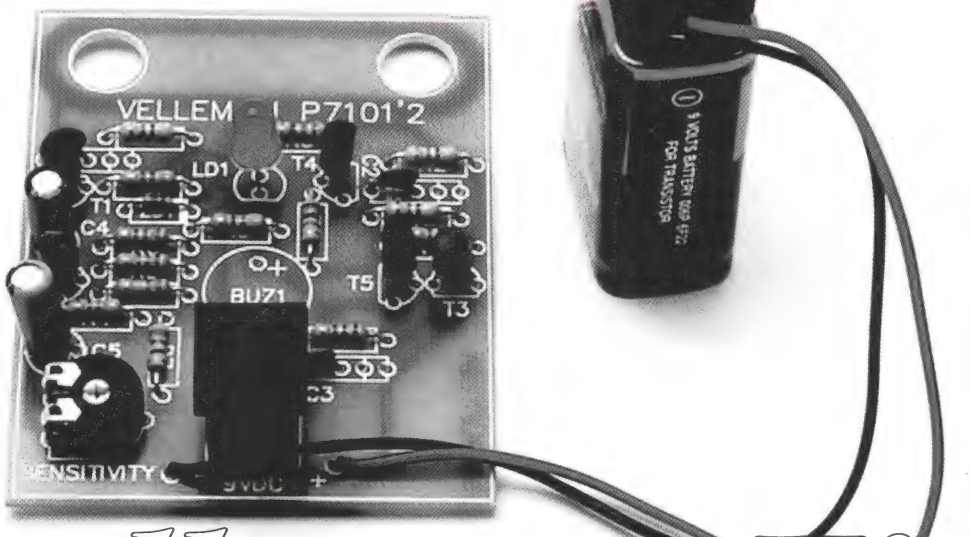
PROJECT

PROJECT RATING 2



Velleman Kit

MAINS DETECTOR

John Mosely constructs this handy little kit from Velleman.

Often the hobbyist has a need to check whether a mains cable is live or not. This simple kit allows you to do just that plus it will allow you to detect wiring within walls or breaks within cables.

A flashing LED shows whether a current flow has been detected, while the speed at which the LED flashes indicates how close the detector is to the wiring. If you require an audible warning of the presence of mains, space is provided on the PCB to add a suitable buzzer. A 9V DC supply is required - a PP3 battery (not supplied) being the ideal choice, and should last for a very long time. The whole project can easily be incorporated in a small plastic box.

Construction

I have mentioned in these pages before about the quality of the Velleman PCBs, and their kits in general. If you follow the instructions, and your soldering is OK, then it is difficult not to end up with a kit that works! Instructions are graphical where appropriate, and more-often-than-not even include a resistor colour code chart. Resistors, diodes and wire links are provided on a bandoleer - the order of the components on the bandoleer corresponding to the order of construction. Components are always of the highest quality, and to-date I have not had one 'faulty' kit, or one with missing components. Quality control at Velleman is first rate.

As usual construction starts with effectively the smaller components and works up in size. The circuit diagram is shown in Figure 1. Note that the detector loop is in fact a loop of copper track on the board. Again, take care to get the electrolytics, diodes etc. in the correct way round.

The height of the LED above the board is approximately 15mm. This is important for mounting in a suitable plastic box. Two will need to be drilled

FEATURES

- LED indicator
- Adjustable detection range (10cm max.)
- 9V DC supply
- Dimensions- 56 x 64mm

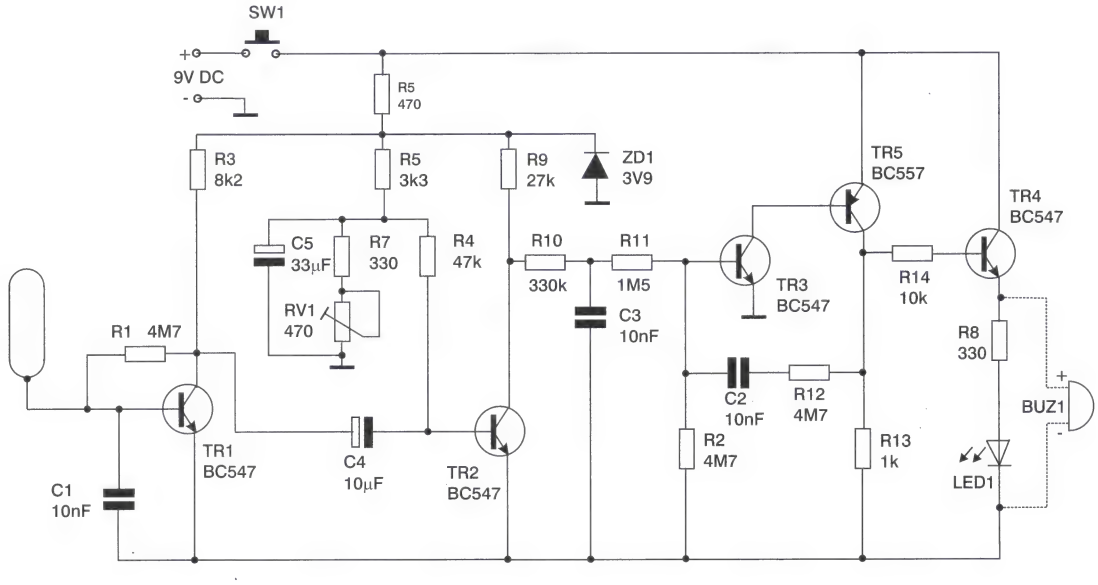


Figure 1. The circuit diagram.

in the box - one for the LED and one for the push switch. Figure 2 shows the hole dimensions for the push switch and the LED with respect to each other. You may want to provide extra holes for securing a piezo sounder if you opt to install one. If you want a sounder then JH24B or KU57M may be suitable candidates.

Finally, check the board for poor joints and shorted tracks. A few minutes spent checking can prevent a lot of problems later! Mount the board and battery in the box prior to testing.

Testing

Select an area where there are no mains cables, and turn RV1 fully antclockwise. Push the switch and the LED should briefly light up. Now adjust RV1 so that the LED is just extinguished. This is the most sensitive setting, and to decrease the sensitivity turn RV1 anticlockwise. The unit is now ready for use.

Conclusion

The kit works very well, and for £9.99 is a useful piece of test gear that will be a handy addition to any toolbox. Order Code **VF63T, £9.99** including VAT.

ELECTRONICS

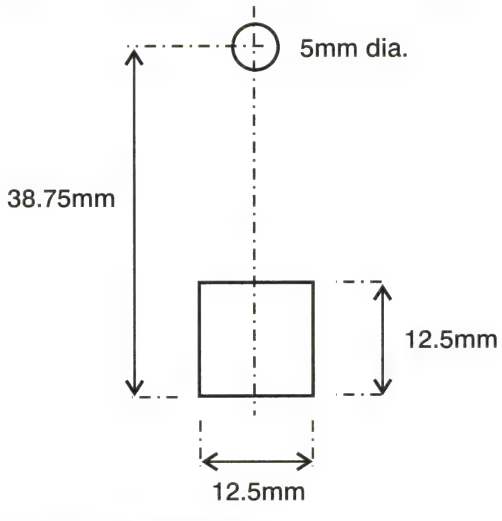


Figure 2. Hole drilling dimensions.

PROJECTS PART LIST

RESISTORS	
R1, 2, 12	4.7M
R3	8.2k
R4	47k
R5	470
R6	3k3
R7, 8	330
R9	27k
R10	330k
R11	1.5M
R13	1k
R14	10k
CAPACITORS	
C1, 2, 3	10nF
C4	10µF
C5	33µF
SEMICONDUCTORS	
TR1, 2, 3, 4	BC547
TR5	BC557
LED1	5mm Red
ZD1	3.9V Zener
MISCELLANEOUS	
SW1	1-pole Push Switch
	Plastic Box
OPTIONAL	
	Buzzer