

Programmable Volume Control

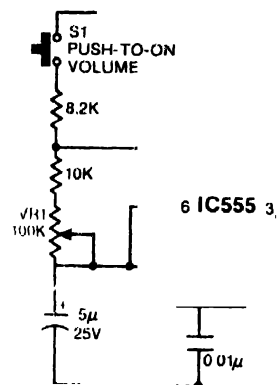
The 'Programmable Volume Control' circuit in November issue is alright, but the same effect can be achieved by using a 10-way thumbwheel switch in place of the BCD type. The thumbwheel switch can take the place of the transistor switches directly. This will eliminate IC 7442, ten transistors, one zener diode, 15 resistors, a PCB and a number of interconnecting wires.

P. MARATHEY
Bombay

□ 'Programmable Volume Control' is really a very interesting idea, but it has the following limitations:

- (a) Thumbwheel switch is required to control the volume;
- (b) It has to memorise the truth table;
- (c) We cannot see the visual indication of the volume; and
- (d) 5V regulated power supply is required.

These problems can be solved with an additional facility such as a mute switch or we can say fast set to '0' volume. Only two push-to-on type switches are required (as shown in Fig.)



S2
PUSH-
TO-ON
MUTE

to control the volume.

We can mount the programmable volume control on front panel with visual indication
A.S. BAJWA
Kapurthala

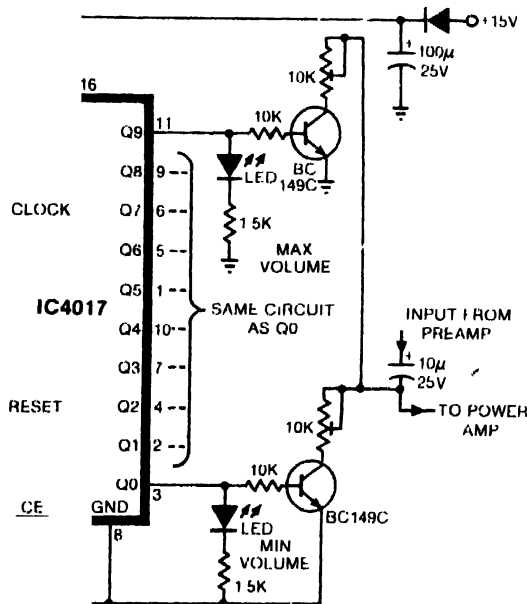
□ I am sorry to mention that the standard of EFY has come down mainly due to the publication of half-baked circuits like this one.

The input to the amplifier is directly taken from the output of the preamplifier. If the output of the preamplifier has a sufficiently low output impedance, the signal would hardly get attenuated since the circuit effectively comes only in parallel to the preamplifier's output. The circuit would work only with a low quality preamplifier which has a relatively

high output impedance.

Also, I object strongly to the use of npn bipolar transistors as the switching elements. The audio signal at the collectors of T1 to T10 would be an AC signal. However, an npn transistor would conduct only when the collector is at a positive voltage with respect to the emitter. This means that the positive half cycles of the audio signal would be attenuated while the negative half cycles would be passed on unattenuated, thus resulting in severe distortion of the output signal. Even when the collector is positive, a transistor needs saturation voltage of several tens of millivolts before any significant conduction begins. This also means a non-linear attenuation of the input signal. A linear characteristic is only possible through an FET, although it is considerably more expensive than an npn transistor.

I also fail to understand how a value of 47k could be used for R11 with a supply voltage of 9V. The current through the 47k resistor would be insufficient to bias the zener diode, let alone the circuit. R11 may be changed to



270 ohms to keep the zener current at a reasonable level.

R. SHANKAR
Madras

The author, Mr Bidyut Chakraborty, replies:
The method described by J.P. Marathey will surely perform the same function but the disadvantage of using a 10-way switch alone is that it produces switching noise. Thus audible noise will be generated from the speaker while changing switch positions.

Mr A.S. Bajwa has indeed suggested a good modification to my circuit idea. Now one can easily instal it inside a radio, TV, cassette recorder, amplifier or any other audio equipment. However, the circuit described by me is

easy to interface with a microcomputer kit.

I am grateful to Mr R. Shankar for his keen observation of my circuit idea. At the same time I disregard the charge that the standard of EFY has come down due to publication of the circuit. The circuit has surely got some novelty value and this type of circuit has rarely appeared in EFY. Moreover, the circuit has inspired several people to think of new circuit ideas.

In the original circuit diagram sent by me, there was a resistance in series with the input coupling capacitor which has been omitted in the published circuit. Had this resistance been in the circuit, the first problem pointed out by Mr R. Shankar could have been avoided.

Again, the value of R11 has been wrongly published in the text as 47 kilohms, in the original manuscript, its value was 47 ohms.

Regarding Mr Shankar's second problem, I would say that the output of the circuit is assumed to be directly coupled with the amplifier's input stage and from there the circuit derives DC voltage to keep the transistors in the operating state throughout an AC signal. But if one wishes to use a coupling capacitor at the output, one must provide a separate biasing circuit to keep the collector voltage of the transistors reasonably above ground.

Since transistors have been used as switching elements in the circuit, there always exists the problem of non-linearity, but that is hardly audible. One may use FET switches to get rid of this problem but the circuit will surely become costlier.

Correct Your Hourly Chime

I am regular reader of EFY magazine since 1980. Recently I have added the hourly chime circuit, which was published in May 1985 issue, to my digital clock.

There is one serious mistake in the PCB layout. Pin number 4 of IC 7404 is wrongly connected to pin number 8 of the same IC, which is the output of the unused inverter gate, and which is always in '0' state since its input is open. After disconnecting this wrong connection the circuit started working satisfactorily.

T.K. Thiyagarajan
Bombay

Electronic Auto Dipper

Mr Hindocha's circuit in Sept. '85 issue works beautifully, but only after the following modifications in the lamp circuit.

The power supply should be fed into the moving contact of the relay. The N/C contact should then be connected with the main beam filament of the N/O contact with the dipper beam filament of each head lamp. In Mr Hindocha's circuit there would be no power supply available to lamp L1 when the relay is energised to make the N/O contact.