

EMAX II MEMORY EXPANSION

Retrofit Instructions

As shown in the charts, a standard Emax II, with initial RAM of 1MB, can be upgraded to a maximum of 7MB. An Emax II, with initial RAM of 2 or 4 MB, can be increased to a maximum of 8 MB of memory. Upgrades are added in 2 MB increments, with this in mind, you first need to determine the amount of memory currently in the unit. To do this, first Erase All Memory (Master, 4), then check *Memory Remaining* (Master, 2). The remaining memory will be displayed in 16 bit *SAMPLES*, not bytes, so double the number to find the amount of memory in bytes.

Tools needed:

- Phillips Screwdriver
- Wire Cutter
- IC Remover
- Needle Nose Pliers

Kit 2216 Memory Board

- (1) 2MB expander board (E-mu p/n AH103)
- (1) Programmed PAL (E-mu p/n IP436)
- (1) Programmed PAL (E-mu p/n IP437)
- (1) Programmed PAL (E-mu p/n IP438)
- (4) 6-32 x 1/4" screws (E-mu p/n HS339)
- (1) Memory Install Diskette 2.1 (Emu p/n ZD403)

Note: the Install disk can only be used once.

Kit 2208 2MB Memory Expansion

- (16)44256 256K x 4 DRAM's (E-mu p/n IM387)
- (1) Programmed PAL (E-mu p/n IP439)
- (1) Programmed PAL (E-mu p/n IP440)
- (1) Memory Install Diskette 2.1 (E-mu p/n ZD403)

Note: the Install disk can only be used once.

Note: You may have extra PAL's. Some memory updates do not require a PAL change.

1 MB Emax II

		Total Memory
1 st add	2216 Memory Board	3MB
2 nd add	2208 2MB Expander	5MB
3 rd add	2208 2MB Expander	7MB

2 MB Emax II

		Total Memory
1 st add	2216 Memory Board	3MB
2 nd add	2208 2MB Expander	6MB
3 rd add	2208 2MB Expander	8MB

4 MB Emax II

		Total Memory
1 st add	2208 Memory Board	4MB
2 nd add	2208 2MB Expander	8MB

THE 6 TYPES OF MEMORY INSTALLATIONS

1MB	3MB	Kit 2216	Uses Expander Board, IP436 PAL, IP437 PAL, IP438 PAL, and Install Disk
3MB	5MB	Kit 2208	Uses 2MB of RAM, IP439 PAL, and Install Diskette Discard IP440 PAL
5MB	7MB	Kit 2208	Uses 2MB of RAM, IP440 PAL, and Install Diskette Discard IP439 PAL
2MB	4MB	Kit 2216	Uses Expander Board, and Install Diskette
4MB	6MB	Kit 2208	Uses 2MB of RAM, and Install Diskette
6MB	8MB	Kit 2208	Uses 2MB of RAM, and Install Diskette

Boot the Emax II with the supplied 2.1 Install disk.

Before doing *anything*, make sure the Emax II is fully functional.

MEMORY TEST

Run a Bank and G-RAM memory test on the unit (**Master, 9, 9**)

Secret Code = 3629 (Emax spelled on a telephone dial)

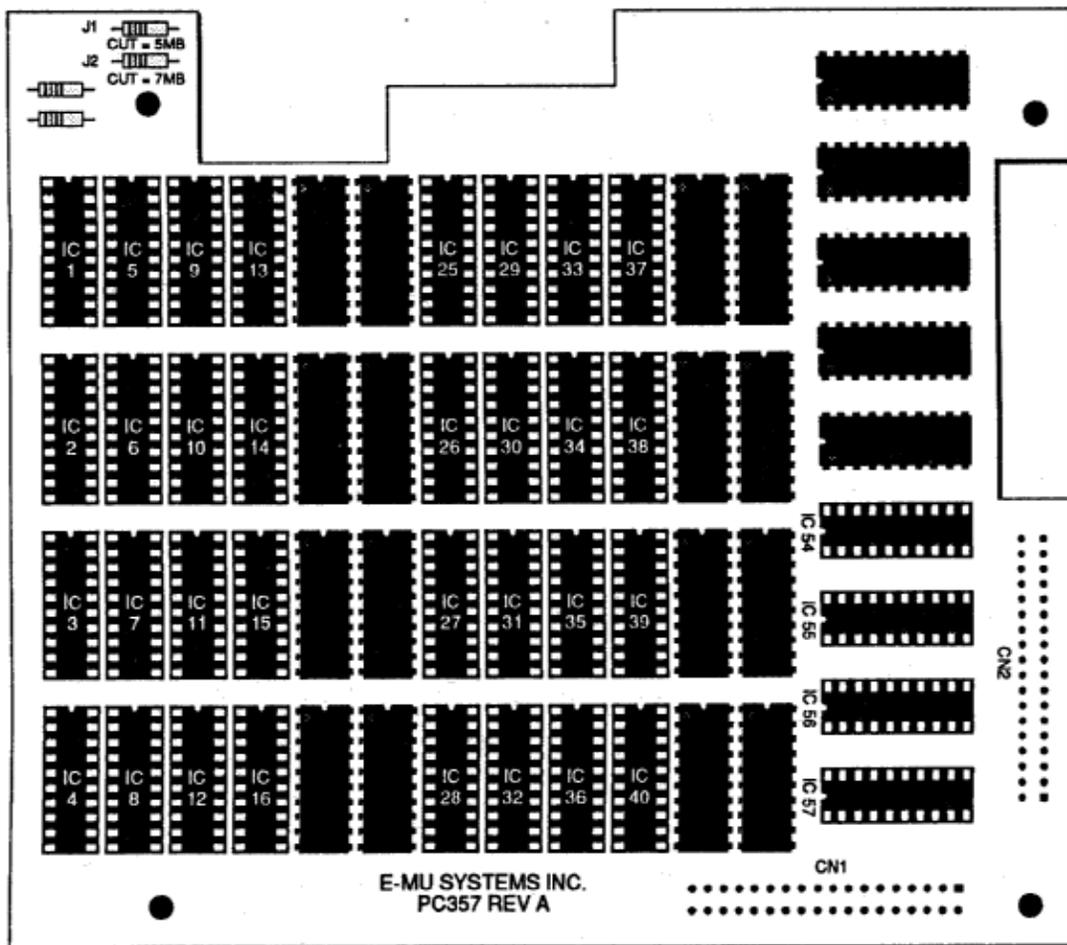
Disassembly

- 1) Disconnect AC, and then place the Emax II upside down on a padded surface. Next, remove the (10) bottom panel screws from the perimeter of the bottom panel. Put the screws aside in a safe place.
- 2) Remove the bottom panel. Be especially careful on rack units not to stress the ribbon cables as you unplug them.

A FEW WORDS ABOUT STATIC

Static discharge from your body has the potential to damage the memory update chips. Before touching any ICs or the memory expansion board, ground yourself by touching the inside of the Emax II enclosure. Do this frequently, especially after moving around, in order to keep your body discharged and the electronic components safe.

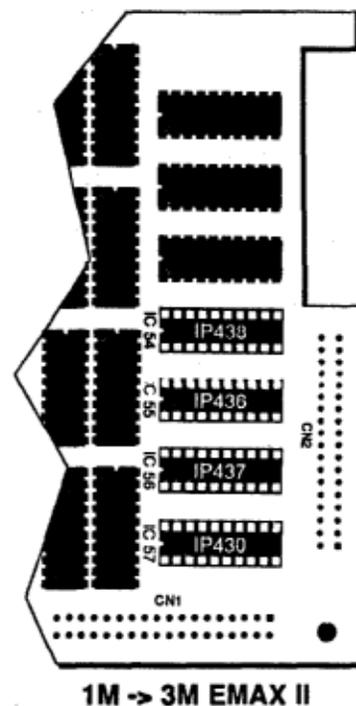
Use the diagram below to identify the proper IC locations.



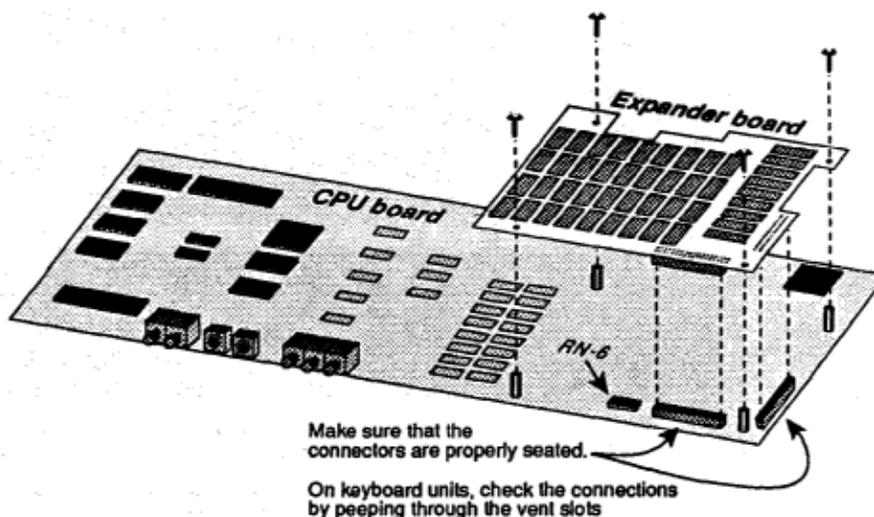
Emax II Memory Expansion Board

1 MB 3 MB UPDATE (Kit 2216)

- 1) Locate resistor pack RN-6 on the rear of the CPU circuit board and remove it.
- 2) On the memory expander board, remove the three PAL's at locations IC54, IC55, and IC56. Replace them with the PAL's IP438, IP436, and IP437 as shown in the diagram at right.
- 3) Install the memory upgrade board to the CPU board. Make sure that connectors CN1 and CN2 are *firmly* seated. There will be an audible click with proper installation. Visually verify that the connectors are correctly mated. Screw down the board to the standoffs with the (4) screws provided.
- 4) Boot up machine using the Install disk provided and run a G-RAM memory test (pg. 2). If the memory test shows an error, check and re-seat the connectors.
- 5) With the Install disk in the drive, select **Master, Special, 8 install Disk**. Display says, "Installing".
- 6) Power down unit and re-boot. Test memory again.
- 7) Check **Memory Remaining (Master, 2)**. Display should show new amount (1,572,820).
- 8) Reassemble unit. (See reassembly instructions.)

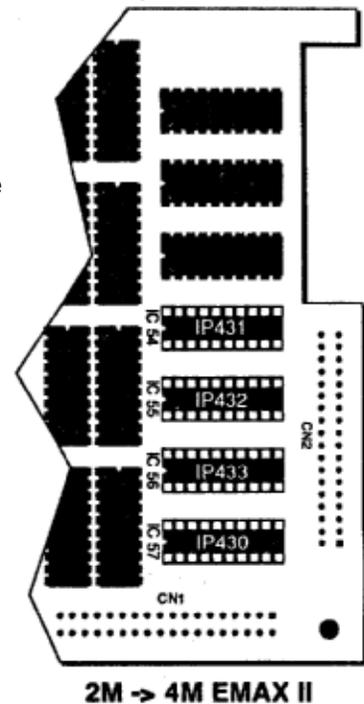


When inserting an IC into a socket, make sure that the pins are straight and the notches are aligned.



2 MB 4 MB UPDATE (Kit 2216)

1. Locate resistor pack RN-6 on the rear of the CPU circuit board and remove it. Check the PAL's on the memory board and make sure that they match the diagram at right.
2. Install the memory upgrade board to the CPU board. Make sure that connectors CN1 and CN2 are *firmly* seated. There will be an audible click with proper installation. Also, visually verify that the connectors are correctly mated. Screw down the board to the standoffs with the (4) screws provided.
3. Boot up machine using the Install disk provided and run a G-RAM memory test (pg. 2). If the memory test shows an error, check and re-seat the connectors.
4. With the Install disk in the drive, select **Master, Special, 8 Install Disk**. Display says, "Installing".
5. Power down unit and re-boot. Test memory again.
6. Check **Memory Remaining (Master, 2)**. Display should show new amount (2,097,108).
7. Reassemble unit. (See reassembly instructions.)



3 MB 5 MB UPDATE (Kit 2208)

1. Remove IC54 from the memory expansion board. Replace it with IP439. Take care not to bend any of the IC pins and make sure that the chip is properly aligned.
2. Install memory chips 9 - 16 and 33 - 40 into the memory expansion board. Again, be sure that no pins are bent under and that all the chips are correctly aligned.
3. Clip out resistor J-1 from expansion board.
4. Boot up machine using the Install disk and run a G-RAM memory test (pg. 2). When the test is complete, the display should say, "Passed".
5. Select **Master, Special, 8 - Install Disk**. Display says, "Installing".
6. Power down unit and re-boot. Test memory again.
7. Check **Memory Remaining (Master, 2)**. Display should show new amount (2,621,396).
8. Reassemble unit. (See reassembly instructions.)

4 MB 6 MB UPDATE (Kit 2208)

- 1) Install memory chips 9 - 16 and 33 - 40 into the memory expansion board. Be sure that no pins are bent under and that all the chips are correctly aligned.
- 2) Boot up machine using the Install disk and run a G-RAM memory test (pg. 2). When the test is complete, the display should say, "Passed".
- 3) Select **Master, Special, 8 - Install Disk**. Display says, "Installing".
- 4) Power down unit and re-boot. Test memory again.
- 5) Check **Memory Remaining (Master, 2)**. Display should show new amount (3,145,684).
- 6) Reassemble unit. (See reassembly instructions.)

5 MB 7 MB UPDATE (Kit 2208)

- 1) Remove IC54 from the memory expansion board. Replace it with IP440. Take care not to bend any of the IC pins and make sure that IP440 is properly aligned.
- 2) Install memory chips 1 - 8 and 25 - 32 into the memory expansion board. Again, make sure that no IC pins are bent under and that all the chips are correctly aligned.
- 3) Clip out resistor J-2 from expansion board.
- 4) Boot up machine using the Install disk and run a G-RAM memory test (pg. 2). When the test is complete, the display should say, "Passed".
- 5) Select **Master, Special, 8 - Install Disk**. Display says, "Installing".
- 6) Power down unit and re-boot. Test memory again.
- 7) Check **Memory Remaining (Master, 2)**. Display should show new amount (3,669,972).
- 8) Reassemble unit. (See reassembly instructions.)

6 MB 8 MB UPDATE (Kit 2208)

- 1) Install memory chips 1-8 and 25-32 into the memory expansion board. Be sure that no pins are bent under and that all the chips are correctly aligned.
- 2) Boot up machine using the Install disk and run a G-RAM memory test (pg. 2). When the test is complete, the display should say, "Passed".
- 3) Select **Master, Special, 8 - Install Disk**. Display says, "Installing".
- 4) Power down unit and re-boot. Test memory again.
- 5) Check **Memory Remaining (Master, 2)**. Display should show new amount (4,194,260).
- 6) Reassemble unit. (See reassembly instructions.)

Reassembly

- 1) On rack units, reconnect the output board cable and make sure that it is plugged in correctly or serious damage may occur.
- 2) Replace the bottom panel and the (10) bottom panel screws around the perimeter.
- 3) Give the unit a complete functional test, including a full-length sample test.

Note: If the output board ribbon cable isn't plugged in, the Transpose LED will remain lit when the unit is powered on.

Problems?

- 1) First of all, read the instructions again, then check your work or better yet have someone else check your work. Check for PAL's in wrong, pins bent under, etc.
- 2) Check the connectors to the expansion board. Make sure they are fully mated. In some cases you may have to apply extra pressure.
- 3) Still not working?
Then it's time to call E-mu Customer Service for assistance at (408) 438-1921.
Telephone hours are 8:00 - 5:00 PST, Monday through Friday.