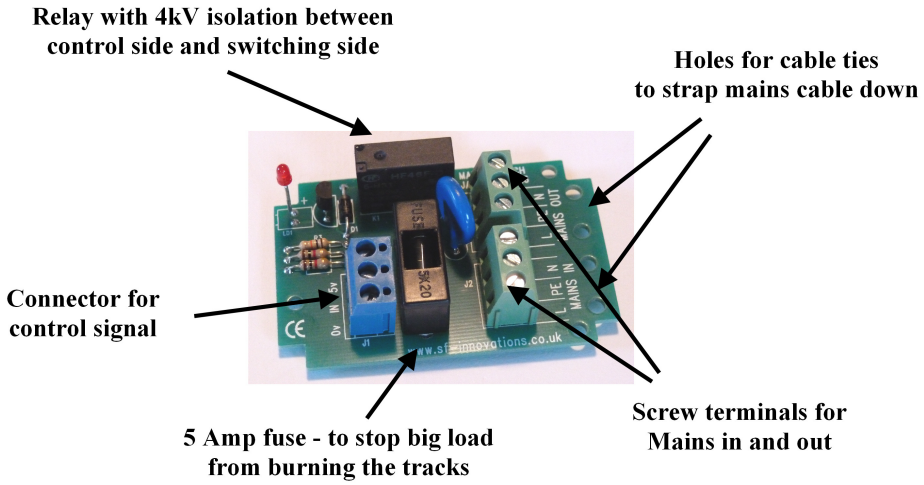
MAINS SWITCH RELAY 2 from SF Innovations Ltd

The Mains Switch Relay 2 allows the user to switch 230V or 110V mains ON and OFF to mains powered devices from microcontrollers like the PIC and the Arduino or from single board computers like the Raspberry Pi and the Beaglebone. It uses a built-in 5A fuse to prevent any faults resulting in a fire. The other safety features of the Mains Switch Relay are shown in the drawing below.



Mains Switch Relay 2

How to use

This product needs a 5V supply to activate the relay. Simply connect a 5V supply (from pin 2 of the Raspberry Pi GPIO) to 5V input of J1 and the 0V (pin 6 of the Raspberry Pi GPIO) to the 0V input of J1.

To switch the Relay ON, apply a voltage in the range 3.3V to 12V to the IN pin of connector J1. To switch the Relay OFF apply 0V to the IN pin. Any of the Raspberry Pi digital output pins can be used for this.

Applications

There are many applications that require switching mains powered appliances ON and OFF. Here are some examples.

Maintaining an environment at a constant temperature:

A temperature measuring device and the Mains Switch Relay with a heater could be used in a feedback control system to maintain a constant temperature.

Keeping a water tank topped up:

A water level detector can be used to control a pump using the Mains Switch Relay to maintain constant water level in a tank.

As a module in a Home Automation system:

A Raspberry Pi could be used to switch lights, heating and ventilation using this product. With a browser interface, this could be controlled from anywhere in the world.

Features

The Mains Switch Relay has the following features:

* Electrical isolation (4kV) between the control side and the mains voltage
* Protected by a 5A fuse in the product
* Cable ties to prevent the mains cable pulling out
* LED indication of ON and OFF states
* Can be configured for most parts of the world by using a suitable mains extension lead (not supplied).

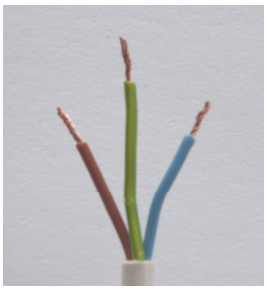
Product Safety

When assembled by a competent person following the instruction below, the finished product should be capable of meeting the requirements of the EU Low Voltage Directive.

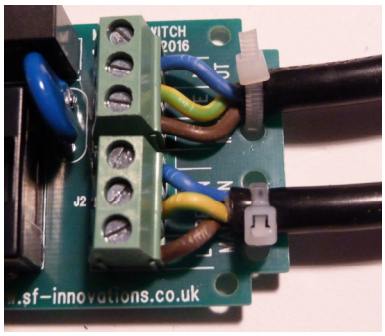
The Mains Switch Relay has to be inside a plastic enclosure to prevent the user touching any part of the electronics inside. When assembling the Mains Switch Relay inside an enclosure great care has to be taken in keeping wires connected to the low voltage side away from components on the high voltage side.

The 5A fuse supplied is to prevent the unit overheating and causing a fire under fault conditions. The user should not just depend on the 13A fuse in the mains plug for protection, as this can pass nearly 20 Amps for a few hours before fusing. This can present a major fire hazard under fault conditions.

As a precaution, the Earth wire should be longer than the Live and Neutral wires. In case the cord anchorage should slip, this will ensure that the Earth wire is the last to slip out.



Cable ties should be used to provide strain relief and prevent the mains cable pulling out of the screw terminal. One should not just depend on the screw terminals to anchor the cable. The cable must move less than 2mm for a force of 30N (i.e. the weight of 3 x 1kg bags of sugar).



Once the product is assembled and shown to be working correctly, we recommend using hot melt glue where the cable enters the screw terminals to prevent strands of wires accidentally touching each other.

If in doubt seek professional help in assembling and checking the assembled product before use.

Remember: Mains Voltage Can Kill - so please follow the instructions here

15th August 2017