

Continuity Checker

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Testing cables and device wiring, that is, finding out which cable leads where, is usually performed considerably easier if you have a cable tester with a buzzer. Various types of these 'buzzers' are available from your friendly neighbourhood electronics shop. Normally, these devices (in addition to their often considerable size) have the disadvantage that they are not very reliable and that an operating voltage that is even slightly too low can lead to annoyingly false conclusions.

Electronic buzzers do not have these disadvantages, but they cannot be used universally, because they operate at a more or less high impedance. With such a device, it is possible to quickly detect an interruption, e.g. in a coil or transformer, but the test shown in Figure 1 already encounters difficulties. The connection (e.g. a transformer terminal) at point A cannot be clearly identified, because no difference is detected between points A and B when using the high-impedance buzzer. For such a test a low-impedance buzzer is required.

Figure 2 shows a circuit that combines the advantages of both high- and low-impedance buzzers. It consists of an astable multivibrator that generates a frequency of approx. 1000 Hz and an output amplifier for the loudspeaker. Only three 'TUN' universal NPN transistors (such as BC108 or BC548) and a few capacitors and resistors are required.

The buzzer can be used for measuring either low impedance (up to approx. 100 Ω) or high impedance (up to several M Ω). If the test leads are connected to terminals 2 and 3, and terminals 1 and 2 are bridged at the same time, the measurement is low-impedance; if the test leads are connected to 1 and 2 while terminals 2 and 3 are bridged, the measurement is high-impedance. The most practical way to switch the operating mode is to use a two-pole switch with three positions. Figure 3 shows how such a switch can be connected.

Two AA- or AAA-size 1.5 V batteries can be used to power the buzzer. Two short strands of wire fitted with crocodile clips (or any other kind of clips or probes) serve as test leads.

