ภาคผนวก ก

โปรแกรมแสดงผล

```
#include <mega128.h>
#include <stdio.h>
#include <math.h>
#include <i2c.h>
#include <lcd.h>
#include <delay.h>

#define  Chacher   PORTD.7
#define  Discharg  PORTC.6
#define  SUB       PORTE

#asm
   .equ __i2c_port=0x12 ;PORTD
   .equ __sda_bit=1
   .equ __scl_bit=0
#endasm

// Alphanumeric LCD Module functions
#asm
  .equ __lcd_port=0x1B ;PORTA
#endasm

eeprom char beta[5],lock;

unsigned char kp,i,port1,port2;
unsigned char boomcheck=0,ACT=0;

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

```
const unsigned char KEY_PAD[4][4] = { {'C','3','2','1'},
                                      {'D','6','5','4'},
                                      {'E','9','8','7'},
                                      {'F','B','0','A'}};
/************************************************************/
unsigned char get_key()
{
 unsigned char  read_col[4] = {0b11101111,0b11011111,0b10111111,0b01111111};
 unsigned int   col,row;
 static char last_key;

    DDRF =0xF0;

  for(col=0;col<4;col++)
     {
      PORTF =  read_col[col];
      delay_ms(10);
      row =  PINF & 0X0F;

      switch (row)
            {
             case 0x0E: row =3;  break;
             case 0x0D: row =2;  break;
             case 0x0B: row =1;  break;
             case 0x07: row =0;  break;
             default:   row =4;
            }
      if(row!=4)
        {
         if(KEY_PAD[row][col]==last_key) return('\0');
```

```
            last_key=KEY_PAD[row][col];
            return(KEY_PAD[row][col]);
          }
      }
  last_key='\0';
  return(last_key);
 }

/*************************************************************/
 unsigned char key_press()
 {
   unsigned char X;

 loop:    X=get_key();

        if (X=='A') goto loop;
        if (X=='B') goto loop;
        if (X=='C') goto loop;
        if (X=='D') goto loop;
        if (X=='E') goto loop;
        if (X=='F') goto loop;
        if (X=='\0') goto loop;
        return (X);
 }
 /*************************************************************/
 unsigned char key_puts()
 {
   unsigned char X;

 loop:    X=get_key();
```

```
    if (X=='\0') goto loop;
       return (X);
 }
/*************************************************************/

/*************************************************************/
void Check_status (void)
{
                    i2c_start();
                    i2c_write(0x70+1);
                    //i2c_write(0xDD);
                    port1=i2c_read(0);
                    i2c_stop();

                    SUB=port1;

                    lcd_clear();
                    lcd_gotoxy(0,line1);
                    if (SUB.0==0)lcd_putsf("CH1=OK");
                    else lcd_putsf("CH1=--");

                    lcd_gotoxy(0,line3);
                    if (SUB.1==0)lcd_putsf("CH3=OK");
                    else lcd_putsf("CH3=--");

                    lcd_gotoxy(7,line1);
                    if (SUB.2==0)lcd_putsf("CH5=OK");
                    else lcd_putsf("CH5=--");

                    lcd_gotoxy(7,line3);
```

```
if (SUB.3==0)lcd_putsf("CH7=OK");
else lcd_putsf("CH7=--");

lcd_gotoxy(14,line1);
if (SUB.4==0)lcd_putsf("CH9=OK");
else lcd_putsf("CH9=--");

lcd_gotoxy(14,line2);
if (SUB.5==0)lcd_putsf("CHA=OK");
else lcd_putsf("CHA=--");

lcd_gotoxy(7,line4);
if (SUB.6==0)lcd_putsf("CH8=OK");
else lcd_putsf("CH8=--");

lcd_gotoxy(7,line2);
if (SUB.7==0)lcd_putsf("CH6=OK");
else lcd_putsf("CH6=--");

i2c_start();
i2c_write(0x72+1);
port2=i2c_read(0);
i2c_stop();
SUB=port2;

lcd_gotoxy(0,line4);
if (SUB.0==0)lcd_putsf("CH4=OK");
else lcd_putsf("CH4=--");

lcd_gotoxy(0,line2);
```

```
                    if (SUB.1==0)lcd_putsf("CH2=OK");
                    else lcd_putsf("CH2=--");

}
/*************************************************************/
 void Check_status1 (void)
{
                    i2c_start();
                    i2c_write(0x70+1);
                    //i2c_write(0xDD);
                    port1=i2c_read(0);
                    i2c_stop();

                    i2c_start();
                    i2c_write(0x72+1);
                    //i2c_write(0xDD);
                    port2=i2c_read(0);
                    i2c_stop();

                    SUB=port1;
                     lcd_clear();
                    lcd_gotoxy(0,line1);
                    if (SUB.0==0)lcd_putsf("CH1=ER");
                    else lcd_putsf("CH1=--");

                    lcd_gotoxy(0,line3);
                    if (SUB.1==0)lcd_putsf("CH3=ER");
                    else lcd_putsf("CH3=--");

                    lcd_gotoxy(7,line1);
```

```
if (SUB.2==0)lcd_putsf("CH5=ER");
else lcd_putsf("CH5=--");

lcd_gotoxy(7,line3);
if (SUB.3==0)lcd_putsf("CH7=ER");
else lcd_putsf("CH7=--");

lcd_gotoxy(14,line1);
if (SUB.4==0)lcd_putsf("CH9=ER");
else lcd_putsf("CH9=--");

lcd_gotoxy(14,line2);
if (SUB.5==0)lcd_putsf("CHA=ER");
else lcd_putsf("CHA=--");

lcd_gotoxy(7,line4);
if (SUB.6==0)lcd_putsf("CH8=ER");
else lcd_putsf("CH8=--");

lcd_gotoxy(7,line2);
if (SUB.7==0)lcd_putsf("CH6=ER");
else lcd_putsf("CH6=--");

SUB=port2;

lcd_gotoxy(0,line4);
if (SUB.0==0)lcd_putsf("CH4=ER");
else lcd_putsf("CH4=--");

lcd_gotoxy(0,line2);
```

```
                    if (SUB.1==0)lcd_putsf("CH2=ER");
                    else lcd_putsf("CH2=--");

}
/*****************************************************************************/
interrupt [EXT_INT2] void ext_int2_isr(void)
{
     boomcheck=0x01;
}
/*****************************************************************/
void main(void)
{
      unsigned char password[5],confirm[5],buff[4],dip_charge=0,str[4];
      unsigned int  CH[11],step=0;
      DDRB =0xFF;
      DDRC =0xFF;
      DDRD =0xFF;
      DDRE =0xFF;
      DDRC.3=0;

      PORTB=0x00;
      PORTC=0x00;
      PORTD=0x00;
      PORTE=0x00;

      //DDRD.4=1;
      Chacher=0;
      Discharg=0;

      i2c_init();
```

```
   lcd_init(20);

/*  PORTB.0=1;delay_ms(10);PORTB.0=0;
   PORTB.1=1;delay_ms(10);PORTB.1=0;
   PORTB.2=1;delay_ms(10);PORTB.2=0;
   PORTB.3=1;delay_ms(10);PORTB.3=0;
   PORTB.4=1;delay_ms(10);PORTB.4=0;
   PORTB.5=1;delay_ms(10);PORTB.5=0;
   PORTB.6=1;delay_ms(10);PORTB.6=0;
   PORTB.7=1;delay_ms(10);PORTB.7=0;
   PORTC.0=1;delay_ms(10);PORTC.0=0;
   PORTC.1=1;delay_ms(10);PORTC.1=0;  */

   if(lock!='0')
              {
               beta[1]='1';
               beta[2]='2';
               beta[3]='3';
               beta[4]='4';
               lcd_gotoxy(1,line2);
               lcd_putchar(beta[1]);
               lcd_putchar(beta[2]);
               lcd_putchar(beta[3]);
               lcd_putchar(beta[4]);
               lock='0';
              }

 while (1)
              {
```

```
start:          lcd_gotoxy(1,line1);lcd_putsf("      Welcome      ");
                delay_ms(3000);

                PORTB=0x00;
                PORTC=0x00;
                PORTE=0x00;

                DDRD.3=1;
                Chacher=0;
                Discharg=0;

                PORTC=0x00;

                lcd_clear();
                Discharg=1;
                delay_ms(1000);
                Chacher=1;
                delay_ms(3000);
                Chacher=0;
                delay_ms(1000);
                Discharg=0;
                delay_ms(1000);

            Check_status();
            delay_ms(1000);
            lcd_clear();

        lcd_gotoxy(1,line1) ;lcd_putsf("     PASSWORD      ");
        lcd_gotoxy(7,line2) ;password[1]=key_puts();lcd_putchar(password[1]);
```

```
lcd_gotoxy(8,line2) ;password[2]=key_puts();lcd_putchar(password[2]);
lcd_gotoxy(9,line2) ;password[3]=key_puts();lcd_putchar(password[3]);
lcd_gotoxy(10,line2);password[4]=key_puts();lcd_putchar(password[4]);

lcd_gotoxy(1,line3) ;lcd_putsf("      CONFIRM      ");
lcd_gotoxy(7,line4) ;confirm[1]=key_puts();lcd_putchar(confirm[1]);
lcd_gotoxy(8,line4) ;confirm[2]=key_puts();lcd_putchar(confirm[2]);
lcd_gotoxy(9,line4) ;confirm[3]=key_puts();lcd_putchar(confirm[3]);
lcd_gotoxy(10,line4);confirm[4]=key_puts();lcd_putchar(confirm[4]);

for(i=1;i<=4;i++)
  {
   if (password[i]!=confirm[i])
      {
       lcd_clear();
       lcd_gotoxy(1,line2) ;lcd_putsf(" PASSWORD&CONFIRM  ");
       lcd_gotoxy(1,line3) ;lcd_putsf("   NOT  CORRECT    ");
       delay_ms(5000);
       lcd_clear();
       goto start;
      }
  }
    for(i=1;i<=4;i++)
 {
   if (password[i]!=beta[i])
      {
       lcd_clear();
       lcd_gotoxy(1,line2) ;lcd_putsf("   YOUR PASSWORD   ");
       lcd_gotoxy(1,line3) ;lcd_putsf("     NOT  PASS     ");
       delay_ms(5000);
```

```
        lcd_clear();
        goto start;
      }
   }
        lcd_clear();
        lcd_gotoxy(1,line2) ;lcd_putsf("   YOUR PASSWORD   ");
        lcd_gotoxy(1,line3) ;lcd_putsf("    OK!   PASS     ");
        delay_ms(3000);

        lcd_clear();
        lcd_gotoxy(1,line2) ;lcd_putsf(" 1.EDIT PASSWORD   ");
        lcd_gotoxy(1,line3) ;lcd_putsf(" 2.RUN  PROGRAM    ");

  loop:  kp=key_press();
        if(kp=='1') goto EDIT_PASS;
        if(kp=='2') goto RUN_PRO;
        goto loop;

         EDIT_PASS: lcd_clear();
        lcd_gotoxy(1,line1) ;lcd_putsf("       MODE        ");
        lcd_gotoxy(1,line2) ;lcd_putsf("   EDIT PASSWORD   ");

        lcd_gotoxy(7,line3) ;beta[1]=key_puts();lcd_putchar(beta[1]);
        lcd_gotoxy(8,line3) ;beta[2]=key_puts();lcd_putchar(beta[2]);
        lcd_gotoxy(9,line3) ;beta[3]=key_puts();lcd_putchar(beta[3]);
        lcd_gotoxy(10,line3);beta[4]=key_puts();lcd_putchar(beta[4]);

        goto start;

RUN_PRO:   lcd_clear();
```

```
        lcd_gotoxy(1,line1) ;lcd_putsf("       MODE        ");
        lcd_gotoxy(1,line2) ;lcd_putsf("   RUN _PROGRAM    ");


LOOP1:    lcd_clear();
        lcd_gotoxy(1,line1) ;lcd_putsf("SET1=       mS     ");
        lcd_gotoxy(6,line1) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line1) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(8,line1) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[1]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH1_KEY:   kp = key_puts();
        if (kp=='A') goto LOOP1;
        if (kp=='F') goto NEXT1;
        goto CH1_KEY;

NEXT1:    lcd_gotoxy(1,line2) ;lcd_putsf("SET2=       mS      ");
        lcd_gotoxy(6,line2) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line2) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(8,line2) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[2]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH2_KEY:   kp = key_puts();
        if (kp=='A') goto NEXT1;
        if (kp=='F') goto NEXT2;
        goto CH2_KEY;

NEXT2:    lcd_gotoxy(1,line3) ;lcd_putsf("SET3=       mS      ");
        lcd_gotoxy(6,line3) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line3) ;buff[2]=key_press();lcd_putchar(buff[2]);
```

```
        lcd_gotoxy(8,line3) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[3]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH3_KEY:   kp = key_puts();
        if (kp=='A') goto NEXT2;
        if (kp=='F') goto NEXT3;
        goto CH3_KEY;

NEXT3:     lcd_gotoxy(1,line4) ;lcd_putsf("SET4=       mS      ");
        lcd_gotoxy(6,line4) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line4) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(8,line4) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[4]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH4_KEY:   kp = key_puts();
        if (kp=='A') goto NEXT3;
        if (kp=='F') goto NEXT4;
        goto CH4_KEY;

NEXT4:     lcd_clear();
        lcd_gotoxy(1,line1) ;lcd_putsf("SET5=       mS      ");
        lcd_gotoxy(6,line1) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line1) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(8,line1) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[5]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH5_KEY:   kp = key_puts();
        if (kp=='A') goto NEXT4;
        if (kp=='F') goto NEXT5;
        goto CH5_KEY;
```

```
NEXT5:    lcd_gotoxy(1,line2) ;lcd_putsf("SET6=       mS      ");
          lcd_gotoxy(6,line2) ;buff[1]=key_press();lcd_putchar(buff[1]);
          lcd_gotoxy(7,line2) ;buff[2]=key_press();lcd_putchar(buff[2]);
          lcd_gotoxy(8,line2) ;buff[3]=key_press();lcd_putchar(buff[3]);
          CH[6]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH6_KEY:  kp = key_puts();
          if (kp=='A') goto NEXT5;
          if (kp=='F') goto NEXT6;
          goto CH6_KEY;

NEXT6:    lcd_gotoxy(1,line3) ;lcd_putsf("SET7=       mS      ");
          lcd_gotoxy(6,line3) ;buff[1]=key_press();lcd_putchar(buff[1]);
          lcd_gotoxy(7,line3) ;buff[2]=key_press();lcd_putchar(buff[2]);
          lcd_gotoxy(8,line3) ;buff[3]=key_press();lcd_putchar(buff[3]);
          CH[7]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH7_KEY:  kp = key_puts();
          if (kp=='A') goto NEXT6;
          if (kp=='F') goto NEXT7;
          goto CH7_KEY;

NEXT7:    lcd_gotoxy(1,line4) ;lcd_putsf("SET8=       mS      ");
          lcd_gotoxy(6,line4) ;buff[1]=key_press();lcd_putchar(buff[1]);
          lcd_gotoxy(7,line4) ;buff[2]=key_press();lcd_putchar(buff[2]);
          lcd_gotoxy(8,line4) ;buff[3]=key_press();lcd_putchar(buff[3]);
          CH[8]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH8_KEY:  kp = key_puts();
```

```
        if (kp=='A') goto NEXT7;
        if (kp=='F') goto NEXT8;
        goto CH8_KEY;

NEXT8:  lcd_clear();
        lcd_gotoxy(1,line1) ;lcd_putsf("SET9=      mS     ");
        lcd_gotoxy(6,line1) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(7,line1) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(8,line1) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[9]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH9_KEY:  kp = key_puts();
        if (kp=='A') goto NEXT8;
        if (kp=='F') goto NEXT9;
        goto CH9_KEY;

NEXT9:  lcd_gotoxy(1,line2) ;lcd_putsf("SET10=     mS     ");
        lcd_gotoxy(7,line2) ;buff[1]=key_press();lcd_putchar(buff[1]);
        lcd_gotoxy(8,line2) ;buff[2]=key_press();lcd_putchar(buff[2]);
        lcd_gotoxy(9,line2) ;buff[3]=key_press();lcd_putchar(buff[3]);
        CH[10]=((buff[1]-0x30)*100)+((buff[2]-0x30)*10)+(buff[3]-0x30);

CH10_KEY:  kp = key_puts();
        if (kp=='A') goto NEXT9;
        if (kp=='F') goto EXIT_LOOP;
        goto CH10_KEY;

EXIT_LOOP: lcd_clear();

READY_KEY: kp = get_key();
```

```
        lcd_gotoxy(1,line2) ;lcd_putsf("     READY RUN     ");
        if (kp=='F') goto RUN_LOOP;
        goto READY_KEY;

RUN_LOOP:   lcd_clear();
         Check_status();
         delay_ms(1000);
         lcd_clear();

         while(port1!=0x00)
          {
        RAP: Chacher=1;
            lcd_clear();
             for(i=0;i<=50;i++)
            {
            lcd_gotoxy(1,line2) ;lcd_putsf(" CAPACITOR CHARGER");
            delay_ms(250);
            lcd_gotoxy(1,line2) ;lcd_putsf("                ");
            delay_ms(250);
            lcd_gotoxy(1,line2) ;lcd_putsf(" CAPACITOR CHARGER");
            delay_ms(250);
            lcd_gotoxy(1,line2) ;lcd_putsf("                ");
            delay_ms(250);
            }

           Chacher=0;
           delay_ms(3000);
           Check_status();
           delay_ms(3000);
           dip_charge++;
```

```
        /*   lcd_clear();
             lcd_gotoxy(1,line4);
             sprintf(str,"%2X",port1);
             lcd_puts(str);
             lcd_gotoxy(4,line4);
             sprintf(str,"%2X",port2);
             lcd_puts(str);
             delay_ms(10000);
             lcd_clear(); */

            while(dip_charge==2)
             {
              dip_charge=0;goto pic;
             }
            if(port2!=0xFC) goto RAP;

        }
pic:        //Check_status();


   END_PRO2:   kp = get_key();
             lcd_gotoxy(14,line4) ;lcd_putsf("ENTER");
             delay_ms(400);
             lcd_gotoxy(14,line4) ;lcd_putsf("     ");
             delay_ms(400);
             if (kp=='F') {goto RUN_LOOP1;}
             if (kp=='A') {lcd_clear();goto start;}
             goto END_PRO2;

RUN_LOOP1:   lcd_clear();
```

```
    if (CH[1]==0) goto next1;

       PORTB.0=1;
            while(1)
            {
                for(step=0;step<=60000;step++)
                 {
                    while(PINC.3==0) ACT=1;
                    if(ACT==1) goto out1;
                 }
                  lcd_gotoxy(1,line1);
                  lcd_putsf("CH1=ERROR");
            Beet1:  kp=key_puts();
                  if(kp=='A') goto start;
                  if(kp=='F') goto out1;
                  goto Beet1;
                 }

        out1: delay_ms(CH[1]);
            PORTB.0=0;
            ACT=0;


next1:if (CH[2]==0) goto next2;

        PORTB.1=1;
            while(1)
               {
                for(step=0;step<=60000;step++)
                 {
```

```
                while(PINC.3==0) ACT=1;
                if(ACT==1) goto out2;
              }
                lcd_gotoxy(1,line1);
                lcd_putsf("CH2=ERROR");
            Beet2:kp=key_puts();
                if(kp=='A') goto start;
                if(kp=='F') goto out2;
                goto Beet2;
              }

        out2:delay_ms(CH[2]);
            PORTB.1=0;
            ACT=0;


next2:   if (CH[3]==0) goto next3;

       PORTB.2=1;
           while(1)
           {
              for(step=0;step<=60000;step++)
               {
                  while(PINC.3==0) ACT=1;
                if(ACT==1) goto out3;
               }
                lcd_gotoxy(1,line1);
                lcd_putsf("CH3=ERROR");
           Beet3: kp=key_puts();
                if(kp=='A') goto start;
```

```
                if(kp=='F') goto out3;
                goto Beet3;
               }

      out3:   delay_ms(CH[3]);
              PORTB.2=0;
              ACT=0;

next3:   if (CH[4]==0) goto next4;

          PORTB.3=1;
              while(1)
              {
                 for(step=0;step<=60000;step++)
                  {
                     while(PINC.3==0) ACT=1;
                    if(ACT==1) goto out4;
                  }
                   lcd_gotoxy(1,line1);
                   lcd_putsf("CH4=ERROR");
               Beet4: kp=key_puts();
                   if(kp=='A') goto start;
                   if(kp=='F') goto out4;
                   goto Beet4;
                  }

      out4:   delay_ms(CH[4]);
              PORTB.3=0;
              ACT=0;
```

```
next4:    if (CH[5]==0) goto next5;

          PORTB.4=1;
               while(1)
               {
                   for(step=0;step<=60000;step++)
                    {
                        while(PINC.3==0) ACT=1;
                       if(ACT==1) goto out5;
                    }
                     lcd_gotoxy(1,line1);
                     lcd_putsf("CH5=ERROR");
                     kp=key_puts();
               Beet5:  if(kp=='A') goto start;
                     if(kp=='F') goto out5;
                     goto Beet5;
                    }

          out5:   delay_ms(CH[5]);
               PORTB.4=0;
               ACT=0;

next5:    if (CH[6]==0) goto next6;

          PORTB.5=1;
               while(1)
               {
                   for(step=0;step<=60000;step++)
                    {
                        while(PINC.3==0) ACT=1;
```

```
                if(ACT==1) goto out6;
              }
                lcd_gotoxy(1,line1);
                lcd_putsf("CH6=ERROR");
            Beet6:  kp=key_puts();
                if(kp=='A') goto start;
                if(kp=='F') goto out6;
                goto Beet6;
            }

      out6:   delay_ms(CH[6]);
            PORTB.5=0;
            ACT=0;

next6:    if (CH[7]==0) goto next7;
            PORTB.6=1;
            while(1)
            {
               for(step=0;step<=60000;step++)
                {
                   while(PINC.3==0) ACT=1;
                  if(ACT==1) goto out7;
              }
                lcd_gotoxy(1,line1);
                lcd_putsf("CH7=ERROR");
            Beet7:  kp=key_puts();
                if(kp=='A') goto start;
                if(kp=='F') goto out7;
                goto Beet7;
              }
```

```
        out7: delay_ms(CH[7]);
            PORTB.6=0;
            ACT=0;

next7:   if (CH[8]==0) goto next8;
            PORTB.7=1;
            while(1)
            {
               for(step=0;step<=60000;step++)
                {
                   while(PINC.3==0) ACT=1;
                  if(ACT==1) goto out8;
                }
                 lcd_gotoxy(1,line1);
                 lcd_putsf("CH8=ERROR");
            Beet8:  kp=key_puts();
                 if(kp=='A') goto start;
                 if(kp=='F') goto out8;
                 goto Beet8;
                }

       out8:   delay_ms(CH[8]);
            PORTB.7=0;
            ACT=0;

next8:   if (CH[9]==0) goto next9;

          PORTC.0=1;
            while(1)
            {
```

```
                for(step=0;step<=60000;step++)
                 {
                   while(PINC.3==0) ACT=1;
                   if(ACT==1) goto out9;
                 }
                  lcd_gotoxy(1,line1);
                  lcd_putsf("CH9=ERROR");
               Beet9: kp=key_puts();
                  if(kp=='A') goto start;
                  if(kp=='F') goto out9;
                  goto Beet9;
                 }

         out9:  delay_ms(CH[9]);
              PORTC.0=0;
              ACT=0;

next9:    if (CH[10]==0) goto next10;
              PORTC.1=1;
              while(1)
              {
                for(step=0;step<=60000;step++)
                 {
                   while(PINC.3==0) ACT=1;
                   if(ACT==1) goto out10;
                 }
                  lcd_gotoxy(1,line1);
                  lcd_putsf("CH10=ERROR");
               Beet10:kp=key_puts();
                  if(kp=='A') goto start;
```

```
                    if(kp=='F') goto out10;
                    goto Beet10;
                   }

          out10:  delay_ms(CH[10]);
                  PORTC.1=0;
                  ACT=0;

        next10:     Check_status1();
                    delay_ms(5000);
                    lcd_clear();

            lcd_gotoxy(1,line1);lcd_putsf("Press CLR to START");
                    lcd_gotoxy(1,line2);lcd_putsf("Press ENT to CONTINUE");
          END_PRO:   kp = key_puts();
                    if (kp=='A') {lcd_clear();goto start;}
                    if (kp=='F') {lcd_clear();goto RUN_LOOP;}
                    goto END_PRO;

   }
}
```