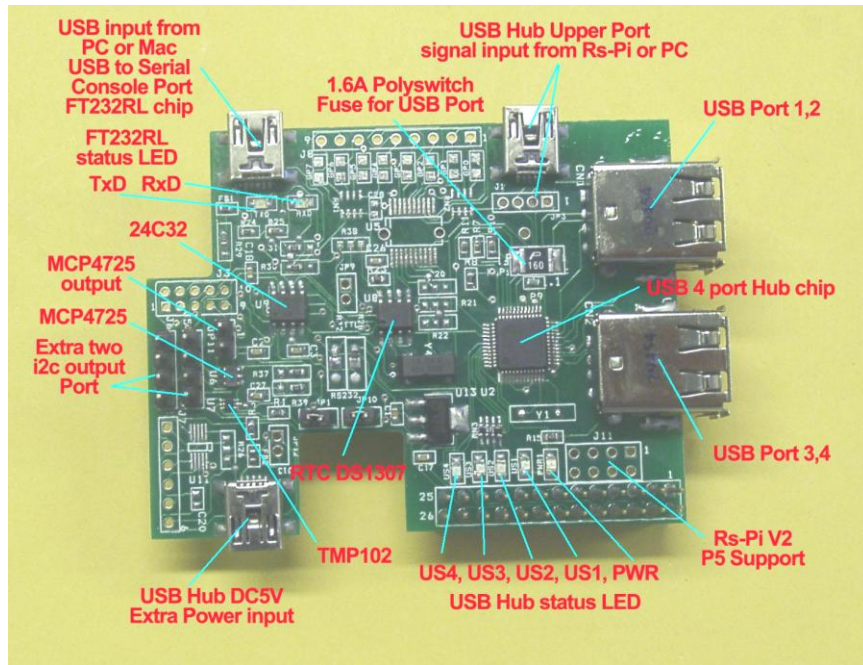


Rs-Pi USB- 4 Hub & I2C User Manual



1. U8 RTC DS1307 with CR1220 Battery
2. U7 TMP102 Temperature Sensor
3. U9 24C32 32Kbit EEPROM JP10 Disable Jumper
4. U6 MCP4725 12bit Digital-to-Analog Converter , JP11 (AOUT, GND) JP1 Disable Jumper
5. J5 (5V, GND,SCL,SDL) J6(3v3,GND,SCL,SDL) I2C output
6. U2 - USB 4 Ports HUB chipset
J1 (JP3) USB HUB upper port input from Rs-Pi
US1,US2,US3,US4 4 LED for indicate 4 USB ports states
7. J13 Extra Mini USB 5V input for USB HUB
8. J11 for RS-Pi V2 GPIO connector
9. U10 **FT232RL** J4 USB input from PC or Mac for USB to TTL , just connect a cable (5pin mini USB-B to A USB) then you have USB console cable

* **FT232RL** the driver for USB to TTL can download from our web site, use this function , you need plug -in USB cable install driver first, then plug-in Rs-Pi hub board to Raspberry Pi.

* **Disable jumper setting must be turn Rs-pi power off.**

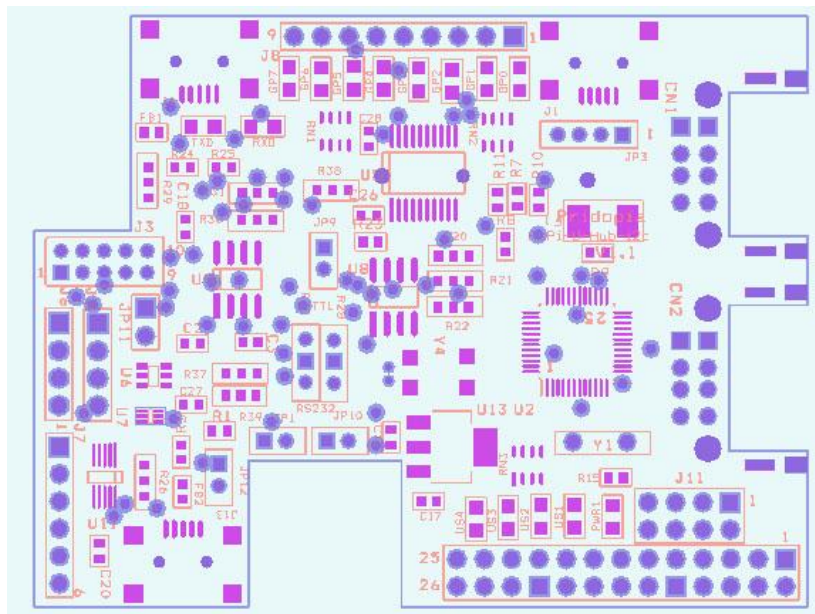
First Install battery for RTC , " + " mark on top

RTC DS1307 - 68 in i2cdetect -y 0 or i2cdetect -y 1 for Rs-Pi V2 you will see 68 in the screen 68 -> RTC DS1307
48 -> tmp102



This requires a Raspberry Pi running a kernel with the RTC module and DS1307 module included. This is not true of the "Wheezy" distros

or Occidentalis v0.1. This is for use with Occidentalis v0.2 or greater



```
COM12 - PuTTY
i2root@raspberrypi:~# i2cdetect -y 0
 0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00: -- -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- 48 -- -- -- -- --
50: 50 -- -- -- -- -- -- -- -- -- -- -- --
60: 60 -- -- -- -- -- -- 68 -- -- -- -- --
70: -- -- -- -- -- -- -- -- -- -- -- -- --

root@raspberrypi:~# modprobe tmp102
root@raspberrypi:~# modprobe rtc-ds1307
root@raspberrypi:~# echo tmp102 0x48 >/sys/class/i2c-adapter/i2c-0/new_device
root@raspberrypi:~# echo ds1307 0x68 >/sys/class/i2c-adapter/i2c-0/new_device
root@raspberrypi:~# sensors
tmp102-i2c-0-48
Adapter: bcm2708 i2c.0
temp1:    +29.5Â°C (high = +160.0Â°C, hyst = +150.0Â°C)

root@raspberrypi:~# hwclock -r
Thu 01 Nov 2012 14:23:38 UTC -0.085865 seconds
root@raspberrypi:~# hwclock -w
root@raspberrypi:~# hwclock -r
Sat 03 Nov 2012 15:36:56 UTC -0.032740 seconds
```

48 -> tmp102 50 -> 24c32 60 -> MCP4725 68 -> RTC DS1307
i2c bus device detect status and active TMP102 & RTC DS1307

then, load up the RTC module by running

sudo modprobe rtc-ds1307

Then, as root (type in **sudo bash**) run

echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-0/new_device (if you have a rev 1 Pi)

echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-1/new_device (if you have a rev 2 Pi)

hwclock -r read time

hwclock -w write time in RTC

modprobe tmp102

echo tmp102 0x48 > /sys/class/i2c-adapter/i2c-0/new_device
(if you have a rev 1 Pi)

echo tmp102 0x48 > /sys/class/i2c-adapter/i2c-1/new_device
(if you have a rev 2 Pi)

sensors show the temp

you'll want to add the RTC kernel module & temp tmp102 to the /etc/modules list, so its loaded when the machine boots. Run **sudo nano /etc/modules** and add **rtc-ds1307 & tmp102** at the end of the file

```
COM37 - PuTTY
# /etc/modules: kernel modules to load at boot time.
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.
# Parameters can be specified after the module name.

snd-bcm2835
spi-bcm2708
i2c-bcm2708
i2c-dev
tmp102
rtc-ds1307
```

Then you'll want to create the DS1307 device creation at boot, edit /etc/rc.local by running **sudo nano /etc/rc.local**

and add **echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-0/new_device** before **exit 0**

```
COM37 - PuTTY
GNU nano 2.2.6 File: /etc/rc.local

#
# By default this script does nothing.

# Print the IP address
_IP=$(hostname -I) || true
if [ "$_IP" ]; then
    printf "My IP address is %s\n" "$_IP"
fi
echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-0/new_device
echo tmp102 0x48 > /sys/class/i2c-adapter/i2c-0/new_device
exit 0
```

* Adafruit **Occidentalis v0.2** image support the TMP102 and RTC DS1307 if you need this driver, you can choose this.

The image can be download from

<http://learn.adafruit.com/adafruit-raspberry-pi-educational-linux-distro/occidentalis-v0-dot-2>

*TMP102 information

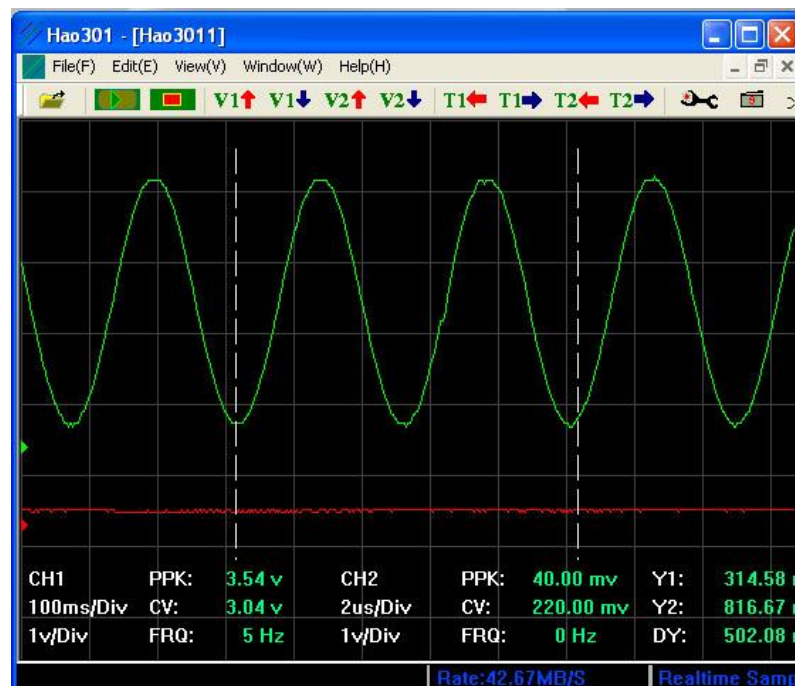
<http://www.element14.com/community/groups/raspberry-pi/blog/2012/07/26/is-it-done-yet-temperature-sensing-with-the-raspberry-pi#comment-16249>

<http://www.agilart.com/blog/tmp102-raspberry-pi>

* MCP4725 Digital to Analog Converter but our address are "60" all the sample can Download from our web site.

<http://learn.adafruit.com/mcp4725-12-bit-dac-with-raspberry-pi>

JP11 for analog output JP11 pin 1,2 (AOUT, GND)



To keep Rs-Pi USB Hub board working properly, you need make sure the Vcc input for Rs-Pi above 4.75V,

JP3 pin 1 Vcc, pin4 GND or J5 pin 1 Vcc , Pin4 GND

- 24c32

```
COM12 - PuTTY
root@raspberrypi:/home/pi/eeprog# dir
24c01.c 24cXX.o data2 eeprog.c eeprom_1.c i2c-dev.h WARNING
24cXX.c ChangeLog data4 eeprog.o eeprom_2 Makefile
24cXX.h data eeprog eeprom_1 eeprom_2.c README
root@raspberrypi:/home/pi/eeprog# ./eeprog /dev/i2c-0 0x50 -r 0:100 -f -x -16
eeprog 0.7.6, a 24Cxx EEPROM reader/writer
Copyright (c) 2003-2004 by Stefano Barbato - All rights reserved.
Bus: /dev/i2c-0, Address: 0x50, Mode: 16bit
Reading 100 bytes from 0x0

0000| 50 72 69 64 6f 70 69 61 20 ff ff ff ff ff ff ff
0010| ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0020| ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0030| ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0040| ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0050| ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0060| ff ff ff ff

root@raspberrypi:/home/pi/eeprog# ./eeprog /dev/i2c-0 0x50 -r 0:100 -f -16
eeprog 0.7.6, a 24Cxx EEPROM reader/writer
Copyright (c) 2003-2004 by Stefano Barbato - All rights reserved.
Bus: /dev/i2c-0, Address: 0x50, Mode: 16bit
Reading 100 bytes from 0x0

Pridopia ~~~~~
~~~~~root@raspberrypi:/home/pi/eeprog#
root@raspberrypi:/home/pi/eeprog# ./eeprog /dev/i2c-0 0x50 -r 0 -f -x -16
eeprog 0.7.6, a 24Cxx EEPROM reader/writer
Copyright (c) 2003-2004 by Stefano Barbato - All rights reserved.
Bus: /dev/i2c-0, Address: 0x50, Mode: 16bit
Reading 1 bytes from 0x0

0000| 50
```

use eeprog 0.7.6 can read/write for 24c32 or 24cxx

The Program can be download from

<http://www.codesink.org/eeprog.html>

* FT232RL the driver for USB to TTL can download from our web site, use this function , you need plug –in USB cable install driver first, then plug-in Rs-Pi hub board to Raspberry Pi

*** USB-TTL console function, access you Rs-Pi by a normal USB A to USB Mini B cable**

For PC or Mac if you need driver you can download from our web site in number 19 FT232RL chipset

<http://www.pridopia.co.uk/support.html>

also the all the information for FT232RL

<http://www.ftdichip.com/Products/ICs/FT232R.htm>

Driver for PC or Mac from FTDI web site

<http://www.ftdichip.com/FTDrivers.htm>

Package Content

- 1x Rs-Pi USB Hub & I2C & USB-TTL board
- 1x USB to MINI USB hub input cable (for USB Hub upper port input)
- 1x CR1220 3V Battery
- 1x Manual