Warning!

This is a very simple project, but anything involving mains power demands care and respect.

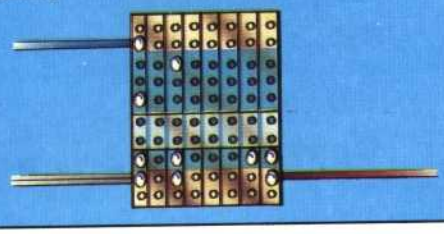
- **Disconnect all power sources before you work on any part of the box.**
- **Check all connections and insulations with a multimeter before applying power for the first time.**
- **Take care, and avoid all short-cuts. Remember — MAINS POWER CAN KILL!**

The Circuit Board

Cut the board to the shape shown, so that it will fit snugly into one corner of the pattress box. Make the track cuts, and solder in the relay as shown in the diagram.

Check the board very carefully before you go any further. Use the multimeter to check for bridging between tracks — a mistake here could kill!

Solder the brown mains lead and the two-way ribbon cable into place on the board. Remove one of the pre-formed slots in the pattress to accept the wires; but tie a knot in these before threading them through — the knot will prevent an accidental pull on the wires from damaging the board. Solder a short length of insulated mains conductor to the board, and connect this to the 'live' screw terminal on the socket. Connect the blue and yellow/green mains leads to the neutral and earth terminals respectively



Test Program

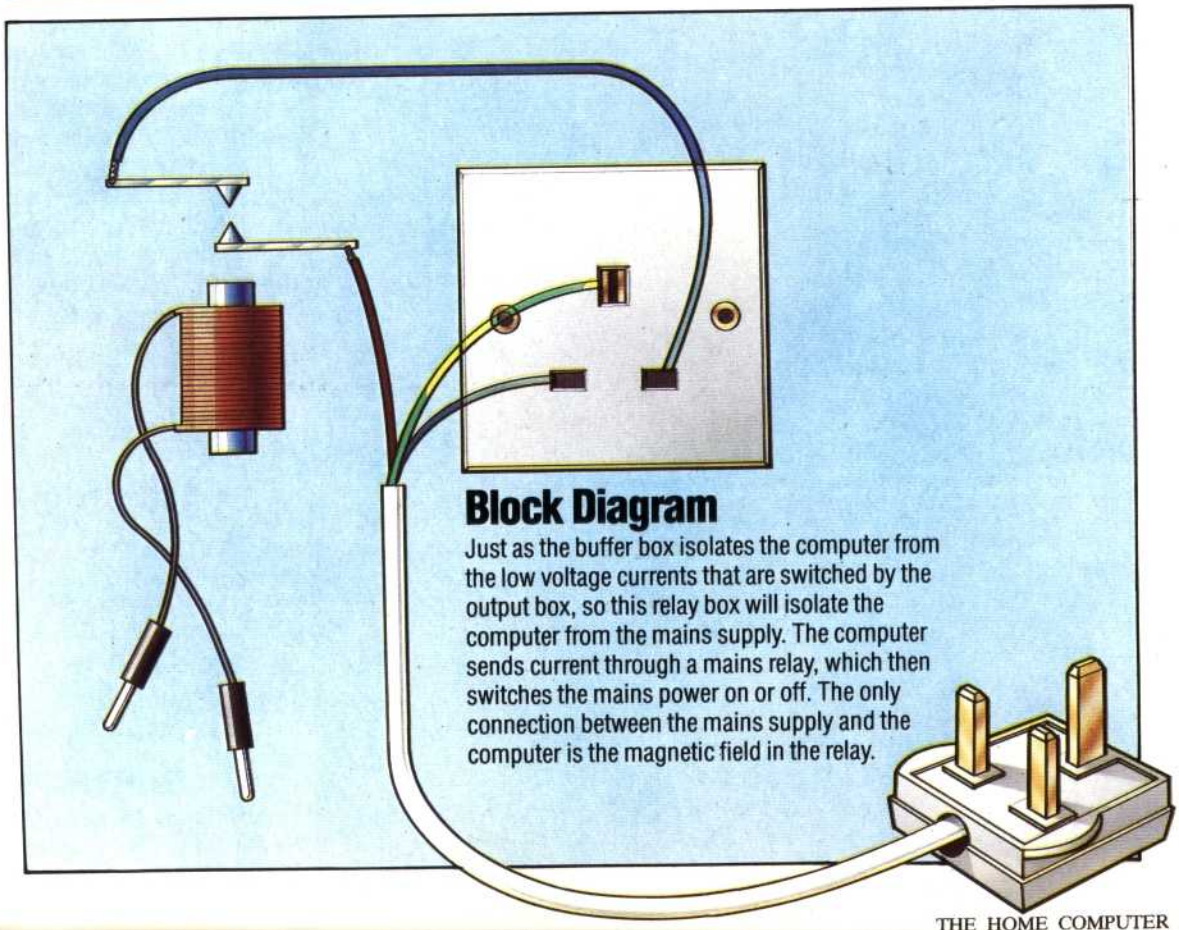
Once we have built the relay box and checked all connections thoroughly, we can test its operation by writing a short program to switch a mains-powered device on and off. A suitable device for such a purpose is a simple table lamp. This should be plugged into the mains power socket on the relay box, and the signal wires connected to the positive and negative terminals on line 0 of the low-voltage output box. The signal wires may be connected to either of the terminals without affecting the operation of the relay. The mains lead from the relay box is then plugged into a wall socket.

Once all connections have been made, type in the following short program; this switches the lamp on for five seconds and then switches it off again.

```
10 REM TEST MAINS RELAY
20 DDR=&FE62:DATREG=&FE60
30 ?DDR=255: REM ALL OUTPUT
40 ?DATREG=1: REM TURN LIGHT ON
50 TIME=0: REM SET TIMER
60 REPEAT
70 UNTIL TIME>500
80 ?DATREG=0: REM TURN LIGHT OFF
```

```
10 REM CBM 64 TEST MAINS RELAY
20 DDR=56579: DATREG=56577
30 POKE DDR,255: REM ALL OUTPUT
40 POKE DATREG,1: REM TURN LIGHT ON
50 T=TI: REM SET TIMER
60 IF (TI-T)<300 THEN 60
70 POKE DATREG,0: REM TURN LIGHT OFF
```

If, after running the program, the lamp fails to light, unplug the mains relay box before testing the connections.



Block Diagram

Just as the buffer box isolates the computer from the low voltage currents that are switched by the output box, so this relay box will isolate the computer from the mains supply. The computer sends current through a mains relay, which then switches the mains power on or off. The only connection between the mains supply and the computer is the magnetic field in the relay.