

Engineering Note E- 503

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SUBJECT: A MAGNETIC MATRIX SWITCH AND ITS INCORPORATION INTO A
COINCIDENT-CURRENT MEMORY
(Abstract of Report R-211, A Master's Thesis)

To: 6889 Engineers
From: Kenneth H. Olsen
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The random-access memory is an important element of a high-speed digital computer. This memory must be capable of operating at high speeds with long-time reliability, and should be compact and of low cost. The coincident-current magnetic memory has been proposed as a possible device which has these qualifications. Although one of the features of this type of memory is the straightforward method by which the storage units are selected, there remains the switching problem associated with the selection and driving of its coordinate lines.

A multi-position switch, capable of handling pulses shorter than one microsecond, can be made from magnetic cores. Windings on the magnetic cores, when matrix-connected, control selection of the switch output. These windings can be excited with either direct current or pulses. This switch is capable of transmitting power efficiently, and the magnetic cores from which it is made are inexpensive and rugged, and promise reliability and long life.

Two such switches pulse the 16 coordinate rows and the 16 coordinate columns of a coincident-current magnetic-core memory. The complete cycle-time of the memory, including the switch set-up time, reading of information, and re-writing of information, is less than 4 microseconds.

Design of the magnetic-matrix switch is facilitated by an equivalent-circuit technique.

Signed...*Kenneth H. Olsen*.....
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Approved...*RRE*.....
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KHO:ap