2;
 kirim_sms();
e=0xff;
e=0xff;
break;
break;
lcd_clear();
}
return(e);
}

char cek_sawah(void)
{
//cek kondisi sawah
unsigned char e;
e=0;
while((kode[0]==on_4[0])&&(kode[1]==on_4[1])&&(kode[2]==on_4[2])&&(kode[3]==on_4[3])
&&(kode[4]==on_4[4])&&(kode[5]==on_4[5])&&(kode[6]==on_4[6])&&(kode[7]==on_4[7])&
&(kode[8]==on_4[8])&&(kode[9]==on_4[9])&&(kode[10]==on_4[10])&&(kode[11]==on_4[11]
))
{
lcd_gotoxy(0,0);
lcd_putsf(" CEK SAWAH A&B ");
balas_sms=4;
 kirim_sms();
e=0xff;
e=0xff;
break;
break;
lcd_clear();
}
return(e);
}

```

```
// Characters/line: 16
lcd_init(16);
lcd_gotoxy(0,0);
lcd_putsf(" ALAT KENDALI ");
lcd_gotoxy(0,1);
lcd_putsf(" IRIGASI SAWAH ");
delay_ms(2000);
lcd_clear();
lcd_gotoxy(0,0);
lcd_putsf(" CEK MODEM ");
lcd_gotoxy(0,1);
lcd_putsf("LOADING.   ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..  ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING...   ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING....  ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
lcd_putsf("LOADING..... ");
delay_ms(2000);
lcd_gotoxy(0,1);
inialisasi();
lcd_gotoxy(0,1);
lcd_putsf(" MODEM READY ");
delay_ms(2000);
lcd_clear();
PORTB.0=0;
while (1)

a=isi_sawahA();
  while(a==0xff)
  {
    lcd_gotoxy(0,0);
    lcd_putsf(" POMPA AIR ON ");
    lcd_gotoxy(0,1);
    lcd_putsf(" SERVO A ON ");
    PORTB.0=1; //POMPA HIDUP
    delay_ms(5000);
    while(loop==0)
    {
      dataadc1=read_adc(0);
      kadar1(((float)dataadc1*5)/1023);
```

```

if(PINB.3==0)
{
  lcd_gotoxy(0,1);
  lcd_putsf("air keluar ");
}

if(j==0)
{
  for(i=0;i<200;i++) //buka pintu A
  {
    PORTB.1=1;
    delay_us(1650);
    PORTB.1=0;
    delay_us(18100);
  }
  j=1;
}

delay_ms(500);

if(PINB.3==1){lcd_gotoxy(0,1);
  lcd_putsf("air macet ");cek_pompa();a=0x0f;loop=1;y=0;lcd_clear();}

if(kadar1<=1)
{
  lcd_gotoxy(0,0);
  lcd_putsf(" SAWAH A PENUH ");
  lcd_gotoxy(0,1);
  lcd_putsf(" POMPA OFF ");

  PORTB.0=0;//POMPA MATI
  delay_ms(2000);
  for(i=0;i<200;i++) //TUTUP pintu A
  {
    PORTB.1=1;
    delay_us(1400);
    PORTB.1=0;
    delay_us(18100);
  }
  balas_sms=6;
  kirim_sms();
  //delay_ms(10000);
  lcd_clear();
  a=0x0f;
  loop=1;
  y=0;
  j=0;
}
}
}

```

Lampiran II

**Foto Alat Kendali Irigasi Sawah Menggunakan SMS Berbasis
Mikrokontroler ATmega16**



Foto Alat Kendali Tampak Luar

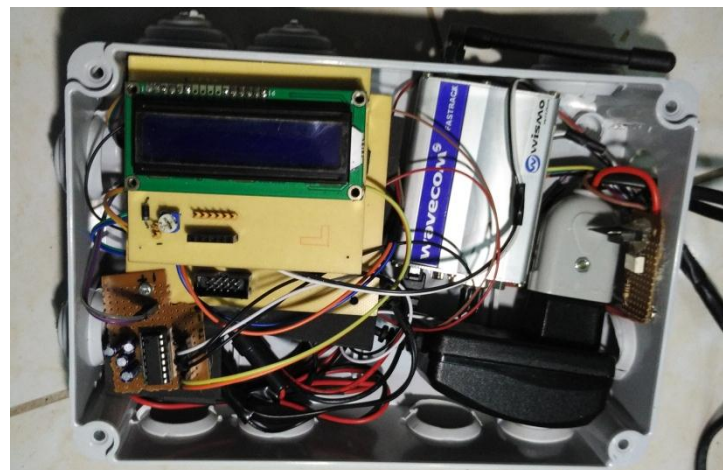


Foto Alat Kendali Tampak Dalam



Foto Pintu Gerbang Air yang di Kontrol Motor Servo dan Sensor Kelembapan Tanah

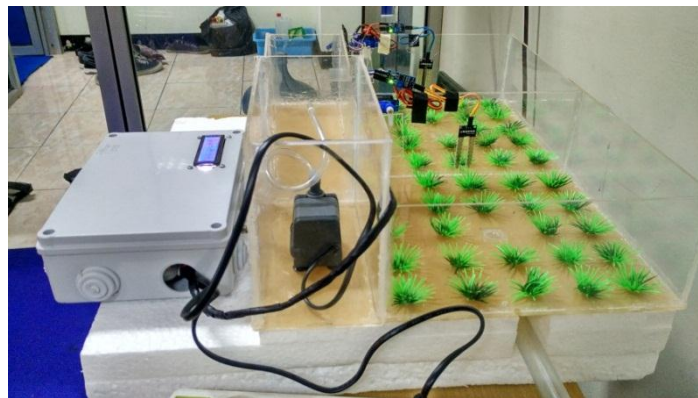


Foto Prototipe Tampak Samping

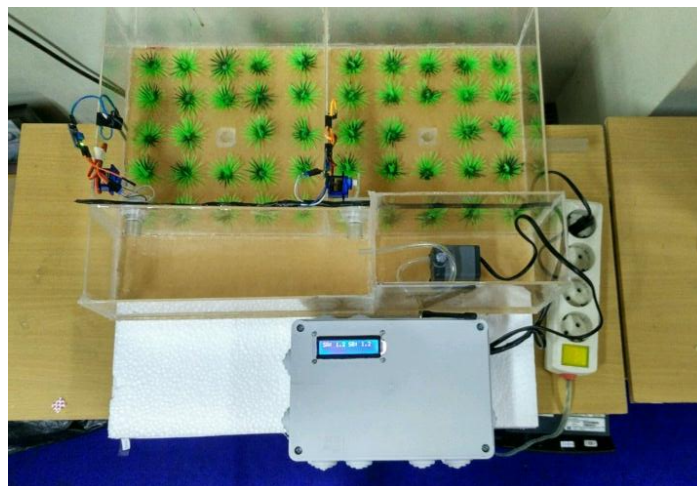


Foto Prototipe Tampak Atas