

DIGITAL RESEARCH: COMPUTERS
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FEATURES:

FULLY SS-50 (SWTPC/6800) BUSS COMPATIBLE
USES THE RELIABLE 2114 4K STATIC RAM CHIP
BOARD ACCESS TIME UNDER 500 NS.
PC BOARD IS SOLDER MASKED AND SILK SCREENED
ALL DATA AND ADDRESS LINES FULLY BUFFERED
LOW POWER: WELL UNDER 2 AMPS TYPICAL
KIT INCLUDES ALL PARTS, SOCKETS, AND CONNECTORS
SIMPLE AND STRAIGHT-FORWARD DESIGN FOR RELIABILITY
MASSIVE GROUND PLANE LAYOUT FOR LOW NOISE
IMPROVED HEAT DISSIPATION ON ALL REGULATORS
BOARD IS LIBERALLY BYPASSED WITH DISCS AND TANTALUMS
A MEMORY BOARD YOU WILL BE PROUD TO HAVE IN YOUR
COMPUTER AND WILL BRAG ABOUT TO YOUR FRIENDS.

PARTS LIST

1	4 Pin Socket	
2	14 Pin Sockets	
5	16 Pin Sockets	
32	18 Pin Sockets	
1	24 Pin Socket	
5	10 Pin Molex Sockets	
4	Heatsinks (with hardware)	
33	Disc Bypass Capacitors	Disk: 10,000pf (0.1 microfarads)
9	Tantalum Capacitors	Tantalum: 6.8 microfarads 16V Polarity
4	7805 5VDC Regulators	
32	2114 1K X 4 Static RAMs	
5	74LS367 Buffers (8T97 or 74367 or 8097)	
1	74LS154 4 to 16 Decoder	
1	74LS04 Hex Inverter	
1	74LS10 Triple 3 Input NAND	
1	Printed Circuit Board	

GENERAL CONSTRUCTION HINTS

For soldering we recommend a 32 Watt soldering pencil. DO NOT use a soldering gun! Use small diameter (such as 24 gauge) rosin core 60/40 alloy solder.

Keep the soldering pencil tip clean with a wet sponge or cloth.

After the capacitors have been soldered in place, use a small pair of diagonal cutters to remove the excess lead length.

Observe the polarities of all tantalum caps.

LIMITED WARRANTY

Digital Research: Computers warrants all components in this kit to be free from defects in material and workmanship for a period of 90 days. Any defective parts must be returned to us and will be replaced at no charge. Any board purchased as a kit which malfunctions during the warranty period which has not been subjected to abuse and that has been assembled with reasonable care will be repaired or replaced at no charge.

Any unassembled kit purchased from us may be returned within 14 days of receipt for a FULL "no questions asked" refund. No reason is necessary. The above warranties also apply to kits assembled by us.

Any board which is not covered by the above warranty will be repaired at a cost commensurate with the work required. This charge will not exceed \$20 without prior approval.

This warranty is made in lieu of any other warranty expressed or implied and is limited in all cases to the repair or replacement of the kit involved.

ASSEMBLY INSTRUCTIONS

() Give the PC board a good visual inspection for any obvious shorts or opens. There should be none, but a few minutes spent here could save many hours later.

() Using an ohm meter, insure that there are no shorts between the +8 volt buss and ground.

() Install and solder 18 pin sockets for IC locations 1 through 32. Note that there is a notch or indentation on each of the IC sockets. This notch should be oriented in the same direction as the wide band of the silk screened component legend. (i.e. PUT THE NOTCH UP, TOWARD THE REGULATORS !)

() Install and solder 16 pin sockets in IC locations 33, 34, 38, 39, and 40.

() Install and solder 14 pin sockets in IC locations 35 and 36.

() Install and solder a 24 pin socket in IC location 37.

() Install and solder the 8 pin socket in the address select position between IC locations 35 and 36.

() Install and solder the disc capacitors in locations C9 through C41.

() Install and solder the tantalum caps in locations C1 through C8 and C42. Note the dot on the PC board denotes the positive (+) side of the cap. A tantalum installed backwards may POP or burn.

() Install and solder the four 7805 +5V voltage regulators in locations VR1 through VR4, with heatsinks, using the hardware supplied.

() Install and solder the five MOLEX sockets into the holes at the bottom of the PC board. It is recommended that a pin on each socket is first soldered. Then go back and align each socket as needed to insure proper mating with the pins on the mother board.

() Install the enclosed key plug into the appropriate socket hole. (this is the missing pin on the mother board). The purpose of this key is to prevent the PC board from being inserted incorrectly or offset into the mother board.

() Install the PC board (less IC's) into the mother board. Using a voltmeter measure the output of each 7805. The output pin on the right pair is the bottom most lead. The output on the left pair is the top most lead. The measured output voltage should be between 4.75 and 5.25 VDC. Any regulator not within these limits is BAD and should be replaced before continuing assembly.

() Insert 74LS367 IC's in locations 33, 34, 38, 39, and 40. Be extremely careful to match the notch on each socket with pin 1 of each IC denoted by a small notch or indentation.

() Insert a 74LS04 in location 36.

() Insert a 74LS10 in location 35.

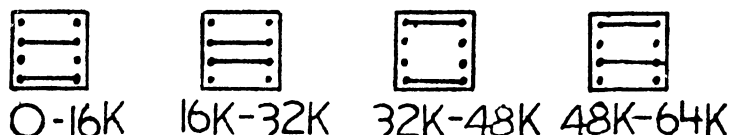
() Insert a 74LS154 in location 37.

() Insert the 2114's in locations 1 through 32. Note that ALL PIN 1's are UP.

() Now that all IC's are installed, recheck the 7805 regulators for proper output.

OPERATION

The board's address is selected by two jumpers installed in the 8 pin socket. The RAM board may be selected to reside in any one of four 16K blocks in system memory as shown below:



THEORY OF OPERATION

Power is supplied to the RAM board via the +8 VDC unregulated buss. The +8 VDC is decoupled by several tantalum caps and regulated to +5 VDC by the 7805's. Address selection and buss control are performed by IC's 35 and 36. Pairs of 2114's are chosen by IC 37. Since the 2114 is organized as 1K X 4 it takes two chips to give an 8 bit word. The low order addresses are buffered by IC's 33 and 34. Data lines are buffered by IC's 38, 39, and 40. Data direction is controlled by IC 35.

A memory read is a combination of VMA being low, R/W being high, O2 low, and the selected address of the board being the same as what appears on the buss. A memory write contains the same information with the exception of R/W being low.

TESTING THE RAM BOARD

There are many good memory tests available. Particularly good are those included in your SWTPC documentation. 99% of ALL computer problems can be traced to flakey memory. Therefore you are urged to collect as many memory diagnostics as possible, and run them frequently. fa those

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