

RealTimeClock(DS3231)

20140413

Reference;

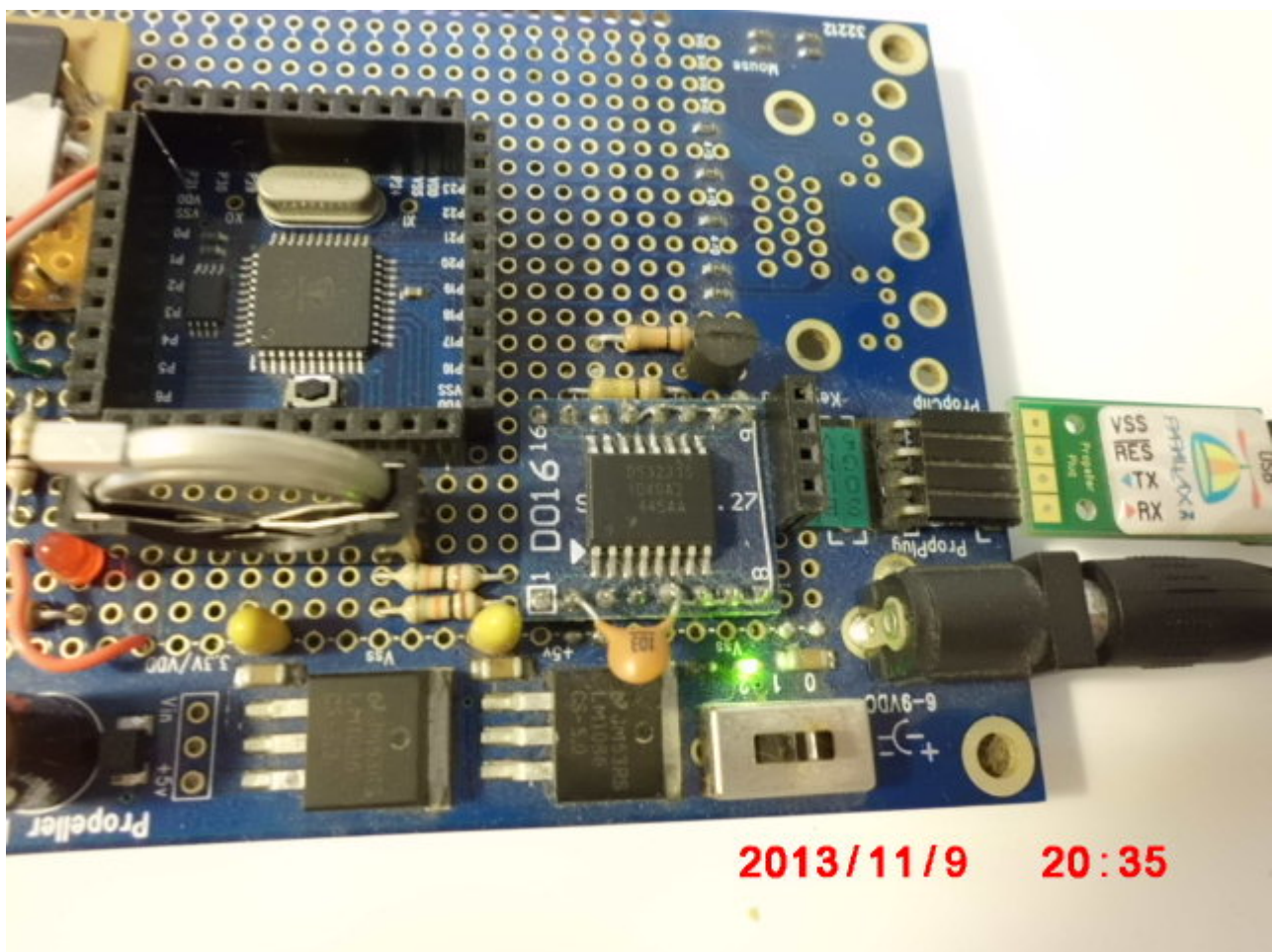
i2c_utility_0.2.1.f

DS3231_0.5.f

Connection

```
RTC DS3231  Propeller
scl  ---- P28
sda  ---- P29
32kHz ---- n LED p --- 220ohm -- 3.3V
INT/SQW ---- n LED p --- 220ohm -- 3.3V
```

Modified DS1337_1.3.f. because DS3231's register structure is almost same as DS1337. But A1M1/A1M3/A2M3/A2M4-bit is 1 on DS3231 at power-on. So, these bit is set at 1 when executing 'set_current'.



Prop0 Cog6 ok

i2c_detect

0 1 2 3 4 5 6 7 8 9 A B C D E F

00: -----

10: -----

20: -----

30: -----

40: -----

50: 50 -----

60: ----- 68 ----- <-- DS3231's address is h68.

70: -----

i2c_device:2

Display register value (After power on)

Prop0 Cog6 ok

disp_reg

Address(hex) value(hex)

00 00

01 01

02 00

03 01

04 01

05 01

06 00

07 80

08 02

09 A3

0A 1A

0B 30

0C 88

0D 82

0E 1C

0F 88

10 00

11 12

12 00

--- Because of A1M1/A1M3/A2M3/A2M4=1, alarm1/alarm2 is strange

Prop0 Cog6 ok

all

CurrentTime

Year: 2000

Date: JAN 1 MON

Time: 00:01:05

Alarm1 setting

Date: 20

Time: A3:02:80

Alarm2 setting

Time: 88:30

Prop0 Cog6 ok

---- Set current-tome 2013 11/8 Friday 08:08:00

Prop0 Cog6 ok

2013 11 8 5 8 8 set_current

CurrentTime

Year: 2013

Date: NOV 8 FRI

Time: 08:08:00

Prop0 Cog6 ok

all

CurrentTime

Year: 2013

Date: NOV 8 FRI

Time: 08:08:04

Alarm1 setting

Date: 20

Time: 23:02:00

Alarm2 setting

Date: 2

Time: 08:30

Prop0 Cog6 ok
Prop0 Cog6 ok
chk_INT
Alarm1 Flag:0
Alarm2 Flag:0

Set alarm1 at Date8 08:14:00

Prop0 Cog6 ok
8 8 14 set_alm1

Alarm1 setting
Date: 8
Time: 08:14:00

Alarm1 Interrupt:Enabled
Alarm2 Interrupt:Disabled
Prop0 Cog6 ok

--- At 8:14 Alarm1 Flag is 1, and INT/SQW-pin goes to low

Prop0 Cog6 ok
chk_INT
Alarm1 Flag:1
Alarm2 Flag:0

Prop0 Cog6 ok

--- Cleared alarm1 Flag, INT/SQW-pin goes to high

Prop0 Cog6 ok
alarm1 clr_INT
Alarm1 Flag:0
Alarm2 Flag:0

Prop0 Cog6 ok

Operation about alarm1/alarm2 is almost same as DS1337.

--- Enabled 32.768kHz pulse from 32kHz-pin(1-pin)

Prop0 Cog6 ok
1 32kHz_out
Prop0 Cog6 ok
1 32kHz_out
32.768kHz already is enabled.
Prop0 Cog6 ok

--- Disabled 32.768kHz pulse from 32kHz-pin(1-pin)

0 32kHz_out

Prop0 Cog6 ok

0 32kHz_out

32.768kHz already is disabled.

Prop0 Cog6 ok

Display temperature value

Prop0 Cog6 ok

disp_Temp

30 .0degree

29 .5degree

29 .5degree

29 .5degree

29 .5degree

29 .5degree

29 .5degree

29 .5degree

29 .75degree <--- Touch by finger on chip

29 .75degree

29 .75degree

29 .75degree

29 .75degree

30 .0degree

30 .0degree

30 .0degree

30 .0degree

30 .0degree

30 .0degree

30 .0degree

30 .0degree

30 .25degree

30 .25degree

30 .25degree

30 .25degree

30 .25degree

Prop0 Cog6 ok

These value is a littel high.

Chip might be close 5V-regurater.

Checking osc status

If no operate, message print and start

osc_state

Oscillator operate

Prop0 Cog6 ok

When INTCN-bit is 1, INT/SQW-pin goes to low at maching current-time and alarm1/
alarm2 . (Default)

Frequency by setting RS1/RS2 always out from INT/SQW-pin when this bit is 0.

Prop0 Cog6 ok

0 set_INT