

## DS1307 Real Time Clock

*This module is part of the original MMBasic library. It is reproduced here with kind permission of Hugh Buckle and Geoff Graham. Be aware it may reference functionality which has changed or is deprecated in the latest versions of MMBasic.*

### I2CTime.BAS

```
'***** Program for setting and reading time on DS1307 Real Time Clock
'***** Author: Ian Quirk
CLS

INPUT "Do you want to set the external clock"; temp$
if temp$ <> "y" and temp$ <> "Y" GOTO Readtime
Start_i2c_clock
INPUT "Do you want to set Time (T) Date (D) or Both (B)"; temp$
if temp$ = "T" or temp$ = "t" then
SetTime
elseif temp$ = "D" or temp$ = "d" then
SetDate
ElseIf temp$ = "B" or temp$ = "b" then
SetTime
SetDate
ENDIF
' CLS
Readtime:
delay = 10000

DO WHILE a$ = ""
a$ = INKEY$
read_i2cRTC (minutes,hours,days,months,year)
'LOCATE 50, 50
PRINT "Confirming I2C Time"
PRINT Hours;" : ";minutes;" " ;days;"/";months;"/";year+2000
PRINT "internal time"
print TIME$, DATE$
PAUSE delay
LOOP
.....

'get time subroutine insert this subroutine to set Maximite time from
dsi307
' readi2cRTC and bcd_bin also required.
.....

GetTime:          ' Get time and date
read_i2cRTC (minutes,hours,days,months,year)
in$ = FORMAT$(days)+"-"+FORMAT$(months)+"-"+FORMAT$(year+2000)
Date$ = in$
in$ = FORMAT$(Hours) +":" + FORMAT$(minutes)
Time$ = in$
```

## Return

```
.....
'set time subroutine
.....
SUB SetTime:          ' set time
  local t1$, hrs, mins
  Print "Enter Time  HH : MM "
  Input in$
  Time$ = in$
  t1$ = "&h"+LEFT$(in$,2)
  hrs = VAL(t1$)
  t1$ = "&h"+RIGHT$(in$,2)
  mins = VAL(t1$)
' bin_bcd (mins,hrs)
  print hrs;": ";mins,
  Set_i2cRTC ( 1,mins,hrs,0)
  END SUB
  .....
'set Date subroutine
.....
SUB SetDate:          ' set  date
  local t1$, temp, in$
  Print "Enter Date DD/MM/YY "
  Input in$
  t1$ = "&h"+LEFT$(in$,2)   ' make equivalent hex string = BCD
  dys = VAL(t1$)
  t1$ = "&h"+mid$(in$,4,2)
  mths = VAL(t1$)
  t1$ = "&h"+RIGHT$(in$,2)
  yr = VAL(t1$)
  Date$ = (LEFT$(in$,6) +"20"+RIGHT$(in$,2))
  temp = 0
  Set_i2cRTC ( 4,dys,mths,yr)
  END SUB
' -----
' Initialise RTC and turn off square wave out and zero Seconds registers
' -----
  SUB Start_i2c_clock:
    I2CEN 100, 100          ' i2c enable 100kHz, 100ms timeout
    I2CSEND &h68, 0, 2,0,0  ' i2c send address, option, send length,
data,data..
    I2CSEND &h68, 0, 2,7,0  ' i2c send address, option, send length,
data,data..
    I2CDIS          ' i2c disable
  END SUB
' -----
' *****Sub to Read DS1307 RTC and return *****
'      Minutes
```

```

'      Hours
'      Date (day of Month)
'      Month
'      Year ( 2 didget can add 20 to front)
'*****
SUB read_i2cRTC (min,hrs,dys,mth,yr)
  Local temp(8), tmp
  ' MSb Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 LSb
  I2CEN 100, 100          ' i2c enable 100kHz, 200ms timeout
  I2CRCV &h68, 0, 6, temp(0),1,&h01      ' i2c read adress, option, recieve
length, rec buffer
  print "Result = "; MM.i2c
  I2CDIS          ' i2c disable
    tmp = temp(0)
  bcd_bin (tmp,min)
    tmp = temp(1)
  bcd_bin (tmp,hrs)
    tmp = temp(3)
  bcd_bin (tmp,dys)
    tmp = temp(4)
  bcd_bin (tmp,mth)
    tmp = temp(5)
  bcd_bin (tmp,yr)

  END SUB
' -----
'*****Sub Procedure Write data to DS13207 RTC*****
' -----
SUB Set_i2cRTC (SAdrs,Dat1,Dat2,Dat3)
  Local temp(4)
  temp(0) = SAdrs
    temp(1) = Dat1
    temp(2) = Dat2
    temp(3) = Dat3
  print
  print temp(0), temp(1), temp(2), temp(3)
  ' MSb Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 LSb
  I2CEN 100, 100          ' i2c enable 100kHz, 100ms timeout
  I2CSEND &h68, 0, 2,temp(0)      ' i2c send adress, option, send length,
data,data..
  I2CDIS          ' i2c disable
  END SUB
' -----
'***** Sub Procedure - convert BCD to binary *****
' -----
SUB bcd_bin (Val,Vout)
  local temp
    ' convert the DS1307 BCD values to binary
    temp = val AND &b00001111
    Vout = (val AND &b11110000) * 10 / 16 + temp
  END SUB

```

Last  
update: 2024/01/19 09:39 mmbasic\_original:ds1307\_real\_time\_clock [https://fruitoftheshed.com/wiki/doku.php?id=mmbasic\\_original:ds1307\\_real\\_time\\_clock](https://fruitoftheshed.com/wiki/doku.php?id=mmbasic_original:ds1307_real_time_clock)

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