Circuit & Design Ideas

Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible for feasibility, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.

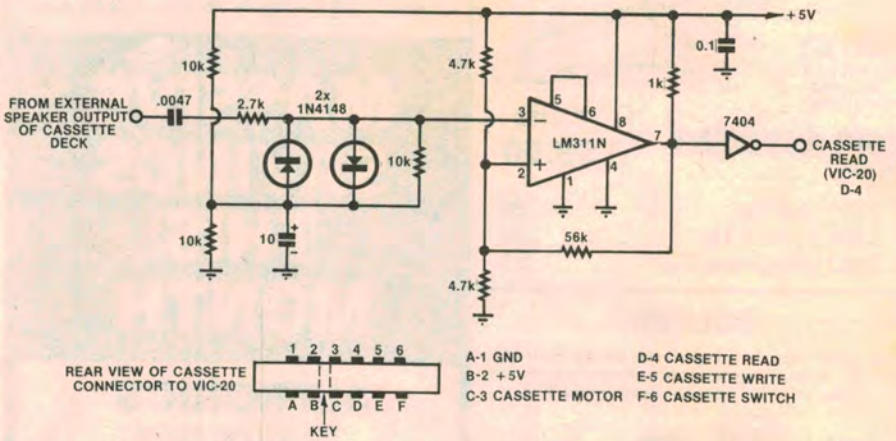
Cassette interface for the VIC-20 personal computer

The accompanying circuit is designed to allow a domestic cassette deck to be used to load programs into a VIC-20 computer. As such, it should be of interest to those who want to load pre-recorded programs without incurring the expense of a Datasette.

The main function of the circuit is to convert a sine wave output from the cassette deck into a TTL signal as required by the VIC-20. This is accomplished by means of a comparator and an inverter.

The comparator (LM311N) is connected as an inverting Schmitt trigger, with trip points of 2.4V and 2.6V, the input signal being symmetric about 2.5V. The 7404 acts as an inverting buffer to restore the signal polarity.

The cassette motor output from the VIC-20 is a nominal 5V DC at 100mA and may be used to drive the cassette motor directly (if suitable), or control it indirectly via a relay. The switch, S1, is set in the "On" position after the "Tape Play" switch on the cassette deck has been depressed.



The prototype needed an input signal of 2V(pp) and has proved to be reliable for loading commercially available programs, as well as programs recorded on a Datasette.

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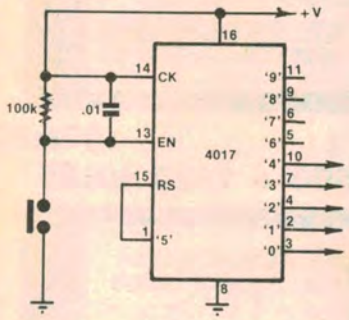
Low-cost pushbutton sequential switch



Based on a CMOS 4017 decade counter, this simple circuit provides single pushbutton sequential switching. The only components required in addition to the IC and the switch are a resistor and a capacitor.

The counter is clocked each time the switch closes, the outputs "0" to "4" each going high in sequence. In this circuit, the counter is reset after the fifth position (the circuit was used as the input selector for a preamplifier), although there is nothing to stop you from using all the counter outputs.

The trick lies in tying the clock (pin 14) high and placing a clock pulse on the enable pin using a resistor and capacitor for contact debouncing. A bonus is that the circuit will "remember" the last position selected for over an hour after power is removed. This period may be increased, but don't make the capacitor too big as clock pulse rise time will degenerate.

The unit can be powered from any available 9-15V supply.

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Hold function for Digital Frequency Meter

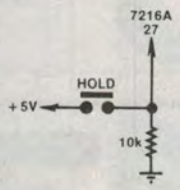

Fig. 1

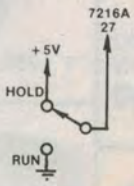

Fig. 2

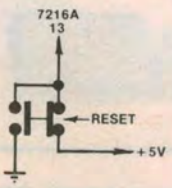

Fig. 3

Here is suggested modification to the Digital Frequency Meter described in EA December 1981. The writer finds the most convenient gating time is one second but the display time too short to log the reading. The circuit was therefore altered to hold the display by switching pin 27 of the 7216A from chassis to +5V.

This action holds the display as long as pin 27 is held positive and no further count occurs. Switching back to chassis resumes normal procedure.

In Fig. 1, the pushbutton switch has to be held in for the duration of the hold mode. In Fig. 2, the two position toggle switch is merely placed in the position required. The PCB has a jumper, connecting pin 27 to chassis, which can be removed and replaced by the 10kΩ ¼ watt resistor for Fig. 1, or omitted for Fig. 2.

The switch can be mounted on the front panel in place of either the 50MHz or 500MHz input socket which can then be mounted on the back drop next to its printed circuit connection.

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