

ICs provide raster scan interface

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One master oscillator and a few counters, flip-flops, and gates make a baud-rate clock with a sync generator that produces horizontal and vertical pulses for noninterlaced raster scanning of a cathode-ray tube. In it, standard integrated circuits are used to generate rates up to 38.4 kilbauds (the upper limit of most generators is only 9,600 bauds) and sync pulses for producing 312 lines at a 50-hertz refreshing rate (or 260 lines for a 60-Hz rate). Thus the circuit is a low-cost solution to building an important part of any data terminal.

All clock rates are derived from one crystal-controlled oscillator, A_1 , which uses the 7209 and a crystal cut for 7.9872 megahertz. The master clock frequency is then divided by 13 by A_2 , the 74LS161 presettable counter. A_2 generates a frequency 16 times 38.4 kilbauds, suit-

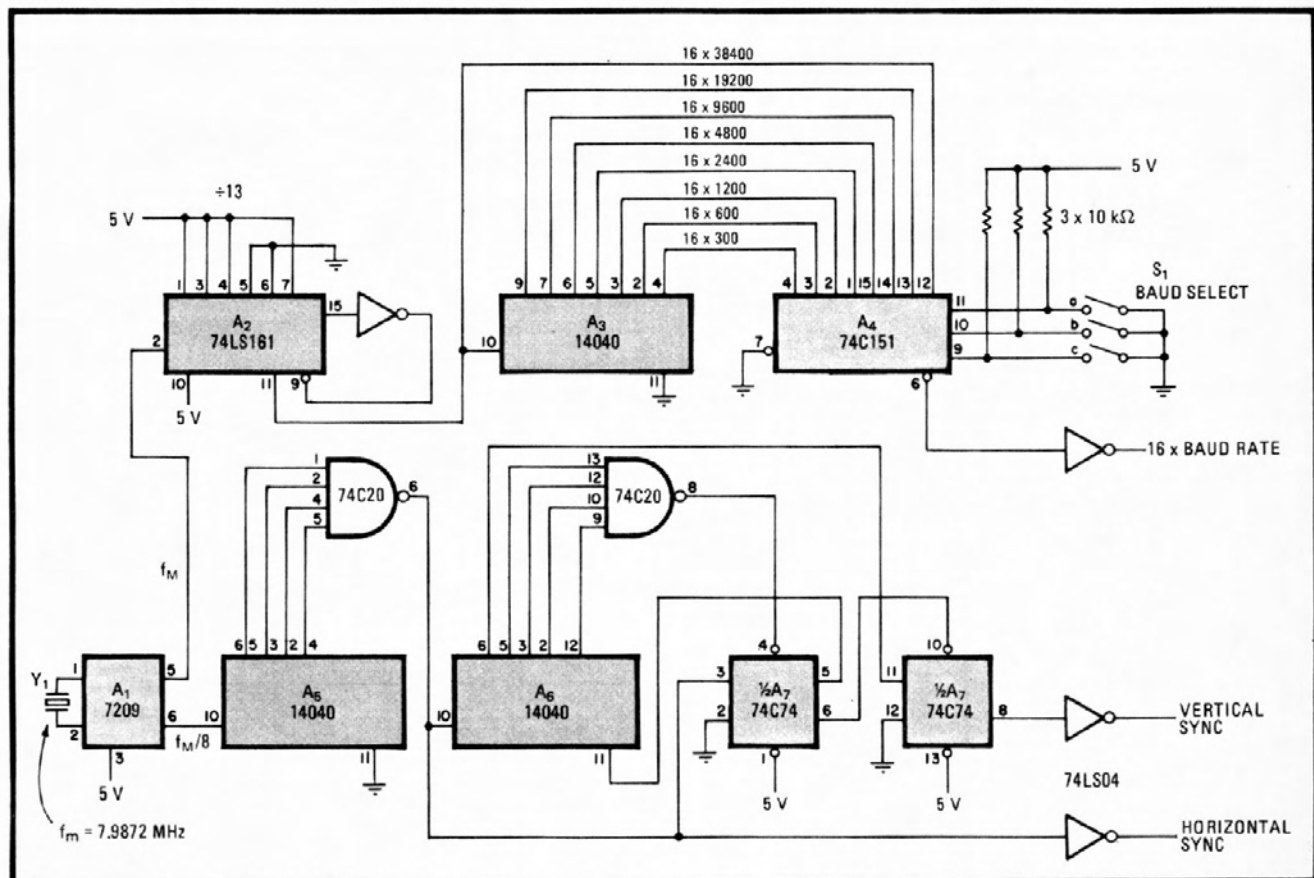
able for interfacing with universal asynchronous receiver-transmitters or similar modems.

This frequency is further divided by A_3 , the 14040 binary counter. Thus, rates extending from 16×300 bauds to 16×19.2 kilbauds will appear at its output.

S_1 , which is used in A_4 , the 74C151 one-of-eight-line multiplexer, selects the baud rate desired. When all switches are open, a rate of 300 bauds is selected. Closing switch a, the least significant bit (i.e., binary number 1), selects a baud rate of 600, and so on.

The horizontal sync pulses for the cathode-ray tube are derived from A_5 and a four-input NAND gate, which generates a frequency of 15,600 Hz, each pulse lasting 4 microseconds. The vertical sync frequency, either 50 or 60 Hz, is obtained from A_6 - A_7 and a four-input NAND gate.

Dividing the horizontal sync pulses by 312 or 260 (for 50 or 60 Hz, respectively), the binary counter, A_6 , which in this case is wired as a divide-by-312 device, drives two flip-flops (A_7). A_7 resets the counter and generates vertical sync pulses, each 256 μ s long. \square



Versatile. Using standard integrated circuits, combination baud-rate generator and sync generator for CRT works up to 38.4 kilbauds and can be wired to generate sync pulses suitable for a 50- or 60-Hz refreshing rate. All frequencies are derived from one oscillator.