```
'-------------------------------------------------------------------------------
'copyright              : (c) 2008-2009, AVRprojects.info
'purpose                : DS1820 / DS18S20 Temperature Indicator
'-------------------------------------------------------------------------------

$regfile = "m8515.dat"                                  ' specify the used micro
$crystal = 8000000                                      ' used crystal frequency


Declare Sub Read1820

Config 1wire = Portd.7
Config Lcd = 16 * 2
Config Lcdpin = Pin , Db4 = Porta.2 , Db5 = Porta.3 , Db6 = Porta.4 , Db7 = Porta.5 , E =
Porta.1 , Rs = Porta.0

Upbtn Alias Pinb.5
Downbtn Alias Pinb.6
Enterbtn Alias Pinb.7
Alarm Alias Pinc.3
Config Upbtn = Input
Config Downbtn = Input
Config Enterbtn = Input
Config Portc = Output

'Temp variables
Dim Bd1 As Byte
Dim Bd2 As Byte
Dim Bd7 As Byte
Dim Bd8 As Byte
Dim Alrmtemp As Byte

Dim I As Byte , Tmp As Byte
Dim T As Integer , T1 As Integer
Dim Bd(9) As Byte                                       'Scratchpad 0-8 72 bits incl
CRC, explanations for

DS1820
'Sc(1)  'Temperature LSB
'Sc(2) 'Temperature MSB
'Sc(3) 'TH/user byte 1 also SRAM
'Sc(4) 'TL/user byte 2 also SRAM
'Sc(5) 'config  also SRAM x R1 R0 1 1 1 1 1 - the r1 r0 are config for resolution - write FF
to byte for 12 bit -

others dont care
'Sc(6) 'res
'Sc(7) 'res
'Sc(8) 'res
'Sc(9) '8 CRC

'DALLAS DS1820 ROM and scratchpad commands''''''''''''''''''''''''''''''1wwrite....
'&H 33 read rom - single sensor
'&H CC skip rom
'&H BE read scratchpad
'&H 44 convert T

' Main loop
Cls
Cursor Off
'Read the alarm temperature from EEPROM
Readeeprom Alrmtemp , 10
If Alrmtemp = &HFF Then Alrmtemp = 30
Do
    1wwrite &HCC : 1wwrite &H44                          ' start measure
    Waitms 400                                          ' wait for end of conversion
    Read1820
    Debounce Upbtn , 0 , Uppr , Sub
    Debounce Downbtn , 0 , Dwnpr , Sub
    Debounce Enterbtn , 0 , Alarmpr , Sub
    Waitms 300
    Debounce Upbtn , 0 , Uppr , Sub
    Debounce Downbtn , 0 , Dwnpr , Sub
    Debounce Enterbtn , 0 , Alarmpr , Sub
    Waitms 300
    Debounce Upbtn , 0 , Uppr , Sub
```

```
    Debounce Downbtn , 0 , Dwnpr , Sub
    Debounce Enterbtn , 0 , Alarmpr , Sub
    Waitms 300
Loop
End                                                     'end program


Uppr:
    If Alrmtemp < 98 Then
        Alrmtemp = Alrmtemp + 1
        Cls
        Lcd "Temp:" ; T1 ; "." ; T
        Lowerline
        Lcd "Alarm Temp:" ; Alrmtemp
    End If
    Return

Dwnpr:
    If Alrmtemp > 1 Then
        Alrmtemp = Alrmtemp - 1
        Cls
        Lcd "Temp:" ; T1 ; "." ; T
        Lowerline
        Lcd "Alarm Temp:" ; Alrmtemp
    End If
    Return

Alarmpr:
    Writeeeprom Alrmtemp , 10
    Cls
    Lcd "Data Stored..."
    Waitms 500
    Return

'Read the DS1820 by skipping the ROM checking, since we are using only 1 sensor
Sub Read1820                                            ' reads sensor ans calculate


                 ' T for 0.1 C
    1wreset                                             ' reset the bus
    1wwrite &HCC                                        ' read internal RAM
    1wwrite &HBE                                        ' read 9 data bytest
    Bd(1) = 1wread(9)
    Bd1 = Bd(1)
    Bd2 = Bd(2)
    Bd7 = Bd(7)
    Bd8 = Bd(8)
                                        ' read bytes in array
    1wreset                                             ' reset the bus
      Tmp = Bd1 And 1
      If Tmp = 1 Then Decr Bd1                          ' 0.1C precision
          T = Bd1
          T = T * 50
          T = T - 25
          T1 = Bd8 - Bd7
          T1 = T1 * 100
          T1 = T1 / Bd8
          T = T + T1
          T1 = T / 100                                  'store tens
          T = T Mod 100                                 'store decimal number
          Cls
          Lcd "Temp:" ; T1 ; "." ; T
          Lowerline
          Lcd "Alarm Temp:" ; Alrmtemp

          If Alrmtemp > T1 Then
              Portc = &B00000100
          Else
              Portc = &B00000000
          End If
End Sub

End
```