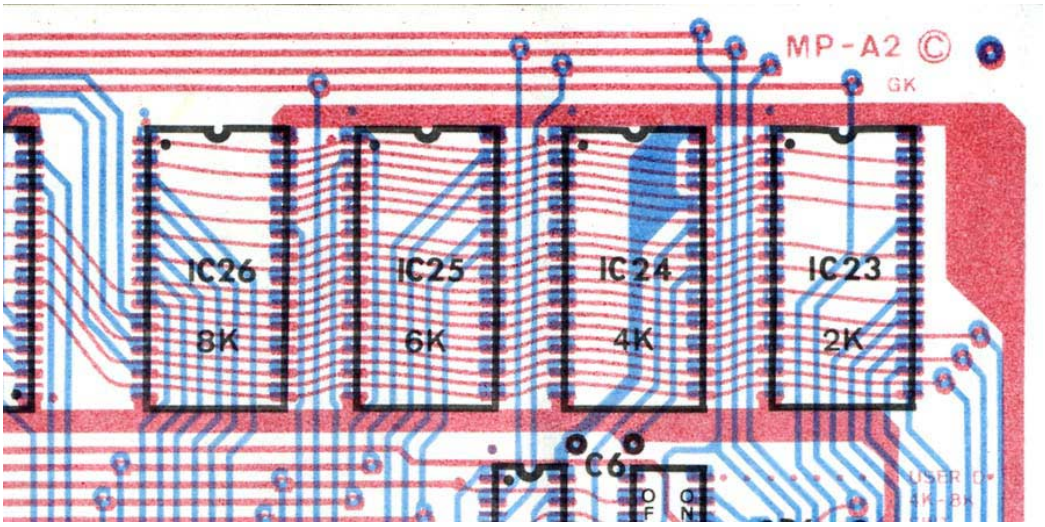
MP-A2 Microprocessor/System Board RAM Modification

The MP-A2 board was designed to hold 8K of Intel 2716 pinout EPROM, PROM or ROM addressed at C000-DFFF or E000-EFFF. With some simple modifications it can hold 8K of 2716 pinout RAMS at A000-BFFF for FLEX 1.0 or 2.0. These modifications allow the board to hold RAM chip but not PROM chips. The PROM IC's are IC23 to IC26. The modifications consist of four changes:

1. Change the connection of pin 18 from ground and jumper it to pin 20 on each IC (IC23 to IC26).
2. Change the connection of pin 21 from +5 volts to R/W.
3. Remove the R/W signal from the chip select circuit
4. Wire the USER D switch to enable the RAM at A000 to BFFF.

Modify Pin 18

The PROG pin of the EPROMS (IC23 to IC26) is connected to Ground. This pin is a chip select on the RAM. You will need to remove ground connection of pin 18 on each IC and jumper it to pin 20.



( ) Cut the foil conductor connecting pin 18 of IC24 to pin 18 of IC23 on the "TOP" side of the board. Make the cut between IC 24 and IC 23.

( ) Cut the foil conductor connecting pin 18 of IC25 to pin 18 of IC24 on the "TOP" side of the board. Make the cut between IC 25 and IC 24.

( ) Cut the foil conductor connecting pin 18 of IC26 to pin 18 of IC25 on the "TOP" side of the board. Make the cut between IC 26 and IC 25.

( ) Cut the foil conductor connecting pin 18 of IC24 to ground trace on the "BOTTOM" side of the board. Make the cut near C6.

( ) Connect a short jumper between pin 18 and pin 20 of IC23 on the "BOTTOM" side of the board.

( ) Connect a short jumper between pin 18 and pin 20 of IC24 on the "BOTTOM" side of the board.

( ) Connect a short jumper between pin 18 and pin 20 of IC25 on the "BOTTOM" side of the board.

( ) Connect a short jumper between pin 18 and pin 20 of IC26 on the "BOTTOM" side of the board.

Modify R/W

The Vpp pin (21) of the EPROMS (IC23 to IC26) is connected to +5V. This pin is a R/W pin on the RAMS. You will need to remove the +5 V connection and connect these pins to the R/W signal.

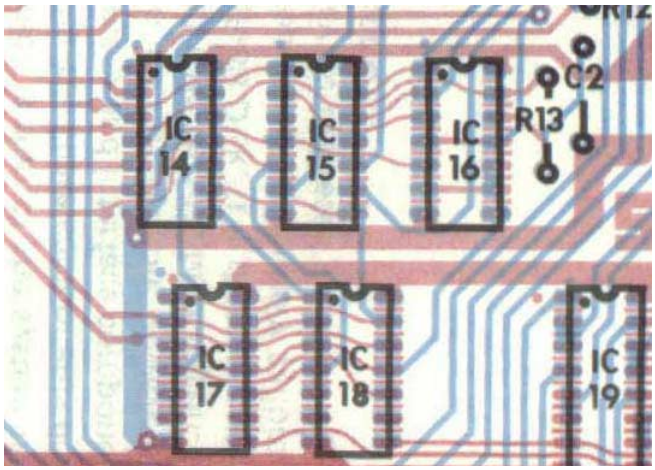
( ) Cut the foil conductor connecting pin 21 of IC24 to +5V on the “BOTTOM” side of the board. Make the cut near pin 21 on IC24. Pin 21 of IC23 to IC26 are connected by a trace on the top of the board.

( ) Connect a short jumper between pin 21 of IC26 and pin 16 of IC3 on the “BOTTOM” side of the board.

NOTE: The R/W signal is also on pin 14 of IC2 but the schematic shows it going to pin 13 of IC2. The schematic is in error.

Modify Chip Select

The EPROMS are only selected on READ so you must disable the R/W signal on the decoding. Isolating pin 5 of IC15 and pulling it to +5V does this.



( ) Cut the foil conductor connecting pin 11of IC14 to pin 5 of IC15 on the “TOP” side of the board.

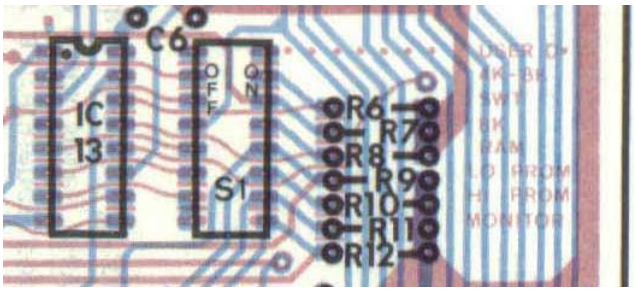
( ) Cut the foil conductor connecting pin 3 of IC18 to pin 5 of IC15, on the “BOTTOM” side of the board. Make the cut near IC15

( ) Connect a short jumper between pin 5 of IC15 and the trace coming from pin 3 of IC18 on the “BOTTOM” side of the board.

( ) Attach a 3.3K ¼ watt resistor between pin 14 and pin 5 of IC15 on the “BOTTOM” side of the board.

Modify Switch

The switch S1 is used to select the address location of IC23 to IC26. On the unmodified board this can be C000-BFFF or E000-FFFF. The User D position of S1 will be for locating IC23 to IC26 at A000-BFFF. The select signal for RAM will be switched to the PROMs



For numbering proposes consider S1 as an IC with the same numbering as IC13.

( ) Connect a short jumper between pin 16 S1 and pin 11 of S1 on the “BOTTOM” side of the board. This connects the ON side of “USER D” to the ON side of “LOW PROM”.

( ) Connect a short jumper between pin 1of S1 and pin 5 of S1 on the “BOTTOM” side of the board. This connects the OFF side of “USER D” to the OFF side of “RAM”.

Switch Settings

USER D		ON	Select 8K RAM at A000 to BFFF
4K-8K		ON	Use all 8K
SWT		ON	Normal function
8K		ON	Use all 8K
RAM	OFF		The 128 byte RAM at A000 must be switched off.
LO PROM	OFF		USER D is selecting the Address
HI PROM	OFF		USER D is selecting the Address
MONITOR		ON	Normal function