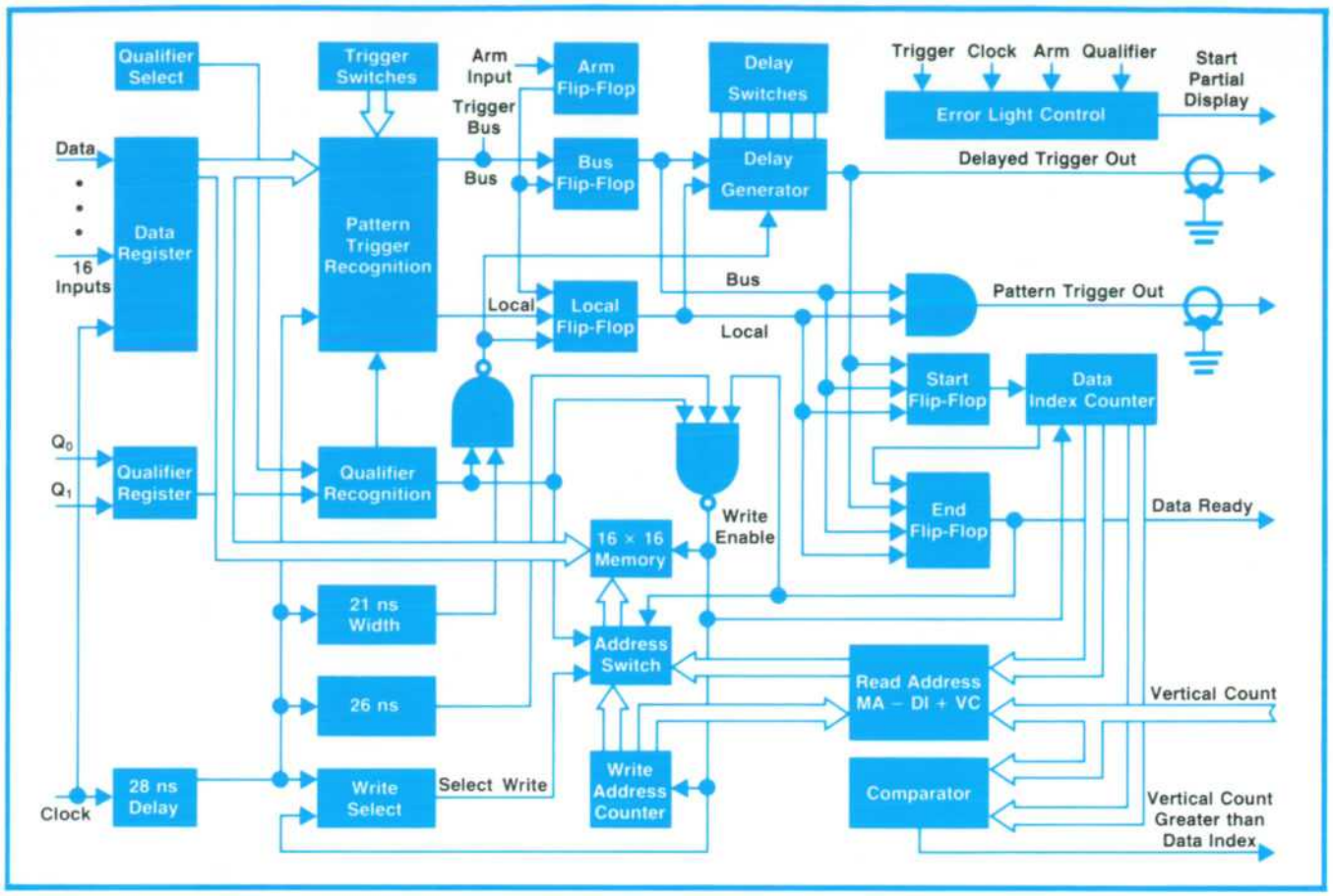

Fig. 6. *Block diagram of the data acquisition circuits. Not shown, for brevity, are the internal gates that determine which of several inputs will trigger a device, for example the "end" flip-flop.*

delay circuits are closely involved with data acquisition, they function independently. The trigger recognition circuit generates an output pulse whenever the trigger word is clocked in, assuming the instrument is armed, regardless of what the rest of the instrument is doing. These pulses are useful for synchronizing other test equipment, such as a time-domain oscilloscope, and they can also be totaled by a counter, giving the instrument the capabilities of a breakpoint register. Following each trigger, a delayed pulse is also supplied at a separate output connector on conclusion of the selected delay interval.

When the data acquisition circuits are enabled, the trigger recognition circuits control data storage. Beginning with a word determined by the trigger word and the mode selected (START DISPLAY, END DISPLAY, etc.), each subsequent qualified word latched into the input data register is stored in memory.

When 16 words have been stored, control is passed automatically to the display circuits, which then display the data stored in memory. When the SINGLE mode is selected, the data is displayed continuously until the RESET button is pressed. In the REPETITIVE mode, the data is retained on display for a period determined by the DISPLAY TIME control (200 ms to 5 s), after which control is passed back to the data acquisition circuits. New data is then stored upon the next occurrence of the trigger word.

A hierarchy of warning lights assists the operator in setting up the instrument. Whenever the average clock rate or the qualifier, trigger, or arming rates fall below 5 Hz, the appropriate warning light turns on. The lights are ranked as follows: clock, qualifier, and trigger. For example, if there were no clock and no trigger, only the NO CLOCK light would turn on. NO ARM, however, has precedence over NO TRIGGER but is independent of the other warning lights.

Data Input

Data is entered by way of pods that can be placed close to the point of measurement. Each of the miniature circuit probes connects through a 30-cm length of wire to a pod, six probes to a pod (Fig. 2). This arrangement minimizes capacitive loading of the circuits under test.

The pods contain trigger circuits that decide whether the voltage sensed by each probe represents a "0" or a "1". The threshold is fixed at +1.5V for TTL circuits, or it can be switched on the instrument front panel to VARIABLE, and is then adjustable over a range