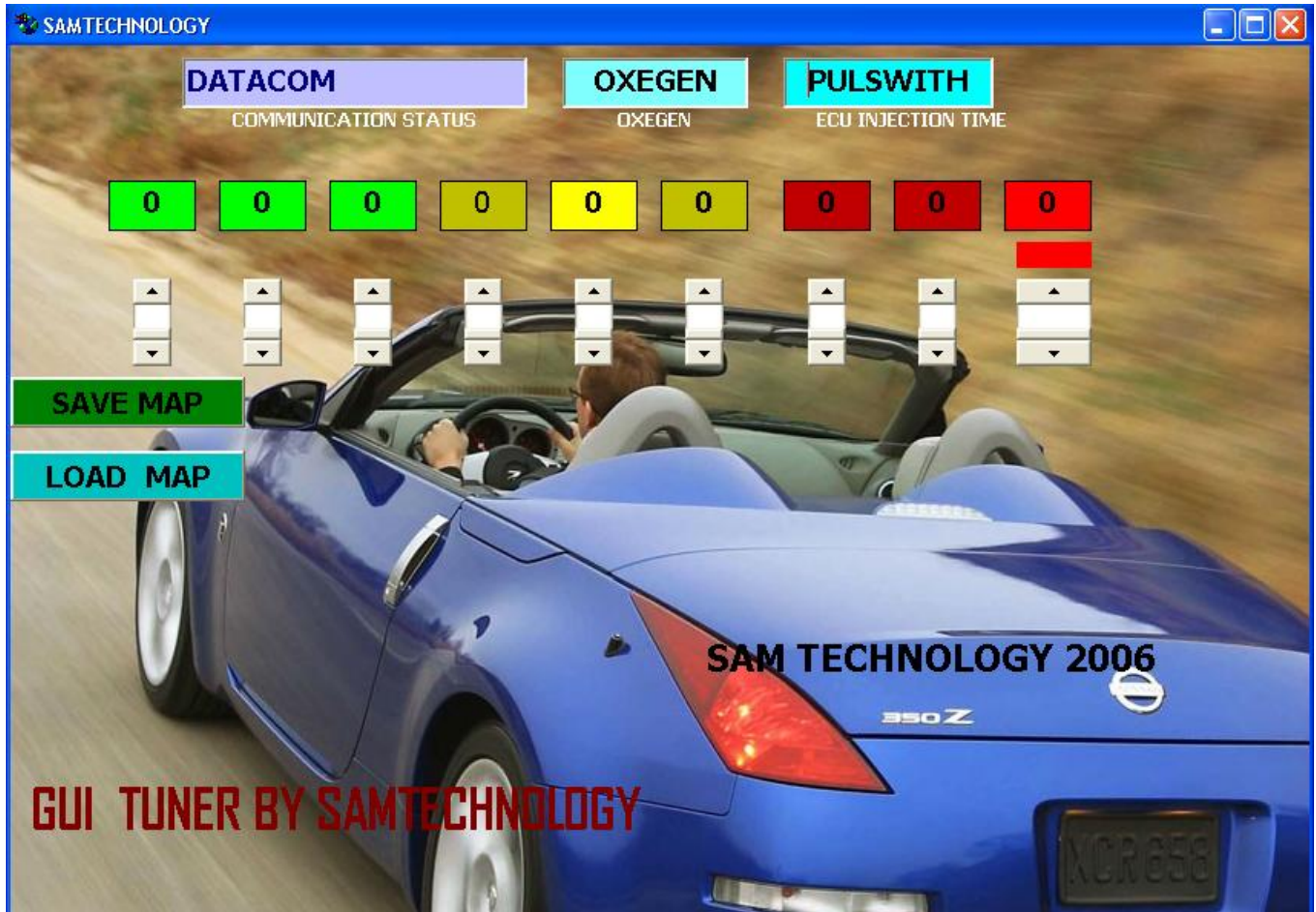


PROJECT ELECTRONIC CONTROL GAS INJECTION SYSTEM



VISUAL BASIC WITH GUI TUNER

SOURCE CODE VISUAL BASIC

```

Dim WR As Boolean
Dim pw
Dim data
Dim oxg
Public index1
Dim index2
Dim k
Dim u
Dim refd
Dim datar1$(1000, 9)
Dim c_data
Dim A$(10)
Dim gas
Private Sub Command1_Click()
    ' Set CancelError is True
    CommonDialog1.CancelError = True
    On Error GoTo ErrHandler
    ' Set flags
    
```

```

CommonDialog1.Flags = cdlOFNHideReadOnly
' Set filters
CommonDialog1.Filter = "All Files (*.*)|*.*|Text Files" & _
"(*.txt)|*.txt|data_inject (*.sam)|*.sam"
' Specify default filter
CommonDialog1.FilterIndex = 3
' Display the Open dialog box
CommonDialog1.ShowSave
' Display name of selected file

,

'MsgBox CommonDialog1.filename
Open CommonDialog1.FileName For Output As #1
Print #1, Text5.Text
Print #1, Text6.Text
Print #1, Text8.Text
Print #1, Text9.Text
Print #1, Text10.Text
Print #1, Text11.Text
Print #1, Text12.Text
Print #1, Text13.Text
Print #1, Text14.Text
Close #1

```

ErrorHandler:

```

'User pressed the Cancel button
Exit Sub

```

End Sub

Private Sub Command2_Click()

```

k = 0
' Set CancelError is True
CommonDialog1.CancelError = True
On Error GoTo ErrorHandler
' Set flags
CommonDialog1.Flags = cdlOFNHideReadOnly
' Set filters
CommonDialog1.Filter = "All Files (*.*)|*.*|Text Files" & _
"(*.txt)|*.txt|data_inject (*.sam)|*.sam"
' Specify default filter
CommonDialog1.FilterIndex = 3
' Display the Open dialog box
CommonDialog1.ShowOpen
' Display name of selected file

```

```

',
'MsgBox CommonDialog1.filename
Open CommonDialog1.FileName For Input As #1
Do While Not EOF(1)
Line Input #1, A$(k)
k = k + 1
Loop
Close #1

```

```

Text5.Text = A$(0)
Text6.Text = A$(1)
Text8.Text = A$(2)
Text9.Text = A$(3)
Text10.Text = A$(4)
Text11.Text = A$(5)
Text12.Text = A$(6)
Text13.Text = A$(7)
Text14.Text = A$(8)

```

```

ErrorHandler:
'User pressed the Cancel button
Exit Sub
End Sub

```

```

Private Sub Command3_Click()
Dim XX

```

```

gas = 1

```

```

Timer1.Enabled = True

```

```

End Sub

```

```

Private Sub Command4_Click()
gas = 0
Timer1.Enabled = True
End Sub

```

```

Private Sub Form_Load()
k = 0
data = 0
gas = 0
MSComm1.PortOpen = True

```

```

Text5.Text = "0"
Text6.Text = "0"
Text8.Text = "0"

```

```

Text9.Text = "0"
Text10.Text = "0"

```

```

Text11.Text = "0"

Text12.Text = "0"
Text13.Text = "0"
Text14.Text = "0"
'-----
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = False
Shape6.Visible = False
Shape7.Visible = False
Shape8.Visible = False
'Shape9.Visible = False
'-----

```

```

Timer1.Enabled = False
c_data = 0

```

```

End Sub

```

```

Private Sub HScroll1_Change()

```

```

End Sub

```

```

Private Sub MSComm1_OnComm()

```

```

'Timer1.Enabled = False
'Timer2.Enabled = False
Dim datain$, A$, b$, d$
Dim c, e, f
Do
    buffer$ = buffer$ & MSComm1.Input
    Loop Until InStr(buffer$, "s")
    datain$ = buffer$
    Text1 = datain$
    b$ = Text1
    A$ = Mid$(b$, 1, 5)
    Text2 = A$
    pw = Val(Text2.Text)
    d$ = Mid$(b$, 6, 5)
    'Text3 = d$
    c = Val(d$)
    e = (c * 5) / 1023
    Text4 = Format(e, "#.0000")
End Sub

```

```

Private Sub Text10_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then
If Val(Text10.Text) > 200 Then
Text10.Text = "200"
End If
On Error Resume Next
VScroll5.Value = Text10.Text
End If
End Sub

```

```

Private Sub Text11_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then
If Val(Text11.Text) > 200 Then
Text11.Text = "200"
End If
On Error Resume Next
VScroll6.Value = Text11.Text
End If
End Sub

```

```

Private Sub Text12_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then

If Val(Text12.Text) > 200 Then
Text12.Text = "200"
End If
On Error Resume Next
VScroll7.Value = Text12.Text

End If
End Sub

```

```

Private Sub Text13_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then
If Val(Text13.Text) > 200 Then
Text13.Text = "200"
End If
On Error Resume Next
VScroll8.Value = Text13.Text

End If
End Sub

```

```

Private Sub Text14_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then

```

```

If Val(Text14.Text) > 200 Then

```

```
Text14.Text = "200"  
End If  
On Error Resume Next  
VScroll9.Value = Text14.Text
```

```
End If  
End Sub
```

```
Private Sub Text2_Change()
```

```
'-----111111-----  
If Val(Text2.Text) > 1500 And Val(Text2.Text) <= 2000 Then  
Shape1.Visible = True  
Shape2.Visible = False  
Shape3.Visible = False  
Shape4.Visible = False  
Shape5.Visible = False  
Shape6.Visible = False  
Shape7.Visible = False  
Shape8.Visible = False  
Shape9.Visible = False
```

```
End If  
'-----2222222222-----  
If Val(Text2.Text) > 2000 And Val(Text2.Text) <= 2500 Then  
Shape1.Visible = False  
Shape2.Visible = True  
Shape3.Visible = False  
Shape4.Visible = False  
Shape5.Visible = False  
Shape6.Visible = False  
Shape7.Visible = False  
Shape8.Visible = False  
Shape9.Visible = False
```

```
End If  
'-----333333333-----  
If Val(Text2.Text) > 2500 And Val(Text2.Text) <= 3000 Then  
Shape1.Visible = False  
Shape2.Visible = False  
Shape3.Visible = True  
Shape4.Visible = False  
Shape5.Visible = False  
Shape6.Visible = False  
Shape7.Visible = False  
Shape8.Visible = False  
Shape9.Visible = False
```

```
End If  
'-----4444444444-----  
If Val(Text2.Text) > 3000 And Val(Text2.Text) <= 3500 Then
```

```
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = True
Shape5.Visible = False
Shape6.Visible = False
Shape7.Visible = False
Shape8.Visible = False
Shape9.Visible = False
```

```
End If
```

```
'-----555555555555-----
If Val(Text2.Text) > 3500 And Val(Text2.Text) <= 4000 Then
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = True
Shape6.Visible = False
Shape7.Visible = False
Shape8.Visible = False
Shape9.Visible = False
```

```
End If
```

```
'-----666666666666-----
If Val(Text2.Text) > 4000 And Val(Text2.Text) <= 4500 Then
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = False
Shape6.Visible = True
Shape7.Visible = False
Shape8.Visible = False
Shape9.Visible = False
```

```
End If
```

```
'-----777777777777-----
If Val(Text2.Text) > 4500 And Val(Text2.Text) <= 5000 Then
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = False
Shape6.Visible = False
Shape7.Visible = True
Shape8.Visible = False
Shape9.Visible = False
```

```
End If
```

```
'-----8888888888888888-----
If Val(Text2.Text) > 5000 And Val(Text2.Text) <= 5500 Then
Shape1.Visible = False
```

```

Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = False
Shape6.Visible = False
Shape7.Visible = False
Shape8.Visible = True
Shape9.Visible = False
End If
'-----99999999999999999999-----
If Val(Text2.Text) > 5500 Then
Shape1.Visible = False
Shape2.Visible = False
Shape3.Visible = False
Shape4.Visible = False
Shape5.Visible = False
Shape6.Visible = False
Shape7.Visible = False
Shape8.Visible = False
Shape9.Visible = True
End If
'-----1010101010-----

```

End Sub

```

Private Sub Text5_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then
If Val(Text5.Text) > 200 Then
Text5.Text = "200"
End If
On Error Resume Next
VScroll1.Value = Text5.Text
End If
End Sub

```

```

Private Sub Text7_Change()
index1 = Val(Text7.Text)
End Sub

```

```

Private Sub Text6_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = 13 Then
If Val(Text6.Text) > 200 Then
Text6.Text = "200"
End If
On Error Resume Next
VScroll2.Value = Text6.Text
End If
End Sub

```

```

Private Sub Text8_KeyDown(KeyCode As Integer, Shift As Integer)

```


If KeyCode = 13 Then

If Val(Text8.Text) > 200 Then

Text8.Text = "200"

End If

On Error Resume Next

VScroll3.Value = Text8.Text

End If

End Sub

Private Sub Text9_KeyDown(KeyCode As Integer, Shift As Integer)

If KeyCode = 13 Then

If Val(Text9.Text) > 200 Then

Text9.Text = "200"

End If

On Error Resume Next

VScroll4.Value = Text9.Text

End If

End Sub

'-----

Private Sub Timer1_Timer()

If c_data = 0 Then

MSComm1.Output = Chr\$(Val(Text5.Text))

c_data = c_data + 1

End If

'-----

If c_data = 1 Then

MSComm1.Output = Chr\$(Val(Text6.Text))

c_data = c_data + 1

End If

'-----

If c_data = 2 Then

MSComm1.Output = Chr\$(Val(Text8.Text))

c_data = c_data + 1

End If

'-----

If c_data = 3 Then

MSComm1.Output = Chr\$(Val(Text9.Text))

c_data = c_data + 1

End If

'-----

If c_data = 4 Then

MSComm1.Output = Chr\$(Val(Text10.Text))

c_data = c_data + 1

```

End If
'-----
If c_data = 5 Then
MSComm1.Output = Chr$(Val(Text11.Text))
c_data = c_data + 1

End If
'-----
If c_data = 6 Then
MSComm1.Output = Chr$(Val(Text12.Text))
c_data = c_data + 1

End If
'-----
If c_data = 7 Then
MSComm1.Output = Chr$(Val(Text13.Text))
c_data = c_data + 1

End If
'-----
If c_data = 8 Then
MSComm1.Output = Chr$(Val(Text14.Text))
c_data = c_data + 1

End If
'-----

If c_data = 9 Then
MSComm1.Output = Chr$(0)
c_data = 0
Timer1.Enabled = False

End If
'-----

```

End Sub

```

Private Sub Timer2_Timer()
pw = pw - 100
Text2.Text = pw
If pw < 2000 Then
Timer2.Enabled = False
Timer1.Enabled = True
End If
End Sub

```

```
Private Sub VScroll1_Change()  
Text5.Text = VScroll1.Value  
Text7.Text = Val(Text2.Text) + 800 + (40 * Val(VScroll1.Value))  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll2_Change()  
Text6.Text = VScroll2.Value  
Text7.Text = Val(Text2.Text) + 800 + (40 * Val(VScroll2.Value))  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll3_Change()  
Text8.Text = VScroll3.Value  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll4_Change()  
Text9.Text = VScroll4.Value  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll5_Change()  
Text10.Text = VScroll5.Value  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll6_Change()  
Text11.Text = VScroll6.Value  
Timer1.Enabled = True  
End Sub
```

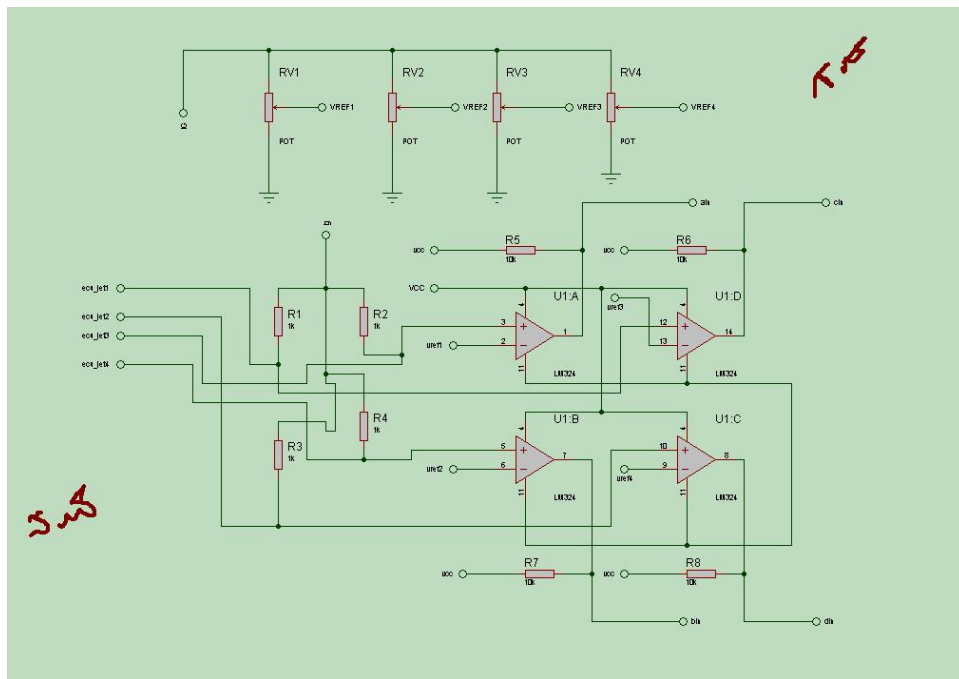
```
Private Sub VScroll7_Change()  
Text12.Text = VScroll7.Value  
Timer1.Enabled = True  
End Sub
```

```
Private Sub VScroll8_Change()  
Text13.Text = VScroll8.Value  
Timer1.Enabled = True  
End Sub
```

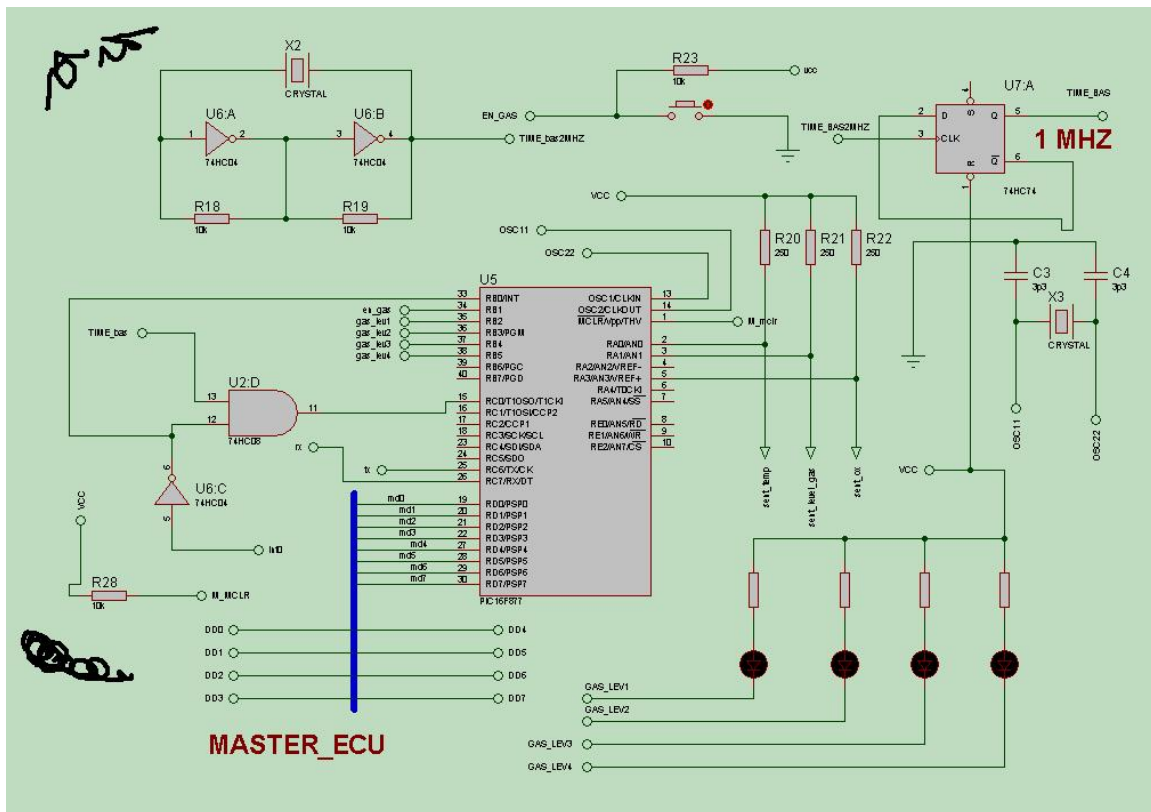
```
Private Sub VScroll9_Change()
```

Text14.Text = VScroll9.Value
 Timer1.Enabled = True
 End Sub

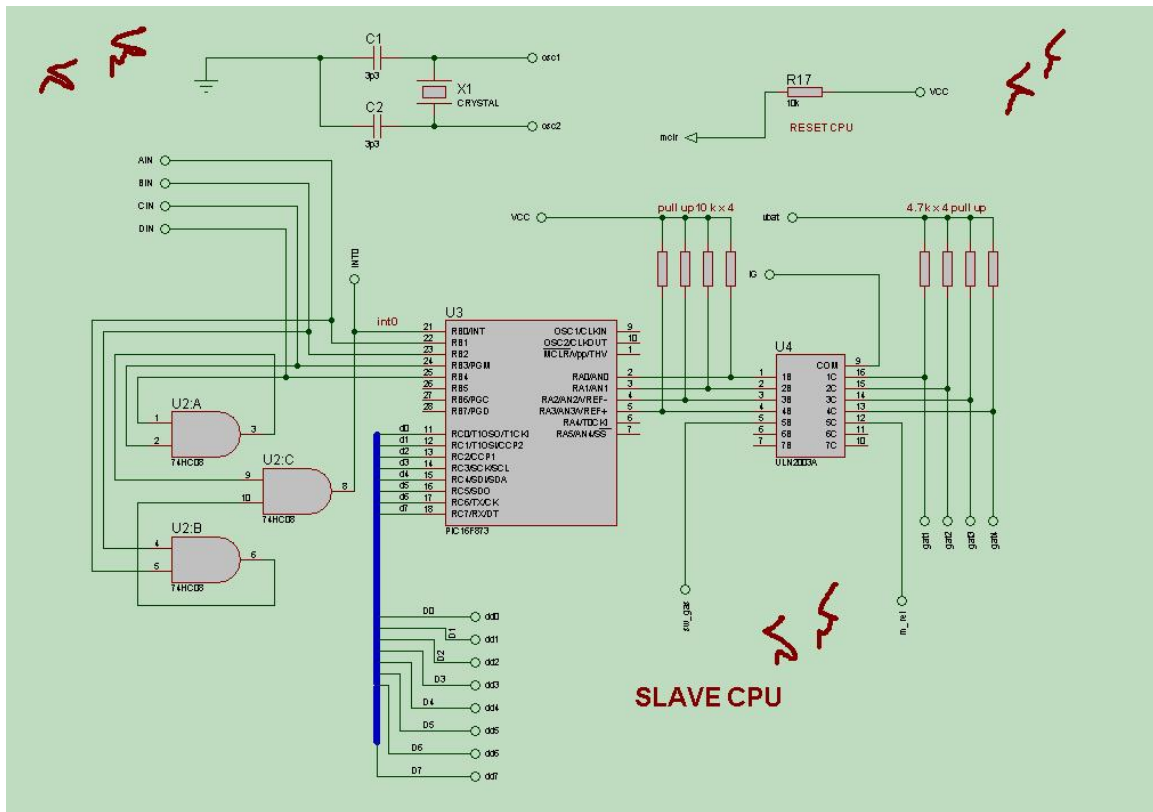
SCHEMATIC DESIGN



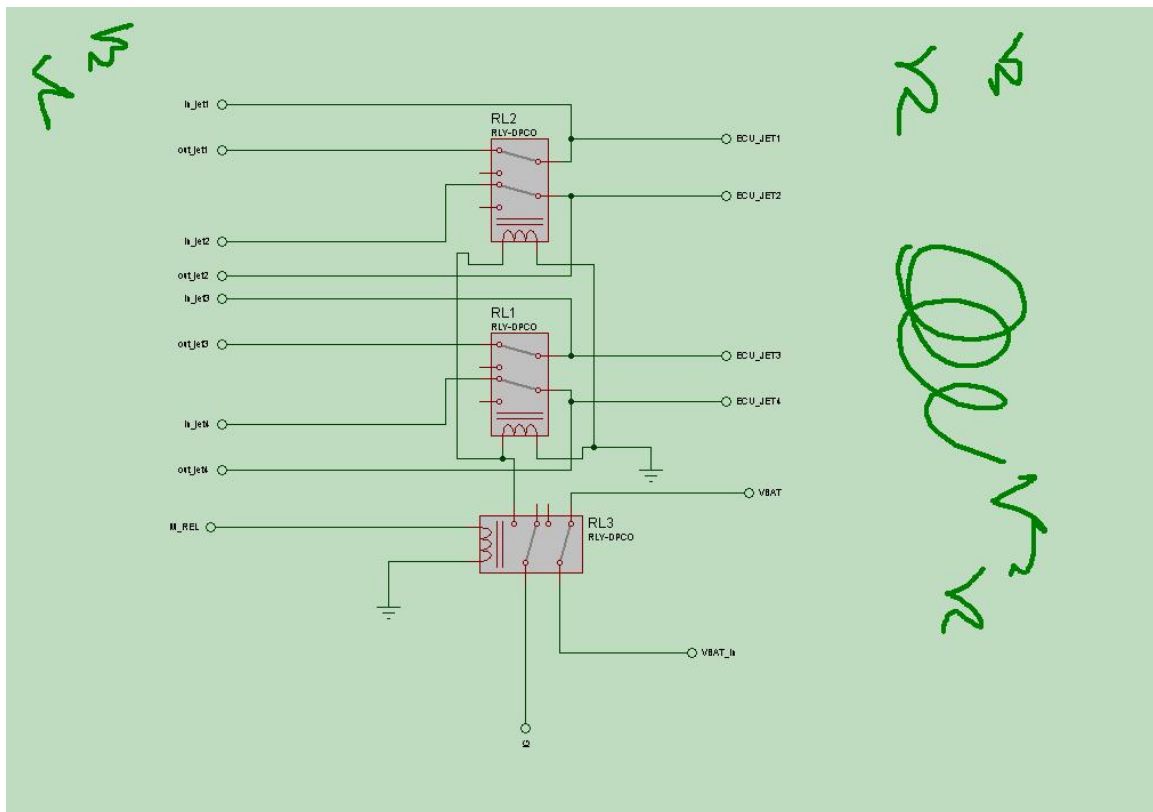
วงจรเช็คตำแหน่งการติดตั้งเซ็นเซอร์ของกล่อง ECU



วงจรมaster cpu



slave cpu



relay for switch gas/petrol

PROGRAM MEMORY IN CPU MASTER

```
#include <16F877.h>

#device adc=10

#fuses WDT,HS, NOPUT, PROTECT, BROWNOUT, NOLVP, NOCPD, NOWRT, NODEBUG

#use delay(clock=4000000,RESTART_WDT)

#use rs232(baud=9600,parity=N,xmit=PIN_C6,rcv=PIN_C7,bits=8,RESTART_WDT)

##DEFINE GAS PIN_B3

##DEFINE SW_GAS PIN_B1


byte a,b,c,d,e;

byte w,x,y,z;

byte n;

byte datacom[9];


int8 dt,dt1,dt2,dt3;

int8 pwm1,pwm2;

int16 oxg;

int16 pulswith;

int1 flg_com;

void hex_bcd1(int16 val);

void hex_bcd2(int16 val2);

VOID READ_EEP(VOID);


void genpuls(int8 pw);

void wr_eeprom(void);

#int_EXT

EXT_isr()

{

    pulswith=get_timer1();
```

```

    set_timer1(0);
}

#int_RDA
RDA_isr()
{

    datacom[n]=getc();

    n++;
    if(n>8)
    {
        flg_com=1;
    }

    //
    //wr_eeeprom();
}

void main()
{

    setup_adc_ports(AN0_AN1_AN3);
    setup_adc(ADC_CLOCK_INTERNAL);
    setup_psp(PSP_DISABLED);
    setup_spi(FALSE);
    setup_timer_0(RTCC_INTERNAL);setup_wdt(WDT_36MS);
    setup_timer_1(T1_EXTERNAL|T1_DIV_BY_1);
    setup_timer_2(T2_DISABLED,0,1);
    enable_interrupts(INT_EXT);
    enable_interrupts(INT_RDA);
    enable_interrupts(GLOBAL);
    ext_int_edge( H_TO_L );

```

```

dt=120;
n=0;
flg_com=0;
while(true)
{
    restart_wdt();
    set_adc_channel(0);
    delay_us(10);
    oxg = read_adc();
    oxg=oxg&0x03ff;
    //IF(!INPUT(READ)) READ_EEP();

    //=====FUEL CONTRON CONTROL=====

    if(flg_com)wr_eeprom();
    if(pulswith>1000)
    {
        if(pulswith>10000) pulswith=10000;
        //PWM1=PULSWITH/65;
        //output_d(pwm1);
        hex_bcd1(pulswith);

        if(pulswith>1500 && pulswith<=2000)
        {
            dt = read_eeprom (0);
        }
        //-----2-----

        else if(pulswith>2000 && pulswith<=2500)
        {
            dt = read_eeprom (1);
        }
        //-----3-----

        else if(pulswith>2500 && pulswith<=3000)
        {

```



```

    dt = read_eeprom (2);
}
//-----4-----
else if(pulswith>3000 && pulswith<=3500)
{
    dt = read_eeprom (3);
}
//-----5-----
else if(pulswith>3500 && pulswith<=4000)
{
    dt = read_eeprom (4);
}
//-----6-----
else if(pulswith>4000 && pulswith<=4500)
{
    dt = read_eeprom (5);
}
//-----7-----
else if(pulswith>4500 && pulswith<=5000)
{
    dt = read_eeprom (6);
}
//-----8-----
else if(pulswith>5000 && pulswith<=5500)
{
    dt = read_eeprom (7);
}
//-----9-----
else if(pulswith>5500)
{
    dt = read_eeprom (8);
}

```

```

    }

    //-----10-----

else
    {

    }

    genpuls(dt);
}

hex_bcd2(oxg);
printf("%u%u%u%u%u",a,b,c,d,e);
printf("%u%u%u%u",w,x,y,z);
printf("s");
delay_ms(100);

//=====GAS COMMAND=====
}
}

void hex_bcd1(int16 val)
{ a=0;b=0;c=0;d=0;

//=====

while(val>=10000)
{ restart_wdt();
a++;
val-=10000;
}

//=====

while(val>=1000)
{ restart_wdt();
b++;
val-=1000;
}

//=====

```

```

while(val>=100)
{ restart_wdt();
  c++;
  val-=100;
}

//=====================================================
while(val>=10)
{ restart_wdt();
  d++;
  val-=10;
}

e=val;
}

void hex_bcd2(int16 val2)
{ w=0;x=0;y=0;z=0;
  while(val2>=1000)
  { restart_wdt();
    w++;
    val2-=1000;
  }

 //=====================================================
  while(val2>=100)
  { restart_wdt();
    x++;
    val2-=100;
  }

 //=====================================================
  while(val2>=10)
  { restart_wdt();
    y++;
    val2-=10;
  }

```

```

//=====

    z=val2;
}

void genpuls(int8 pw)
{
    //dt=dt|0x01;
    output_d(dt);
}

void wr_eeprom(void)
{
    write_eeprom(0,datacom[0]);
    write_eeprom(1,datacom[1]);
    write_eeprom(2,datacom[2]);
    write_eeprom(3,datacom[3]);
    write_eeprom(4,datacom[4]);
    write_eeprom(5,datacom[5]);
    write_eeprom(6,datacom[6]);
    write_eeprom(7,datacom[7]);
    write_eeprom(8,datacom[8]);

    n=0;
    flg_com=0;

}

```

PROGRAM MEMORY IN CPU SLAVE

```

#include <16F876.h>

#define adc=8

#define FUSES WDT, HS, NOPUT, PROTECT, BROWNOUT, NOLVP, NOCPD, NOWRT, NODEBUG

#define use_delay(clock=20000000,RESTART_WDT)

// #include <lcd.c>

int1 flg_int;

int8 time_inj;

```

```

int8 dat_inj;
int8 outinj[]={0x01,0x02,0x04,0x08};
#int_EXT
EXT_isr()
{
    dat_inj=input_b();
    output_a(dat_inj);
    // dat_inj&=0x1f;
    flg_int=1;
}
void main()
{
    setup_adc_ports(NO_ANALOGS);
    setup_adc(ADC_OFF);
    setup_spi(FALSE);
    setup_timer_0(RTCC_INTERNAL);setup_wdt(WDT_18MS);
    setup_timer_1(T1_DISABLED);
    setup_timer_2(T2_DISABLED,0,1);
    enable_interrupts(INT_EXT);
    enable_interrupts(GLOBAL);
    flg_int=0;
    ext_int_edge( H_TO_L );
    output_c(0xff);
    while(1)
    {
        restart_wdt();
        time_inj=input_c();
        if(flg_int)
        {
            //output_a(dat_inj);
            while(time_inj>1)
            {

```

```
    delay_us(50);  
    time_inj--;  
}  
output_a(0xff);flg_int=0;  
}  
  
}  
}
```