

# Firmware Master-Station (Schüler)

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*****
'MUSEE DES MINES RUMELANGE
'PROJET T3 EC+EE 2010/2011
'BETREUER: JEAN-CLAUDE FELTES
*****
'MASTER-STATION (RTC, LCD, Terminal, Tristate R/W)
*****

'uC-INIT-----

$regfile = "m16def.dat"
$crystal = 16000000
$baud = 9600
$hwstack = 100
$swstack = 100
$framesize = 100

'DISPLAY-----

Config Lcd = 16 * 4
Config Lcdpin = Pin , Db4 = Portc.3 , Db5 = Portc.2 , Db6 = Portd.7 , Db7 = Portd.6 , E =
Portc.4 , Rs = Portc.5
Cursor Noblink
Cursor Off

'I2C-----

Config Sda = Portc.1
Config Scl = Portc.0

'RTC INIT-----

Dim S$ As String * 8
Dim Weekday As Byte
Config Clock = User
Config Date = Dmy , Separator = .

'VARIABLEN DECLARIEREN-----

Dim In(7) As String * 10
Dim I As Byte
Dim J As Byte

Dim Slavesseconds As Long
Dim Temperature_outside As String * 10
Dim Temperature_inside As String * 10
Dim Temperature_inside_near As String * 10
Dim Onflag As Byte
Dim Unknow As Byte
Dim Co2value As Word

Dim Commandflag As Bit
Dim Onsecflag As Bit
Dim Masterseconds As Long
Masterseconds = 0
Dim Ok As Byte

'SOFTWARE-UART-----

Open "comd.4:9600,8,n,1" For Output As #1
Open "comd.3:9600,8,n,1" For Input As #2

'TRISTATE-----

Config Portd.2 = Output
Portd.2 = 1 '1 = read

'Timer 1s-----

Config Pina.7 = Output 'LED 1s
Config Timer1 = Timer , Prescale = 1024 , Clear Timer = 1 , Compare A = Disconnect
Ocr1ah = High(15625)
Ocr1al = Low(15625)
Tccr1a = 0
On Compare1a Tim1_1s
Enable Compare1a

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## Enable Interrupts

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'HAUPTPROGRAMM-----
Cls
Commandflag = 1

Print "Date" ;
Print " " ;
Print "Time" ;
Print " " ;
Print "Master_Sec" ;
Print " " ;
Print "Slave_Sec" ;
Print " " ;
Print "Temp_Out" ;
Print " " ;
Print "Temp_In";
Print " " ;
Print "Temp_In_near";
Print " " ;
Print "Heizung" ;
Print " " ;
Print "Unknow";
Print " " ;
Print "Co2"

Do

  If Commandflag = 1 Then
    Gosub Empfangen_slave
  End If

  If Oneseclag = 1 Then
    Gosub Lcdclock
    Oneseclag = 0
  End If

  Ok = Inkey()

  If Ok <> "" Then Gosub Tasten

  Waitms 10

Loop

End

'UNTERPROGRAMME-----
Tim1_ls:

  Oneseclag = 1
  Incr Masterseconds
  Toggle Porta.7

  Incr J
  If J = 20 Then
    Commandflag = 1
    J = 0
  End If

Return

'-----
Empfangen_slave:

  'write
  Portd.2 = 0
  Waitms 5

  Print #1 , ""
  Waitms 10

  'Read
  Portd.2 = 1

  For I = 1 To 7
    Input #2 , In(i)
  Next I

  For I = 1 To 7
    If Left(in(i) , 1) = Chr(10) Then In(i) = Mid(in(i) , 2)

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Next I

Slavesecounds = Val(in(1))
Temperature_outside = In(2)
Temperature_inside = In(3)
Temperature_inside_near = In(4)
Onflag = Val(in(5))
Unknow = Val(in(6))
Co2value = Val(in(7))
Gosub Lcd_display
Gosub Terminal

Commandflag = 0

Return

'-----
Tasten:

Select Case Ok

    Case "s"
        Input "hh:mm:ss" , S$           'mit Variable arbeiten, da sonst Time$ / Date$ nicht
        gesetzt wird
        Time$ = S$
        Input "dd.mm.yy" , S$
        Date$ = S$

    Case "v"
        Commandflag = 1

End Select
Return

'-----
Lcd_display:

    Locate 3 , 1 : Lcd "           "
    Locate 3 , 1 : Lcd "Temp_Out: " ; Temperature_outside ; "C"
    Locate 4 , 1 : Lcd "           "
    Locate 4 , 1 : Lcd "Co2: " ; Co2value ; "ppm"

Return

'-----
Lcdclock:

    Locate 1 , 1 : Lcd "Datum: " ; Date$
    Locate 2 , 1 : Lcd "Zeit: " ; Time$

Return

'-----
Terminal:

Print Date$ ;
Print " " ;
Print Time$ ;
Print " " ;
Print Masterseconds ;
Print " " ;
Print Slavesecounds ;
Print " " ;
Print Temperature_outside ;
Print " " ;
Print Temperature_inside ;
Print " " ;
Print Temperature_inside_near ;
Print " " ;
Print Onflag ;
Print " " ;
Print Unknow;
Print " " ;
Print Co2value

Return

'-----
Getdatetime:

I2cstart

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I2cwbyte &HD0
I2cwbyte 0
I2cstop

I2cstart
I2cwbyte &HD1
I2crbyte _sec , Ack
I2crbyte _min , Ack
I2crbyte _hour , Ack
I2crbyte Weekday , Ack
I2crbyte _day , Ack
I2crbyte _month , Ack
I2crbyte _year , Nack
I2cstop

_sec = Makedec(_sec)
_min = Makedec(_min)
_hour = Makedec(_hour)
_day = Makedec(_day)
_month = Makedec(_month)
_year = Makedec(_year)

Return

'-----
Setdate:

_day = Makebcd(_day)
_month = Makebcd(_month)
_year = Makebcd(_year)

I2cstart
I2cwbyte &HD0
I2cwbyte 4
I2cwbyte _day
I2cwbyte _month
I2cwbyte _year
I2cstop

Return

'-----
Settime:

_sec = Makebcd(_sec)
_min = Makebcd(_min)
_hour = Makebcd(_hour)

I2cstart
I2cwbyte &HD0
I2cwbyte 0
I2cwbyte _sec
I2cwbyte _min
I2cwbyte _hour
I2cstop

Return

'-----

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