Electronics
Optosiolator Breadboard Layout

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The Raspberry Pi uses 3.3V logic. Many sensors and other devices use 5V logic. To mix the two, it is essential to protect the Raspberry Pi from potentially harmful voltages. The best way to do this is with optical isolation.

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- To mix the two, it is essential to protect the Raspberry Pi from potentially harmful voltages.
- The best way to do this is with *optical isolation*. 
Optoisolator circuit

This is the configuration shown in the following figures.
Suggested layout

This has the Raspberry Pi on the left and the 5V “world” on the right.
Suggested layout

The left breadboard will have a 3.3V supply, while the right will have a 5V supply.
Suggested layout

Note the bottom chip is turned around to have inputs on the right and outputs on the left.
Suggested layout

Signals *from* the Raspberry Pi will be *3.3V*. 
Suggested layout

Signals *to* the outside will be 5V.
Suggested layout

Signals *from* the outside will be *5V*. 
Suggested layout

Signals to the Raspberry Pi will be 3.3V.
Suggested layout

Ground for the Raspberry Pi side can be on the left.
Suggested layout

Ground for the other side can be on the right.
Suggested layout

Power for the Raspberry Pi side can be on the left.
Suggested layout

Power for the other side can be on the right.
Suggested layout

If no wires cross the centre of the breadboard, there will be no chance of damaging the Raspberry Pi.
Clean Wiring

From Pi to 5V world
Clean Wiring

The only supply is 5V on the “world” side.
Clean Wiring

From 5V world to Pi
Clean Wiring

The only supply is 3.3V on the Pi side.