



# Tech Info Library

## MODE32 Version 7.5: Release Notes and Instructions (5/96)

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TOPIC -----

This Document is divided into the following sections:

- "Do I need MODE32?"
- Changes in Version 7.5
- Summary Description
- Installation
- Quick Tips
- Choosing and Changing Between 24-Bit and 32-Bit Modes
- Which Software is 32-Bit Clean?
- How to Obtain Connectix Products

DISCUSSION -----

"DO I NEED MODE32?"

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If you have a Mac II, IIx, IIcx, or SE/30 with System 7 and want to run in 32-bit addressing mode - the answer is yes; MODE32 gives your Mac the ability to run in 32-bit addressing mode under these systems.

If you have any other Macintosh model the answer is no. Your Mac either: (1) has the 32-bit addressing option built into ROM, (2) is incapable of running in 32-bit mode (has a 68000 Processor), (3) is always in 32-bit addressing mode (Power Macintosh, PowerBook 500 series and AV models), (4) is running System 6.

CHANGES IN VERSION 7.5

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WARNING! DO NOT INSTALL MODE32 v1.2 WITH SYSTEM 7.5!

Use of MODE32 version 1.2 with System 7.5 may cause serious file corruption. If you have already installed version 1.2 (the control panel version) into a System 7.5 system - or even if you have already removed it - reinstall fresh System Software. Version 1.2 of MODE32 can cause file resource corruption in System 7.5. The only way to correct the problem is to reinstall a fresh version System Software 7.5. Once you have reinstalled System Software, you can use version 7.5 of MODE32 to gain 32-Bit Addressing capability.

MODE32 version 7.5 introduces a new interface and offers some compatibility

improvements over version 1.2. MODE32 v7.5 has an installer that will automatically remove an old version of MODE32 control panel and replace it with MODE32 7.5 system extension. When installed, the MODE32 7.5 system extension is always enabled; you can access 32-bit addressing in the Memory control panel without having to adjust MODE32.

Connectix confirms that MODE 32 version 7.5 is compatible with System Software 7.5.3.

Other new features:

- Compatibility with the Thread Manager extension (built into System 7.5 - 7.5.3).
- System 7.0.1 Virtual Memory will no longer crashes with certain combinations of NuBus cards.
- Mac II without a 68851 PMMU running System 7.1 or newer won't hang on restart
- Certain hard disks that would previously cause continuous restarts can now be used as the startup disk.
- Improved performance when using virtual memory.
- Compatibility with DiskLock 2.0.
- Improved compatibility with some 68040 accelerators.
- Improved power-on testing of memory beyond 8M.

#### SUMMARY DESCRIPTION

MODE32 is the utility for Mac II, IIx, IIcx, and SE/30 users who would like to use System 7 32-bit mode to access more than 8 contiguous megabytes of real or extended application memory. It is especially useful for pre-press, image processing, desktop publishing, animation, CAD, scanning, other memory-intensive applications, or use of large numbers of applications.

MODE32 enables the use of the standard 32-bit addressing mode of System 7.0. This new mode allows direct access to up to 128 megabytes of standard RAM or up to one gigabyte of extended memory, eliminating the traditional "eight megabyte barrier." 32-bit addressing would normally not be possible on the SE/30, II, IIx, and IIcx systems because of the software built into their ROMs. Those ROMs are only compatible with the less powerful 24-bit addressing mode which was standard in System 6.0. By extending the compatibility of the ROMs to the new 32-bit mode, MODE32 provides full System 7.0 32-bit functionality to these earlier machines.

Some applications and INITs are not "32-bit clean," that is, they are incompatible with 32-bit mode. Such software usually causes your system to crash immediately when run in 32-bit mode. When you need to work with any non 32-bit clean INITs or applications we recommend using Maxima (see How To Obtain

Connectix Products). Maxima extends addressing of your physical memory to 14 megabytes without resorting to 32-bit addressing, so it is compatible with essentially all applications.

## INSTALLATION

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- 1) Double-click on the MODE32 Installer.
- 2) Select the drive in which to install MODE32. By default, the boot drive will be selected.
- 3) Click the Install button.
- 4) Select "Register Now..." and complete the registration information and click OK.
- 5) If you have a modem, click "Send". If you do not have a modem but have a printer, click "Print". If you do not have a printer or modem click "Don't Register" and use the toll-free phone number to register your copy of MODE32 7.5.
- 6) When you see a message saying that installation was successful, click "Restart" to load MODE32 or click "Quit" to return to Finder. You must restart your Mac in order to load MODE32.
- 7) After restart, open the Memory control panel (in the Control Panels folder in the System Folder). A 32-Bit Addressing option is now available. Click the On button and close the control panel.
- 8) Restart your Macintosh.
  - \* NOTE: Not all applications, system extensions and hard disk drivers are compatible with 32-bit addressing. Follow the instructions listed in MODE32 Quick Tips or check with the manufacturer if you have problems using a particular product with 32-bit addressing.

## QUICK TIPS

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- After you install MODE32, remove all the Startup, Control Panel, and Chooser documents (INITs, cdevs and rdevs) that you are not sure are 32-bit clean and Restart your system before you switch into 32-bit mode. You can then go back and add the ones in question one at a time.
- If you have a problem with a particular INIT or application, make sure that you have the most recent version. Many software products that were originally not 32-bit clean are being re-released in a 32-bit compatible version. Contact the publisher for compatibility details.
- If you wish to temporarily disable MODE32 hold down the ESC key (the upper left key on your keyboard) during boot. Your system then automatically launches in 24-bit mode. The 32-Bit Addressing portion of the memory control panel will still be "On," so your system will automatically return to 32-bit mode after the next reboot.

- MODE32 only works on Macintosh II family systems with non 32-bit clean ROMs (II, IIx, IIcx, or SE/30). It is not needed on Macintosh computers with 32-bit clean ROMs (IIci, IIsi, IIfx, LC, and so on), and it does not work on systems that have early ROM designs (128, 512, Plus, SE, Classic, Portable, and so on).
- MODE32 only works with System 7.0 and later. If you want to use 32-bit addressing mode with System 6.0 you need to use the Connectix product, OPTIMA.
- Do not forget to Restart your system after you change your addressing mode.

#### CHOOSING AND CHANGING BETWEEN 24-BIT AND 32-BIT MODES

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Even though your system now has a powerful 32-bit mode, you may still wish to use 24-bit mode from time to time because of its more complete compatibility. Which mode you should use depends on how much memory you need.

##### 32-bit Mode:

The System 7.0 implementation of 32-bit mode allows up to one gigabyte (1024 megabytes) of directly addressable memory. However, the main boards of the modular Macintosh systems are not wired to accept more than 128 megabytes of standard RAM. So you can access up to 128MB of physical memory or 1 gigabyte of extended memory in 32-bit mode.

You should be aware that 32-bit mode is only compatible with "32-bit clean" applications so you may not want to use it unless you need a lot of memory. It will only take one incompatible INIT or application to crash the system in 32-bit mode.

"32-bit addressing mode" means that all 32 bits of each address generated by the processor are interpreted by the Macintosh to be part of the address. It is often confused with 32-bit Color QuickDraw and 24-bit color video monitors, neither one of which is at all related to memory addressing modes. The 32-bit mode on your system will function in the same manner as the standard 32-bit mode on the IIci, IIsi, IIfx, LC, and newer models.

##### 24-bit Mode:

The standard 24-bit mode allows you to access up to eight megabytes of physical RAM or up to 13 megabytes of extended memory. The advantage of 24-bit addressing mode is that it is compatible with the full range of Macintosh software, whereas only "32-bit clean" applications and INITs will run in the more powerful 32-bit mode. So, whenever your memory requirements can be adequately served by 24-bit mode, the increased compatibility of this mode may make it easier to use. By adding MAXIMA, RAM Doubler, or Virtual 3.0 to your system you can access 14 megabytes of physical or extended application memory, respectively, in 24-bit mode. However, any of this memory over eight megabytes will be fragmented, with the result that no single application can use all 13 or 14 megabytes. (In 32-bit mode, all of the memory up to one gigabyte is contiguous so that each application can access all the application memory.) Generally, if eight (or 14) megabytes of application memory is sufficient for your needs, you should consider using 24-bit mode because of its superior compatibility.

## How to Change Memory Addressing Modes

Once you have installed MODE32 you can select 32-bit mode exactly the same way you would on the latest Macintosh systems. Open the standard System 7 "Memory" control panel (under the Apple menu) and click the "On" button in the 32-Bit Addressing portion. (This portion of the panel will only appear if you are using MODE32.) Then Restart your system. You can switch back to 24-bit mode at any time by following the same procedure, clicking the "Off" button instead of the "On" button.

### WHICH SOFTWARE IS 32-BIT CLEAN?

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The current versions of most applications are already 32-bit clean and many more clean versions will be released as System 7 becomes more widely used. However, there are enough incompatible products in use that you may still have to do some work to get your own system ready for 32-bit mode.

Start by running Apple's System 7 Compatibility Checker to see what you are using that may cause a problem. Eliminate anything it identifies as not 32-bit (or System 7) compatible. Then, temporarily strip your system down to the bare essentials, putting the non-critical INITs in a Temporarily Disabled folder, or by turning them off with a 32-bit clean INIT chooser. It is much faster to start with a minimal set of INITs and add things one-by-one than it is to try everything and then eliminate the ones that don't work. (One of the best ways to do this is to start with a fresh System Folder in a 32-bit environment and add Startup, Control Panel and Chooser documents a few at a time.) Reboot and check the functionality of the software by exercising it a little, then add back a few more items.

If you get a crash or can't boot when you try to Startup in 32-bit mode, don't panic. Just reboot, holding down the ESC key (to temporarily switch to 24-bit mode ) and start looking for the incompatible software. If you crashed while the INITs were loading, remember the last one that posted an icon to the desktop. The next one in alphabetical sequence is the most likely culprit. If you were running an application, don't use or even launch it for a while and get the rest of the system running smoothly. Then go back to that application and confirm that it was the problem. When you identify a product as non-32-bit compatible check to see if you have the current version. If not, contact the vendor as you may be entitled to a free or inexpensive upgrade. If they do not have a 32-bit clean version yet, find out if and when they plan to release one.

Even the NuBus and Process Direct Slot (PDS) cards in your machine must be running code which is 32-bit clean. Some NuBus cards have code that gets executed when the machine starts. These problems will exist even with a clean System Folder when you are in 32-bit mode. If you believe that you may have a incompatible NuBus or PDS card, try using a different card with the same functionality (for example another video card), test the suspect card in a 32-bit clean system (IIci, IIsi, IIfx, LC, and newer), or contact the manufacturer.

### HOW TO OBTAIN CONNECTIX PRODUCTS

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To obtain the Connectix products mentioned in this document (Maxima, OPTIMA, RAM Doubler) contact Connectix Corporation. To locate a vendor's address and phone number, use the vendor name as a search string.

Article Change History:

22 May 1996 - Updated references to Mode32 with SSW 7.5.3.

22 Nov 1994 - Added information on how to find Connectix address and phone number.

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