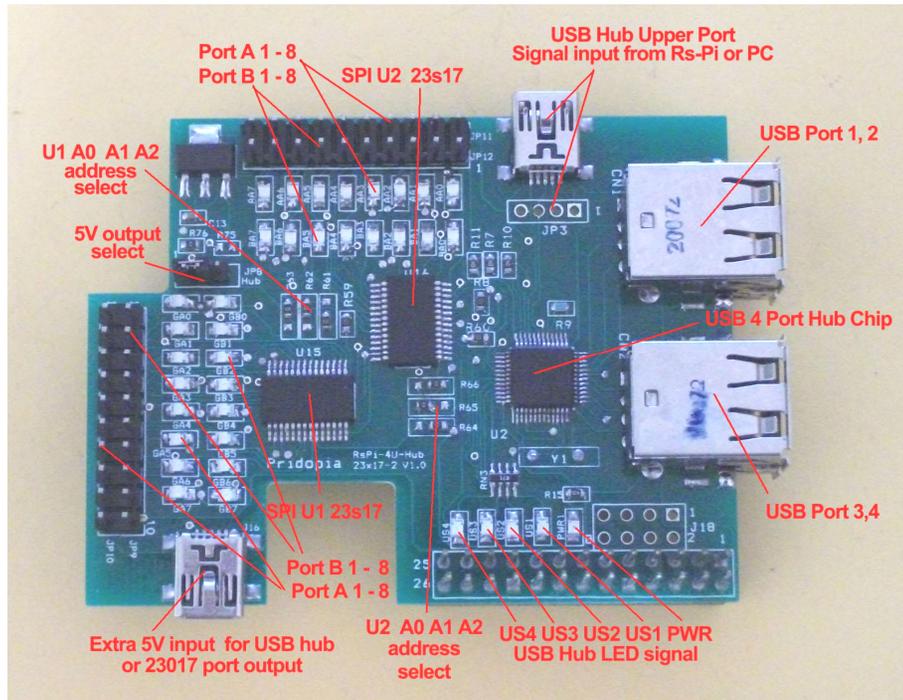


# Rs-Pi-4 USB hub & 23s17x2 User Manual



1. J16 Mini USB 5V input
2. J18 Rs-Pi V2 GPIO output
3. JP10 GA0 ~ GA7, GND, Vcc U15 Port A
4. JP9 GB0 ~ GB7, GND, Vcc U15 Port B
5. JP11 AA0 ~ AA7, GND, Vcc U16 Port A
6. JP12 BA0 ~ BA7, GND, Vcc U16 Port B
7. R61, R62, R63 ( for U13 Address select A0, A1, A2 )
8. R64, R65, R66 ( for U14 Address select A0, A1, A2 )
9. U15 (000) 23s17 -1 Port A, B
10. U16 (001) 23s17-2 Port A, B
11. JP8 Power input select (J16) for USB hub or GPIO output to PIN 10
12. J18 for RS-Pi V2 GPIO connector (got 4 more GPIO pin)

## Enable USB hub function.

\* use the Mini USB to USB cable we provide plug in one of the Raspberry Pi USB port to this 4 Port USB hub board Mini USB connector upper of the JP3

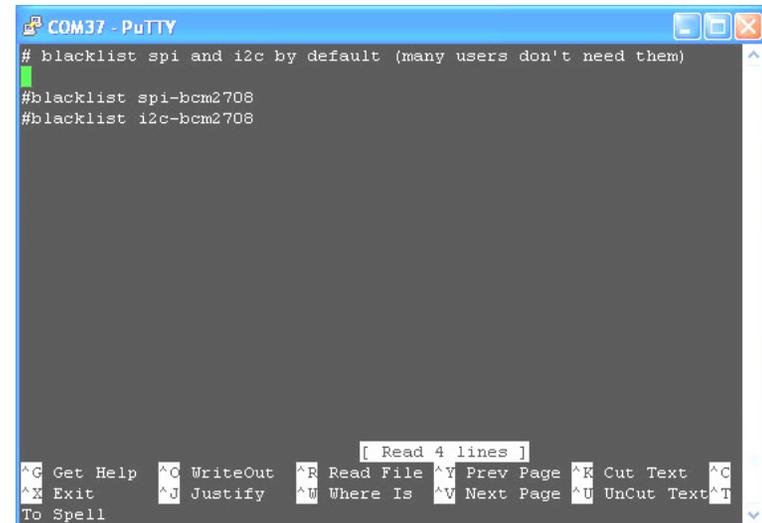
## Always enabling SPI

To always enable the SPI driver: After logging in, edit /etc/modprobe.d/raspi-blacklist.conf

```
sudo nano etc/modprobe.d/raspi-blacklist.conf
```

Insert a # at the start of the line containing blacklist spi-bcm2708

```
#blacklist spi-bcm2708
```



<https://pypi.python.org/pypi/RPi.GPIO> GPIO library

GPIO library - RPi.GPIO-0.5.2a.tar.gz

## Install python , library and run the test program

```
# sudo apt-get install python-dev
```

```
# wget http://www.pridopia.co.uk/pi-pgm/RPi.GPIO-0.5.2a.tar.gz
```

```
# gunzip RPi.GPIO-0.5.2a.tar.gz
```

```
# tar -xvf RPi.GPIO-0.5.2a.tar
```

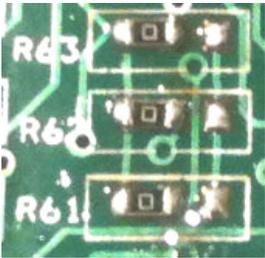
```
# cd RPi.GPIO-0.5.2a
```

```
# sudo python setup.py install
```

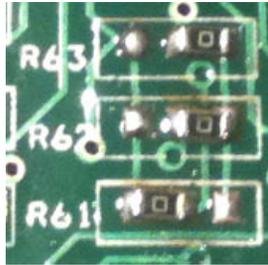
```
# sudo python n23s17-cs0.py
```

A0, A1, A2 address \* right side GND low - 0 \* left side Vcc High - 1

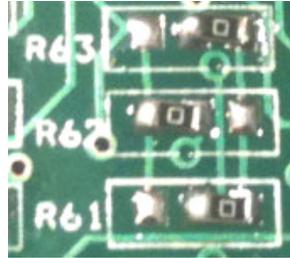
000 -



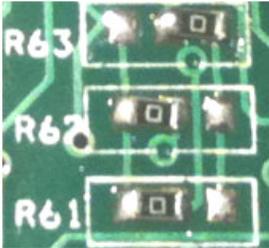
001 -



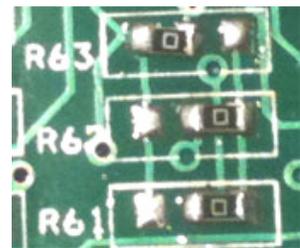
010 -



011



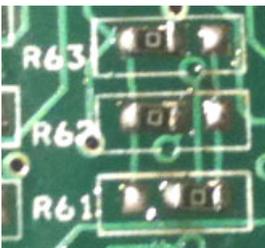
100



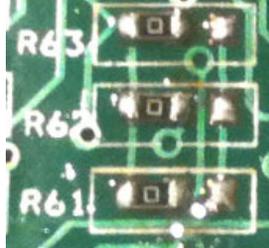
101



110



111



Download test program on our web site

1. n23s17-cs0.py

2. 23s17-2port-s-v103.py

<http://www.pridopia.co.uk/pi-23s17-2-lp.html>

```
192.168.0.9 - PuTTY
root@raspberrypi:~# cd ..
root@raspberrypi:/# cd home
root@raspberrypi:/home# cd pi
root@raspberrypi:/home/pi# cd 23s17
root@raspberrypi:/home/pi/23s17# sudo python n23s17-cs0.py
GPIO-A 0b1010101 GPIO-B 0b1010101
GPIO-A 0b10101010 GPIO-B 0b10101010
GPIO-A 0b1010101 GPIO-B 0b1010101
GPIO-A 0b10101010 GPIO-B 0b10101010
GPIO-A 0b1 GPIO-B 0b1
GPIO-A 0b10 GPIO-B 0b10
GPIO-A 0b100 GPIO-B 0b100
GPIO-A 0b1000 GPIO-B 0b1000
^Z
[1]+  Stopped                  sudo python n23s17-cs0.py
root@raspberrypi:/home/pi/23s17#
```

n23s17-cs0.py demo

```
COM22 - PuTTY
23S17-2port  MCP23S17
 8  7  6  5  4  3  2  1
A1 [0] [0] [0] [0] [0] [0] [0] [1]
A2 [0] [0] [0] [0] [0] [0] [1] [0]
B1 [1] [0] [0] [0] [0] [0] [0] [0]
B2 [1] [0] [0] [0] [0] [0] [1] [0]

Enter the Bank ( A-B ), Port ( 1-2 ) and LED number ( 1-8 ).
Type RES or Ctrl+2 to reset.
Example "A21" or "a21" Which will toggle Bank A, Port 2 and LED 1
>
```

our new output test program 23s17-2port-s-v103.py display all 32 GPIO status

New Pridopia scratch interface software Pi\_Scratch you can download from our web site

<http://www.pridopia.co.uk/rs-pi-set-scratch.html>

U1 to U2 spi 23s17 address 40,42

40 --> 1 42 --> 2 44 --> 3 46 --> 4  
48 --> 5 4a --> 6 4c --> 7 4e --> 8

Command "sp"+ "address(1-8)" + "a" +"bit(1 to 8)" Port A  
Command "sp"+ "address(1-8)" + "b" +"bit(1 to 8)" Port B  
Command "bits"+"address(1-8)" + "a" +"bit(8 to 1)"Port A  
Command "bits"+"address(1-8)" + "b" +"bit(8 to 1)"Port B

sp2b7 --> spi address 2 Port B bit 7 ON/OFF  
sp3b4 --> spi address 3 Port B bit 4 ON/OFF  
bits2b01010101 --> address 2 port B from bit 8 to 11  
output --> 01010101  
bits2a01010101 --> address 2 port A from bit 8 to 1  
output --> 01010101  
bits2aoff --> address 2 Port A all OFF/clear  
bits2aclr --> address 2 Port A all OFF/clear

