



Kingston Technology

Memory Module Upgrades for Apple Computers

Introduction:

The memory module or modules included in your Kingston product package are supported in a number of Apple computers. Therefore, it is extremely important you reference the memory installation instructions in your Apple *Technical Information* booklet in conjunction with these instructions.

In most cases, installing your Kingston memory module is simply a matter of removing your computer's top cover and inserting the module into an available memory expansion socket. However, for Apple computers that use the mid-tower chassis (e.g., Quadra 800, 840, Power Macintosh 8500, 9500, etc.), the installation process requires the removal of the computer's main system board. This procedure is quite technical and if you would feel more comfortable having a trained technician perform the installation, you should contact your local Apple Authorized Service Center for assistance.



The following procedures include basic handling and installation instructions for 30-pin, 72-pin, and 168-pin Kingston memory modules. It is highly recommended that you also reference the technical documentation supplied with your Apple computer, which includes detailed step-by-step memory expansion instructions.

30-Pin Memory Installation:



1. Place your computer's power switch in the *off* position and disconnect the AC power cord.
2. Follow the instructions in your Apple *Technical Information* booklet that describe how to locate your computer's memory expansion sockets.
3. To help protect the components inside your computer, you may want to consider using a wrist strap or some other antistatic device, which are available from most computer retail outlets. Otherwise, make sure you first touch a grounded, unpainted metal object to discharge any static electricity that may be stored on your body or clothing. 
4. Handle your new SIMM (Single In-line Memory Module) or SIMMs carefully; do not flex or bend the SIMM. Always grasp the SIMM by its edges.
5. Your computer's memory expansion sockets are located on the main system board. Depending on the model, you will have as few as two or as many as eight memory expansion sockets. For example, the Apple Macintosh Quadra 950 has 16 memory expansion sockets divided into four banks of four. The Macintosh Performa 600CD has four memory sockets divided into one bank of four. Both the Quadra 950 and 600CD computers require modules to be installed in kits of four.



6. As shown in Figure 1, the SIMM and the expansion socket are both keyed. A small plastic bridge in the socket must align with the curved notch in the SIMM. The bridge insures the SIMM can only be plugged into the socket one-way.

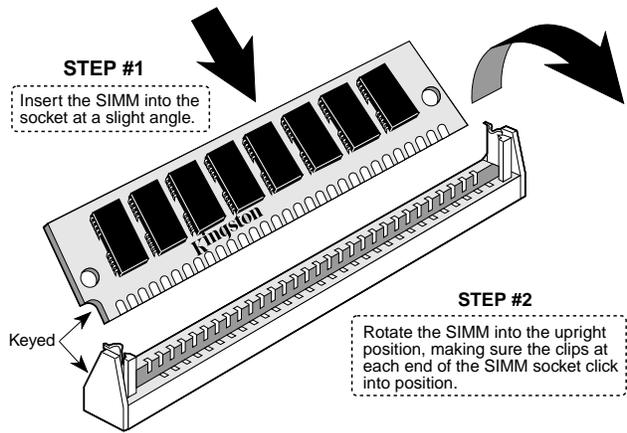


Figure 1

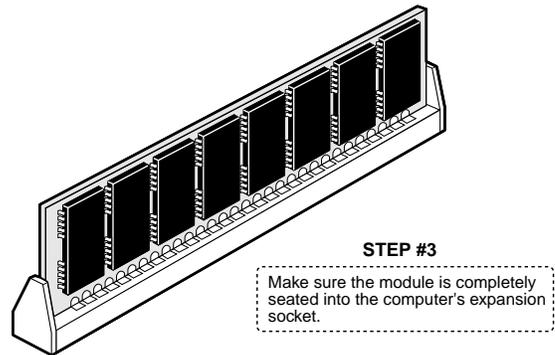
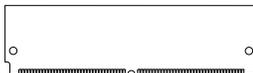


Figure 2

Note: For most installations, 30-pin SIMMs are installed in groups of four—i.e., one memory bank consists of four expansion sockets and each of the four sockets must contain a module of the same capacity and speed. However, some older 16-bit Apple computers, like the Macintosh Color Classic and Classic II, only have a single memory bank, which consists of two 30-pin expansion sockets. In this case, a kit of two 30-pin SIMMs must be installed.

7. Insert the SIMM into the socket at a slight angle. Make sure the SIMM is completely seated in the socket. If you're having problems inserting the SIMM into the socket, stop and examine both the SIMM and the socket; make sure the notch in the SIMM is properly aligned with keyed plastic bridge in the socket. Do not force the SIMM into the socket. If too much force is used, both the socket and SIMM could be damaged.
8. Once you are satisfied the SIMM is seated properly in the socket, rotate the SIMM upward until the clips at each end of the expansion socket click into place.
9. After all SIMMs have been installed, close the computer, plug in the AC power cord, and reinstall any cables that may have been disconnected during the installation process.
10. Upon power-up, your computer will automatically recognize the newly installed memory. To make the best use of your new memory, see your Apple owner's manual for information about the Memory Control Panel, memory allocation, and Apple's virtual memory feature.

72-Pin Memory Installation:



1. Place your computer's power switch in the *off* position and disconnect the AC power cord.
2. Follow the instructions in your Apple *Technical Information* booklet that describe how to locate your computer's memory expansion sockets.
3. To help protect the components inside your computer, you may want to consider using a wrist strap or some other antistatic device, which are available from most computer retail outlets. Otherwise, make sure you first touch a grounded, unpainted metal object to discharge any static electricity that may be stored on your body or clothing.
4. Handle your new SIMM (Single In-line Memory Module) or SIMMs carefully; do not flex or bend the SIMM. Always grasp the SIMM by its edges.



5. Your computer's memory expansion sockets are located on the main system board. Depending on the model, you will have as few as one or as many as eight memory expansion sockets. For example, the Apple Power Macintosh 7100 has four memory expansion sockets, divided into two banks of two. The Power Macintosh 8100 has eight memory sockets divided into four banks of two. Both the Power Macintosh 8100 and 7100 computers require modules to be installed in matching pairs. Some computers, like the Quadra 605, only have a single memory expansion socket, in which case, only one 72-pin SIMM can be added.

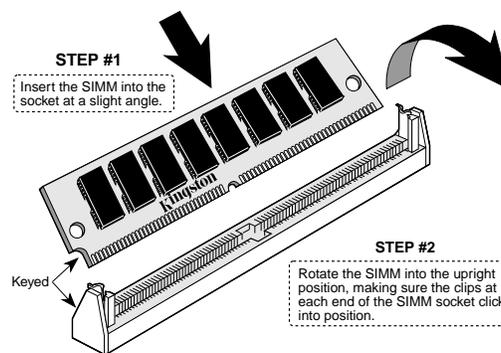


Figure 1

6. As shown in Figure 1, the SIMM and the expansion socket are both keyed. A small plastic bridge in the socket must align with the curved notch in the SIMM. The bridge insures the SIMM can only be plugged into the socket one-way.

7. Insert the SIMM into the socket at a slight angle. Make sure the SIMM is completely seated in the socket. If you're having problems inserting the SIMM into the socket, stop and examine both the SIMM and the socket; make sure the notch in the SIMM is properly aligned with keyed plastic bridge in the socket. Do not force the SIMM into the socket. If too much force is used, both the socket and SIMM could be damaged.

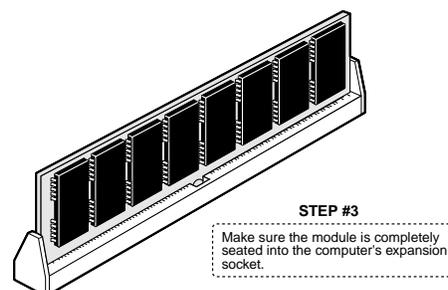
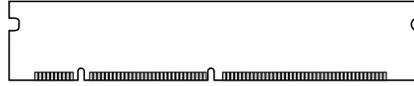


Figure 2

8. Once you are satisfied the SIMM is seated properly in the socket, rotate the SIMM upward until the clips at each end of the expansion socket click into place.
9. After all SIMMs have been installed, close the computer, plug in the AC power cord, and reinstall any cables that may have been disconnected during the installation process.
10. Upon power-up, your computer will automatically recognize the newly installed memory. To make the best use of your new memory, see your Apple owner's manual for information about the Memory Control Panel, memory allocation, and Apple's virtual memory feature.

168-Pin Memory Installation:



1. Place your computer's power switch in the *off* position and disconnect the AC power cord.
2. Follow the instructions in your Apple *Technical Information* booklet that describe how to locate your computer's memory expansion sockets.
3. To help protect the components inside your computer, you may want to consider using a wrist strap or some other antistatic device, which are available from most computer retail outlets. Otherwise, make sure you first touch a grounded, unpainted metal object to discharge any static electricity that may be stored on your body or clothing.



4. Handle your new DIMM (**D**ual **I**n-line **M**emory **M**odule) or DIMMs carefully; do not flex or bend the DIMM. Always grasp the DIMM by its edges.
5. Your computer's memory expansion sockets are located on the main system board. Depending on the model, you will have as few as four or as many as 12 memory expansion sockets. For example, the Apple Power Macintosh 9500 has 12 memory expansion sockets, divided into six banks of two. The Power Macintosh 8500 has eight memory sockets divided into four banks of two. In order to take advantage of memory interleaving, Power Macintosh 9500 and 8500 computers require modules to be installed in matching pairs. If only one module is installed in a bank or if two modules of different capacities are added, memory interleaving will be disabled. Not all models support memory interleaving; the Power Macintosh 7200, for example, only has four memory expansion sockets and modules are installed one at a time.

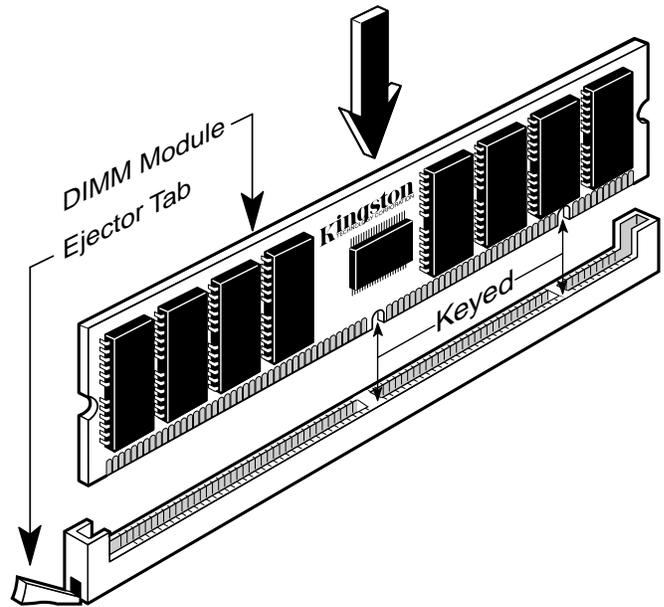


Figure 1. Installing 168-Pin DIMMs

6. Insert the module into an available expansion socket as shown in Figure 1. Note how the module is keyed to the socket. This insures the module can be **plugged into the socket one way only**. Firmly press the module into position, making certain it seats completely into the socket. Repeat this procedure for any additional modules you are installing.
7. Most 168-pin memory expansion sockets have at least one ejector tab similar to the one shown in Figure 1. The ejector tab is used only when you need to remove a module. By pressing down on the ejector tab, the module will be partially ejected from the socket and can then be removed.
8. Once the module or modules have been installed, the computer's top cover can be reinstalled.
9. Plug in the AC power cord and connect any cables disconnected during the installation process.
10. Upon power-up, your computer will automatically recognize the newly installed memory. To make the best use of your new memory, see your Apple owner's manual for information about the Memory Control Panel, memory allocation, and Apple's virtual memory feature.

Contacting Technical Support:

If you have any problems, questions, or comments associated with installing your Kingston memory, please call Kingston Technology Technical Support for assistance. Technical support technicians are available Monday through Friday from 6:00 am to 6:00 pm Pacific Time. Call:

(888) 435-4755 (Voice, Toll Free)

(714) 437-3310 (Fax)

In addition to the technical support numbers listed above, there are a number of other ways to contact Kingston Technology. For details, turn to the next page.

How to Reach Kingston

Product Specifications and Technical Information Services



INTERNET

For access to product information, white papers, file downloads, and Kepler, visit Kingston's WEB site at <http://www.kingston.com>

To contact Kingston on the Internet:

Kingston Sales
sales@kingston.com

Kingston Technical Support
tech_support@kingston.com



CompuServe

Kingston product information is also available on CompuServe.

Just type: **GO KINGSTON**, from any CIS prompt.



RAMfax

By using your touch-tone telephone, call Kingston's 24-hour RAMfax to receive fax information on Kingston's products. Just call **(800) 435-0056** or **(714) 435-2677**.



Bulletin Board Service

For access to technical notes, installation advice, and file downloads, reach Kingston through our BBS. In addition, Kingston's KEPLER (Kingston's Electronic Product Library and Easy Reference) is updated weekly and available through the BBS. The BBS phone number is **(714) 435-2636**.

Kingston's BBS supports up to 14.4 Kbps, No Parity, 8-Data Bits/1 Stop Bit.

Important Phone and Fax Numbers

U.S. Numbers

Corporate:	(714) 435-2600
Corporate Fax:	(714) 435-2699
Domestic Sales:	(800) 337-8410
Networking Sales:	(800) 435-2620
Networking Fax:	(714) 438-1879
Workstation Sales:	(800) 835-2545
Workstation Fax:	(714) 435-2618
Storage Sales:	(800) 435-0642
Storage Fax:	(714) 438-1847
International Sales:	(714) 437-3334
International Fax:	(714) 438-1820
Technical Support:	(800) 435-0640
Technical Fax:	(714) 437-3310

International Numbers

Austria	0660 50 58
Austria Fax	0660 50 71
Australia	613 9690 9699
Australia Fax	613 9696 9192
Belgium	0800 1 92 39
Belgium Fax	0800 1 91 55
Canada	(800) 754-8048
France	05 90 41 00
France Fax	05 90 41 07
Germany	0130 11 56 39
Germany Fax	89 6 35 10 39
Italy Fax	1678 7 44 85
Spain Fax	900 98 49 96
Switzerland	155 46 81
Switzerland Fax	155 04 93