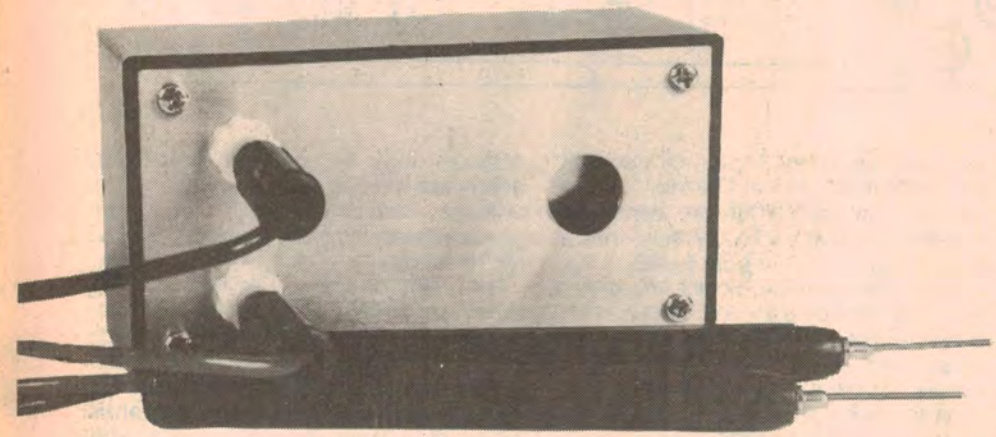
Basic Electronics

Continuity Tester

Ye olde humble Continuity Tester still has a place in today's high technology world. It is often more convenient to use than a multimeter and is not likely to make a big dent in your paypacket when you accidentally tread on it with your size-12 hobnail boots. Why not nip out and buy the parts for it now?



We have seen many different designs for Continuity Testers in the past but the best type has an audible buzzer or alarm transducer. That way you can concentrate on placing the probes correctly on the device being tested and not have to look at some visual indicator.

One drawback of some of the old buzzer-type Continuity Testers is that their relatively high current drain made them unsuitable for checking semiconductors such as transistors and diodes. At the same time, they were really only suitable for checking quite low resistances. This new design (even though it's entitled "Ye Olde Humble Continuity Tester") has low current drain from its internal battery and is suitable for checking semiconductors as well as resistances up to as high as several megohms.

This Tester gives essentially the same level of output with resistance up to 1kΩ or so, with diminishing output for resistances above that. But even with high values up to several megohms it will give a very weak output. You can even test your own skin resistance and see the result of wet skin versus dry skin!

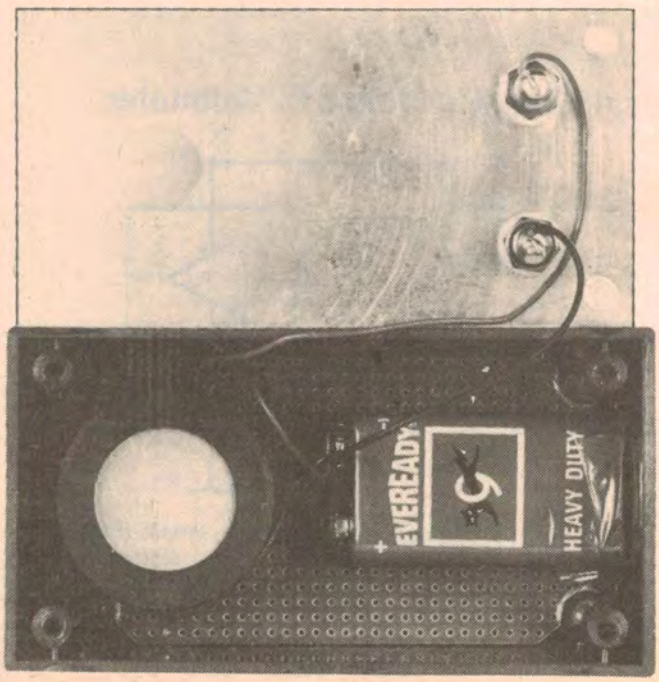
Actually we must admit that the idea for this Continuity Tester is not ours. It came from Geoff Wood, of Radio Despatch Service, 869 George Street, Sydney. Geoff showed us a neat little continuity tester that he had just built up. "What a neat little doo-hickey", we thought, or words to that effect. After very little persuasion (truly), Geoff parted with his prize and here it is.

The Continuity Tester is based on an electronic piesolectric module which will run from five to 16 volts and gives a loud warbling tone, at around 1kHz. This module is called the Bell Audiolarm, type 2321-2-5 and is distributed by C. & K. Electronics (Aust) Pty Ltd, 2/6 McFarlane St, Merrylands, 2160 phone (02) 682 3144.

The module has a current drain of about five milliamps when connected directly across a nine-volt battery but will function on the proverbial "smell of an oily rag" and continue to give a very faint output even when fed by resistances of as high as several megohms.

The circuit of this Tester is so simple that a diagram is really unnecessary. You can draw your own with the Audiolarm unit connected in series with a nine-volt battery and two banana plug terminals. There is no on-off switch. The circuit is completed when the two tests prods are applied to a resistance and the Audiolarm sounds.

The prototype was housed in a small black plastic case (zippy box) measuring 102 x 54 x 42mm. Three holes need to be drilled in the aluminium lid, two for



What could be simpler? A zippy box, piece of Veroboard, alarm and battery plus a few other bits. Wire them together and you have a neat little Continuity Tester!

the banana terminals and one to let the sound out!

The Audiolarm itself is mounted on a piece of Veroboard measuring approximately 96 x 50mm with the tracks running across the board. The corners of the board are cut away so that it presents a neat fit into the case. Solder the Audiolarm to one end of the Veroboard and cut away the track that shorts out the positive and negative terminals.

Solder the black (negative) lead from the battery connector to the black terminal on the lid and the red battery lead to the positive (+) connection on the Audiolarm. Then take a short length of hookup wire and strip the insulation from both ends. Solder one end to the negative (–) connection on the Audiolarm and the other end to the red terminal on the lid. Now check your connections and connect the battery to the circuit.

PARTS LIST

1 Audiolarm, type 2321-2-5
1 zippy box, 102 x 54 x 42mm
1 piece of Veroboard, 90 x 50mm
2 banana plugs, one red, one black
2 banana plug sockets, one red, one black
1 Eveready 216 9V battery or equivalent
1 battery connector to suit
2 meter prods, one red, one black
1 500mm length of red hookup wire
1 500mm length of black hookup wire
Plus solder and scrap foam rubber.

Now connect a high value resistor, say 100kΩ, across the terminals. The Audiolarm should give out with a weak pulsed bleat, as though it was being strangled. If it doesn't make any sound, it's probably dead already or you have connected the battery the wrong way around.

We estimate that the cost of parts for this project is approximately

$12.90

This includes sales tax

When you have sound output via the resistor you can then connect a short length of wire across to test the full output. Deafening isn't it? But it is not so loud when you put it in the zippy box. This you can now do. Install the board in the box along with the battery and use some foam rubber to hold it all in place when the lid is screwed down.

Well there you have it. A useful tool which you will find yourself using surprisingly often in the future, instead of reaching for your multimeter.