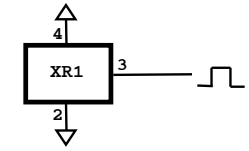
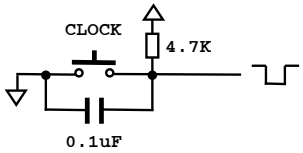


Possible clock circuit using crystal oscillator



Possible manual clock circuit using N.O. switch

"Free-run" circuit for the RCA 1802:

This circuit allows for an easy test of a processor to make sure it`s working, or as a starting point to the development of a full system.

It allows the 1802 to run with no attached memory. The 1802 requests instructions from successive addresses (seen on the LEDs), and receives nonsense instructions on the BUS lines, which it executes, then requests an instruction from the next address. Pulling BUS0 high keeps the processor from seeing an "IDL" instruction that would halt the processor.

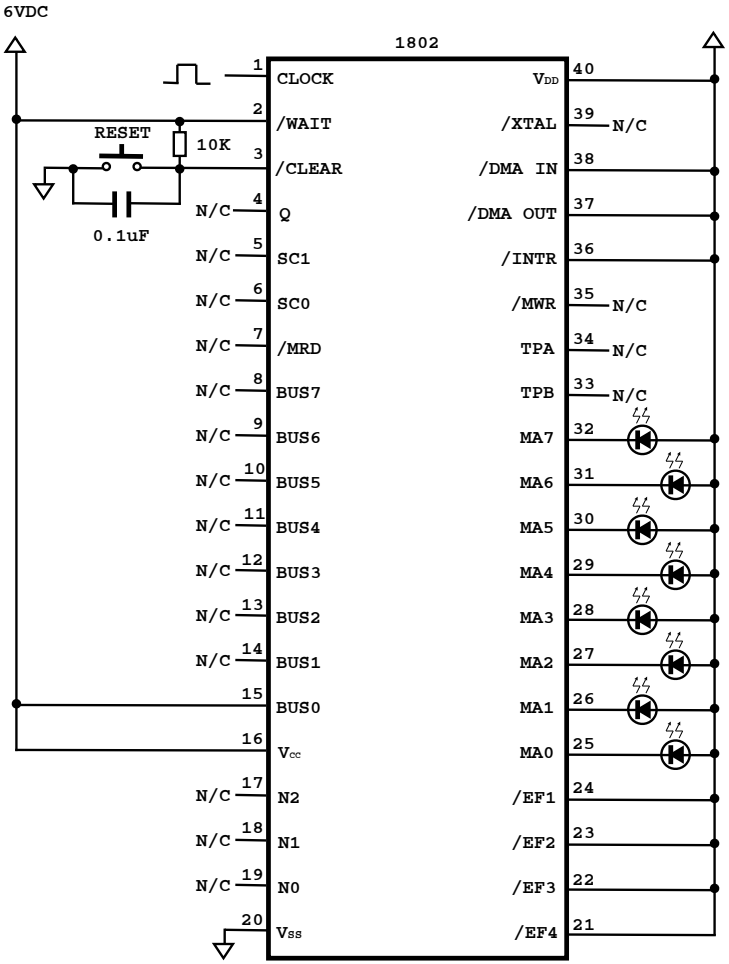
The circuit can be clocked manually (using a switch, as shown), or using any sort of oscillator at any frequency up to the maximum allowed for the specific version of the 1802 in use at the applied Vdd voltage(anything up to 2MHz is OK if you want to be able to see the high order LEDs blinking.) When clocked manually, remember that multiple pulses on the CLOCK switch will be required for each instruction cycle (8 per machine cycle, instructions are from 1 to 3 machine cycles, so 8 to 24 clock cycles per instruction.)

The RESET switch is used when a clock signal is applied and the circuit does not run immediately. For most conditions, this will not be necessary, the circuit will run as soon as power is applied.

For my own use, I prefer to hard-wire a specific instruction. Shown at right are the connections for the 1802`s NOP instruction. This ensures the 1802 will advance one address per instruction cycle, and will not use the BUS lines as outputs, and ensures 8 clock cycles per instruction.

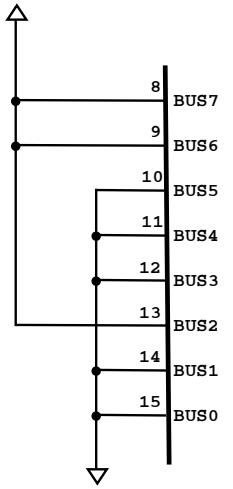
Power (Vcc & Vdd) can be anything from 3.0 to 6.0VDC, I usually use 2 or 3 batteries in a snap-on battery holder.

Mark Graybill, April 2010



Free-Run Circuit

LEDs will "count" off addresses as the 1802 cycles through its address space.



Alternate connections to hard-wire NOP instruction