

# Ideas for Experimenters

These pages are intended primarily as a source of ideas. As far as reasonably possible all material has been checked for feasibility, component availability etc, but the circuits have not necessarily been built and tested in our laboratory. Because of the nature of the information in this section we cannot enter into any correspondence about any of the circuits, nor can we produce constructional details.

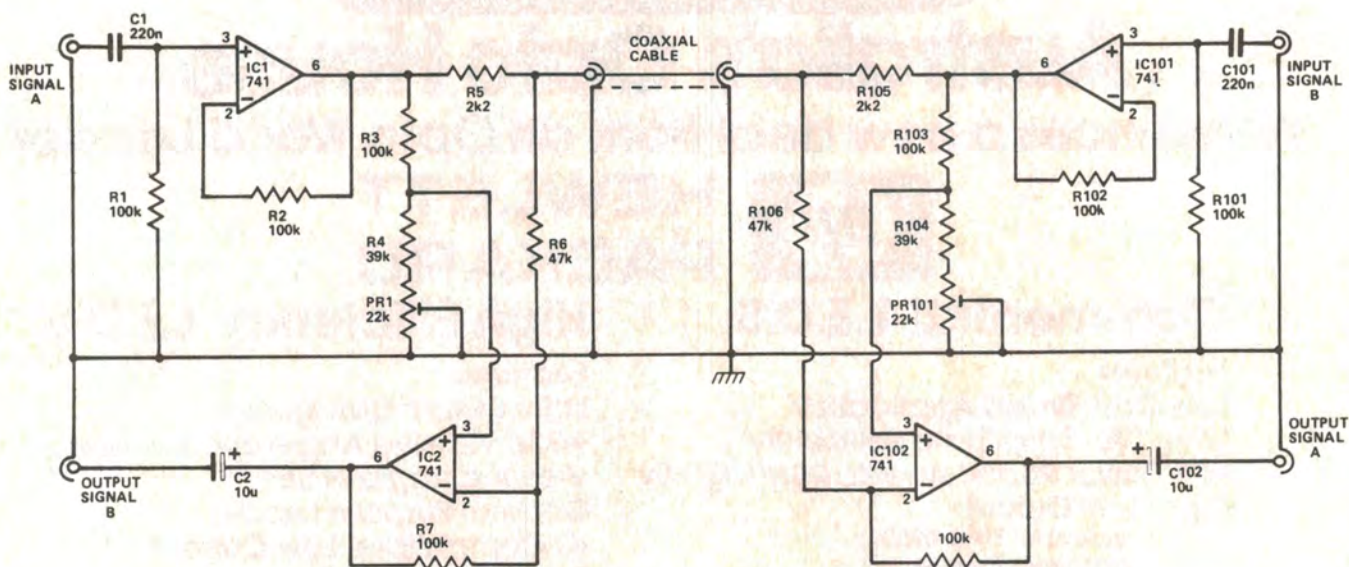
## Bidirectional audio link

This simple circuit arrangement from **T. Hopkins of Stockport, UK**, enables audio signals to be sent along a single piece of coaxial cable in both directions simultaneously. The input signals are buffered by IC1, IC101 and fed to the cable by resistors R5, R105. IC2, IC102 subtract the signals on the cable from

the output of the buffer amplifier; the difference is the signal put onto the cable at the other end. The net result is that signals inserted at one end appear only at the other end.

The audio signals should be between 100 mV and 3 V (RMS). Potentiometers PR1, PR101 set the rejection of the unwanted signal; these should be of good quality and preferably multitrurn presets. A rejection of 50-55 dB can be obtained.

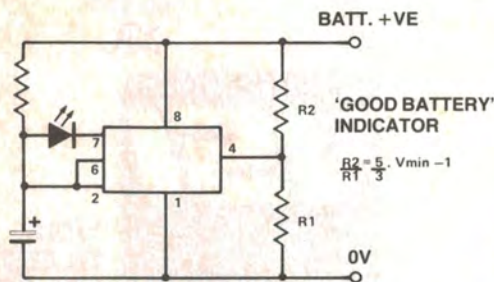
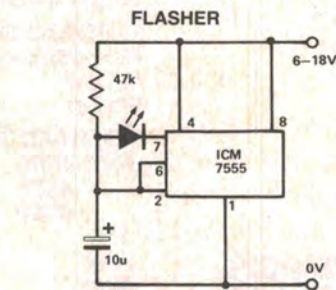
The prototypes were used in an audio system where the control unit was remote from the signal source and the power amplifiers and speakers. Other possible uses include intercom and talkback systems. If this technique is tried at higher frequencies, resistors R5, R105 should be adjusted to match the characteristic impedance of the coaxial cable used. A similar system has been successfully used for digital signals.



## Micropower LED flasher

This circuit will brightly flash an LED, yet draws a supply current of only 150  $\mu$ A. In a normal 555 astable, the timing capacitor is discharged straight to ground. Here, the charge is made use of by discharging it through the LED. A suggested use is for an on-off indicator in a battery-powered circuit.

With a slight modification the circuit can be used as a good battery indicator. A potential divider is connected to pin 4 (reset) from the supply rail of the circuit



whose battery is being monitored, so that when the supply drops below a predetermined voltage, then the voltage on pin 4 drops below 0.7 V. Thus the LED

will only flash if the supply is higher than the predetermined voltage. Keep the value of the resistors high to reduce current consumption (e.g. 1M for R1).