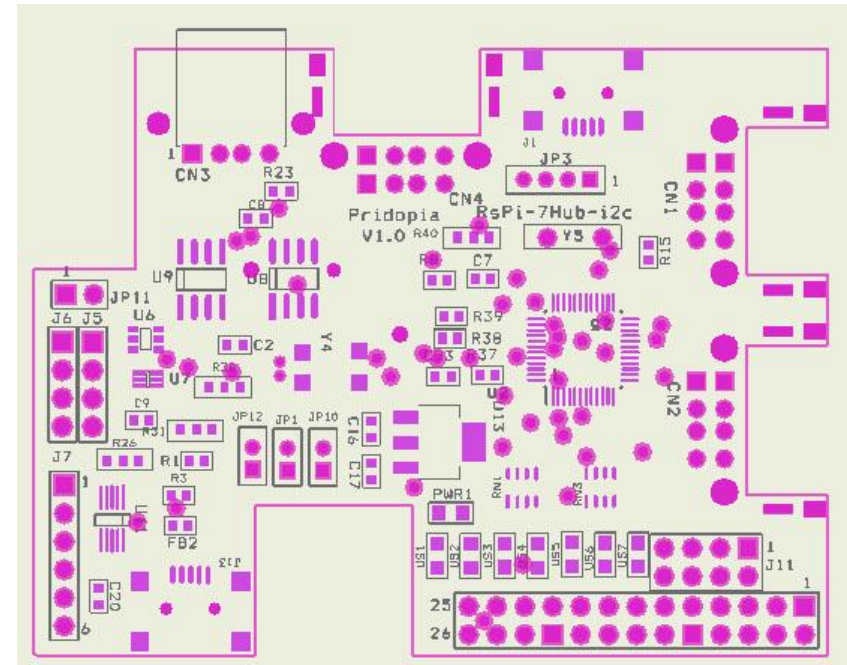
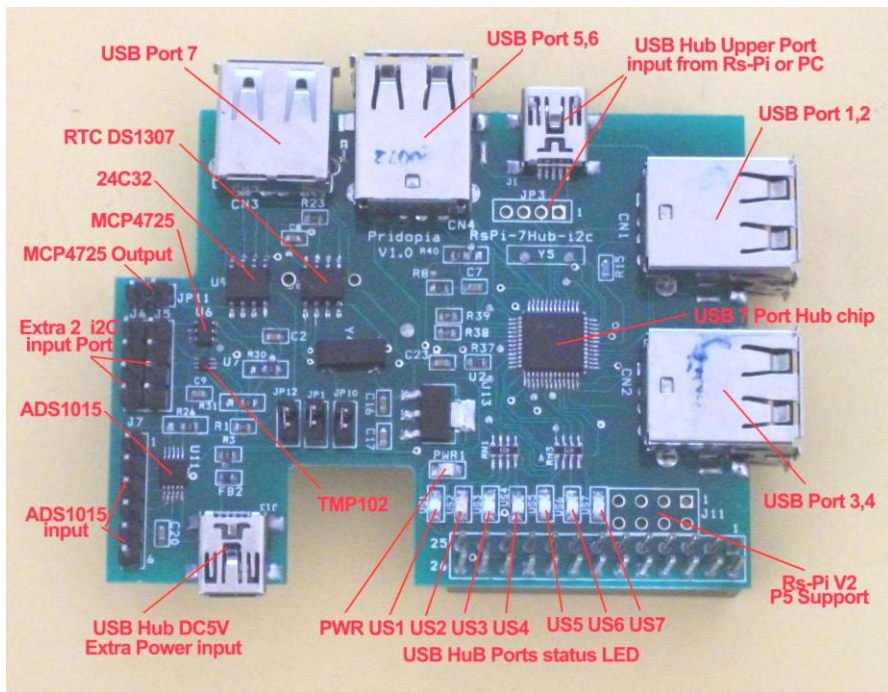


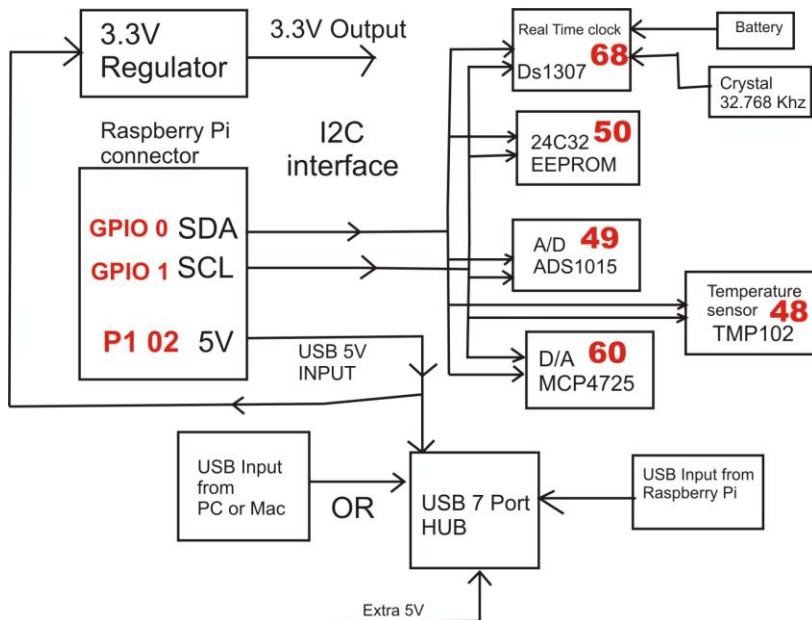
Rs-Pi 7 USB- Hub & I2C User Manual



1. U8 RTC **DS1307** with CR2032 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. U11 **ADS1015** 12bit Analog-to-Digital Converter , J7 INPUT (AIN0, AIN1, AIN2, AIN3, GND, 3V3) **JP12** Disable Jumper
6. J5 (5V, GND, SCL, SDL) J6(3v3, GND, SCL, SDL) I2C output
7. U2 - USB 7 Ports HUB chipset
J1 (JP3) USB HUB upper port signal input from Rs-Pi
8. J13 Mini USB 5V input for USB HUB, you don't need plug 5V , the HUB already use 5V from Raspberry Pi, if your use USB device need more power, then you can plug-in 5V in this port.
9. J11 for RS-Pi V2 GPIO connector (got 4 more GPIO pin)

Enable 7 Port USB hub function.

* use the Mini USB to USB cable we provide plug in one of the Raspberry Pi USB port to this 7 Port USB hub board Mini USB connector(J1) upper of the JP3



```

COM12 - PuTTY
Type 'startx' to launch a graphical session

i2root@raspberrypi:~# i2cdetect -y 0
    0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
10:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
20: 20  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
30:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
40:  --  --  --  --  --  --  -- 48 49  --  --  --  --  --  --  --  --
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:~# hwclock -r
Sun 04 Nov 2012 02:09:41 UTC -0.282234 seconds
root@raspberrypi:~# sensors
tmp102-i2c-0-48
Adapter: bcm2708_i2c.0
temp1:    +35.8Â°C (high = +160.0Â°C, hyst = +150.0Â°C)

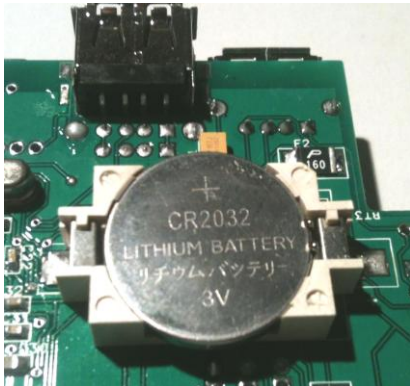
root@raspberrypi:~#

```

i2c bus device detect status and active TMP102 & RTC DS1307

48 -> tmp102 50 -> 24c32 60 -> MCP4725 68 -> RTC DS1307
 49 -> ads1015

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

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

*TMP102 information

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

ExitHelp  Justify  Where Is  Next Page  UnCut Text  To Spel
1

```

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

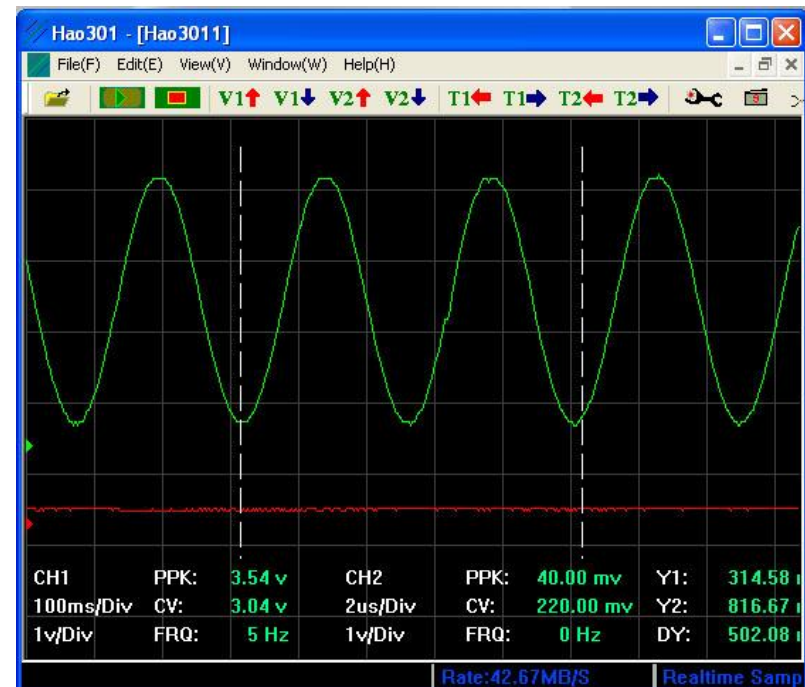
<http://www.element14.com/community/groups/raspberry-pi/blog/2012/07/26/is-it-done-yet-temperature-sensing-with-the-raspberry-pi#comment-16249>

<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)

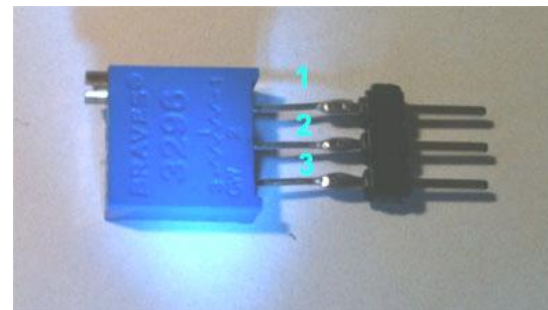


* ADS1015 12bit Analog-to-Digital Converter

demo 12 bit 4 channel input ads1015-49.py at address "49"

J7 INPUT (AIN0, AIN1, AIN2, AIN3, GND, 3V3)

AIN0, AIN1, AIN2, AIN3 connect to trimpot 10K OHM pin 2
pin1 3v3 pin3 GND



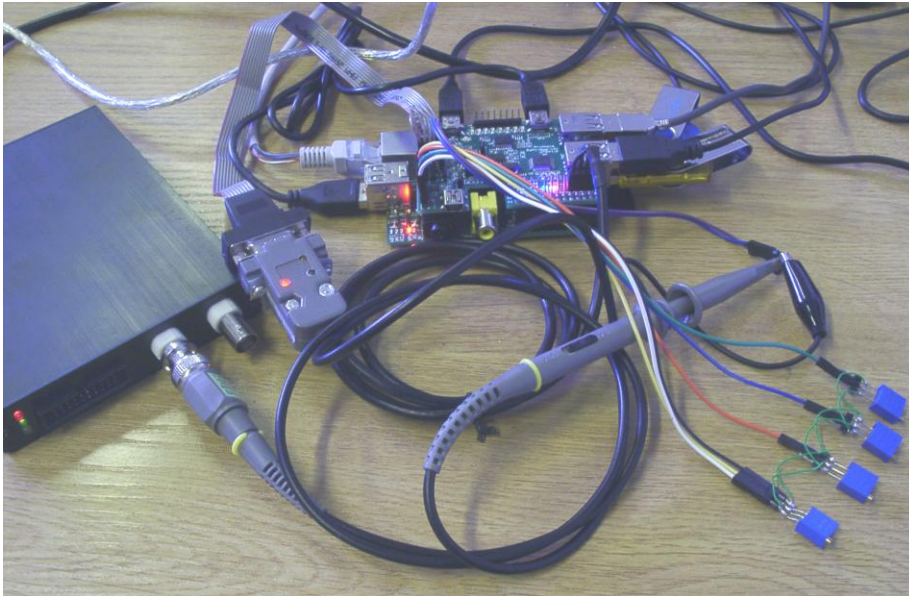
```

root@raspberrypi:/home/pi/ads1015# i2cdetect -y 0
    0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
10:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
20: 20  --  --  --  --  --  --  --  --  --  --  --  --  --  --
30:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --
40:  --  --  --  --  --  --  48 49  --  --  --  --  --  --  --
50: 50  --  --  --  --  --  --  --  --  --  --  --  --  --  --
60: 60  --  --  --  --  --  --  68  --  --  --  --  --  --  --
70:  --  --  --  --  --  --  --  --  --  --  --  --  --  --  --

root@raspberrypi:/home/pi/ads1015# dir
Adafruit_ADS1x15.py  Adafruit_I2C.pyc  ads1015_example.py
Adafruit_ADS1x15.pyc  ads1015-49.py  ads1015.py
root@raspberrypi:/home/pi/ads1015# ./ads1015-49.py
Reading ADS1015 Channel 0, 1, 2, 3  Total  4 Channel

Channel 0 = 1.485 V
Channel 1 = 1.869 V
Channel 2 = 0.981 V
Channel 3 = 1.371 V
root@raspberrypi:/home/pi/ads1015#
root@raspberrypi:/home/pi/ads1015#

```



ADS1015 use 4 trimpot 10K OHM for 4 channel Analog input
MCP4725 output to USB Digital Oscilloscope

- 24c32 EEPROM

```
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 66 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>

To keep Rs-Pi USB Hub board working properly, you need make sure the Vcc input for Rs-Pi above 4.75V,
P3 pin 1 Vcc, pin4 GND

Package Content

- 1x Rs-Pi 7 USB Hub & I2C AD/DA board
- 1x USB to MINI USB hub input cable (for USB Hub input & Power input)
- 1x CR2032 3V Battery
- 1x Manual