J. Jacobs

lie detector

This lie detector works in the usual manner by measuring skin resistance and therefore is no innovation, but in comparison with the designs popular some years ago it offers a number of useful improvements. In the circuit the advantages of opamps have been turned to full use. The detector operates fully symmetrically, and therefore two batteries are required. The voltage across the electrodes according to local regulations in some countries, may not be higher than 2 V so a reference voltage of no more than 1.2 V is applied to the input of the measuring bridge. Since the resistance of the human skin is generally 50 k or less, the voltage across the electrodes will be at maximum 0.6 V. The set-up of the measuring bridge has the additional advantage that the reference voltage is independent of the battery voltage. To obtain a sufficiently high sensitivity the total amplification in the detector should preferably be greater than 100,000 times. Therefore a second opamp was added, which brings the overall amplification to about 250,000 times. With the double potentiometer of 500 k the amplification can be adjusted from 0 to the above-mentioned maximum. The 100 k potentiometer serves to adjust the sensitivity of the moving coil meter; therefore the input bridge is first brought completely out of balance to the one side and then to the other by means of the 100 k potentiometer, whilst the positive and negative deflection of the meter is adjusted to maximum. Afterwards the adjustment potentiometer can, if required, be replaced by a fixed resistor.