

REMOTE AND TOUCH VOLUME CONTROLS

An electronic attenuator such as the MC3340P IC can be used as the basis of a remote volume control, as shown in the first circuit. RV1 controls the voltage gain of the MC3340P, which varies from typically 13 dB at minimum resistance to about -80 dB at maximum resistance. Since only a DC level is controlled by RV1, any AC pick-up in the connecting cable can be

filtered out, which is the purpose of C2. The cable only needs to have two conductors, it can be many metres long, and does not have to be a screened type. C1 and C4 are merely input and output DC blocking capacitors respectively. C3 rolls off the RF response of the circuit so as to aid stability and prevent RF breakthrough.

The MC3340P can be used as the basis of a novel touch operated volume control, as shown in the second circuit. This has the advantage over a conventional volume control of having no moving parts to wear out. The device is controlled by a voltage rather than a res-

istance and gives the same attenuation range as the previous circuit.

The control voltage is obtained from a charged capacitor (C1) via an op amp unity gain buffer stage utilizing IC1. IC1 has a PMOS input stage which produces a typical input resistance of 1.5 million Meg ohms. This ensures the charge on C1 is not significantly affected by the amplifier of attenuator circuit, so that once set it remains virtually unaltered for a long period of time.

The charge voltage on C1 is set by the operator who, by touching the lower two contacts, can charge C1 via R1 and his or her skin

resistance. This decreases the control voltage fed to IC2, and increases the volume. Touching the upper two contacts causes C1 to gradually discharge; increasing the control voltage and decreasing the volume. When the unit is switched off, C1 gradually discharges. At switch on it is necessary to bring the volume up to the required level, rather like using an ordinary combined on/off switch and volume control. Both circuits will handle input levels of up to 500 mV RMS, with a THD figure of only about 0.6% at high volume settings, rising to about 2% or so at low settings.

