Raspiggy manual

## The IO of raspberry

IO can be confusing in Raspberry PI. To clear things up the following table may be helpful:

+----------+-Rev2-+------+--------+------+-------+

| wiringPi | GPIO | Phys | Name | Mode | Value |

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| 0 | 17 | 11 | GPIO 0 | IN | High |

| 1 | 18 | 12 | GPIO 1 | IN | High |

| 2 | 27 | 13 | GPIO 2 | OUT | Low |

| 3 | 22 | 15 | GPIO 3 | IN | High |

| 4 | 23 | 16 | GPIO 4 | OUT | Low |

| 5 | 24 | 18 | GPIO 5 | OUT | High |

| 6 | 25 | 22 | GPIO 6 | OUT | Low |

| 7 | 4 | 7 | GPIO 7 | IN | High |

| 8 | 2 | 3 | SDA | IN | High |

| 9 | 3 | 5 | SCL | IN | High |

| 10 | 8 | 24 | CE0 | OUT | Low |

| 11 | 7 | 26 | CE1 | ALT0 | High |

| 12 | 10 | 19 | MOSI | OUT | Low |

| 13 | 9 | 21 | MISO | ALT0 | Low |

| 14 | 11 | 23 | SCLK | OUT | Low |

| 15 | 14 | 8 | TxD | ALT0 | High |

| 16 | 15 | 10 | RxD | ALT0 | High |

| 17 | 28 | 3 | GPIO 8 | ALT2 | Low |

| 18 | 29 | 4 | GPIO 9 | ALT2 | Low |

| 19 | 30 | 5 | GPIO10 | ALT2 | Low |

| 20 | 31 | 6 | GPIO11 | ALT2 | Low |

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## Getting your PI ready

The first step is to change where our Pi updates from, by editing a text file. We need to open up the file /etc/apt/sources.list.d/raspi.list as root, so type:

**sudo leafpad /etc/apt/sources.list.d/raspi.list**

Now change the line in this file so that it reads "deb http://archive.raspberrypi.org/debian/ wheezy main untested", then save and close the file.

Next, do the following commands:

**apt-get update**

**apt-get upgrade**

# The LCD display

The LCD display is a Nokia 5110 type LCD display.

Important Note:

Please check the pin assignment of your LCD before you connect it - Nokia 5110 pin assignments can vary, also different breakout-boards can have different pin assignments!

Raspiggy uses the following pin layout:

1. RST - Reset – connected to GPIO 5

2. CE - Chip Select

3. DC - data/instruction selection

4. DIN - serial data line

5. CLK - Serial Clock Line

6. VCC - power input (3.3v or 5v)

7. BL - backlight control – connected to GPIO 1

8. GND – Ground

## Test

You can test the LCD by running the **nokia** executable that can be found in the Raspiggy GitHub repository.

Be sure to set the backlight pin to output before running the program.

**gpio mode 1 out**

## Addition information

Extra information on this subject can be found in these locations:

# The LED

The LED is connected to GPIO3. Toggling this output can control it. In wiringPi terminology GPIO3 is referred as number 2 (see page 1).

#include <wiringPi.h>

#define LED 2

int main (void)

{

char a;

wiringPiSetup () ;

pinMode (LED, OUTPUT) ;

for (a=1;a<10;a++)

{

digitalWrite (LED, HIGH) ; delay (500) ;

digitalWrite (LED, LOW) ; delay (500) ;

}

return 0 ;

}

A precompiled test program called blink can be can be found in the Raspiggy GitHub repository.

As an alternative you could use this:

Open a root terminal from the menu, or by running **sudo su** in a normal terminal.

cd /sys/class/gpio/

echo "27" > export

cd gpio27

echo "out" > direction

echo "1" > value

The LED should now be turned on. To turn the LED off, type:

echo "0" > value

cd ..

echo "27" > unexport

# The DS18B20

To test the correct working of the 1-wire temperature sensor type these commands into a terminal:

sudo modprobe w1-gpio

sudo modprobe w1-therm

cd /sys/bus/w1/devices

ls

cd 10-xxxx *(change this to match what serial number pops up)*

cat w1\_slave

You should see an output of two lines of text. The first line will say YES or NO at the end. If YES, then the measured temperature will be at the end of the second line, in 1/000 degrees C. If a NO appears on the end of the first line, the sensor is still working, it just failed to communicate with the Pi correctly. Reenter cat w1\_slave and it should give a YES.

Two lines of text will be printed. On the second line, the section starting "t=" is the temperature in degrees Celsius. A decimal point goes after the first two digits, so the example value of "t=22250" is in fact "t=22.250" degrees Celsius