EMPLANT

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WRITTEN BY		December 2, 2024	

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

EMPLANT

1.1 EMPLANT.Guide

E M P L A N T

(Electronic Micro-Processor Level Amiga Native Task)

Software designed and written by Jim Drew and Joe Fenton
Guide written by Mike Fenton

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1.2 Introduction

Congratulations on your purchase of EMPLANT!

Your EMPLANT board has the hardware ability to emulate virtually any computer on the market today, providing a software module is written to handle the operating system.

Please fill out the registration card and return it. Only registered users will be notified of product upgrades and bug-fixes.

If you purchased this product directly from Utilities Unlimited, Inc., you will NOT have a warranty card included in your package, it was filled out for you!

1.3 EMPLANT - Mac Walk-Through

EMPLANT - Mac Walk-Through

So, you just got your EMPLANT and don't know what to do; you looked through the manual and still can't make heads or tails of things. Well, maybe we can clear a few things up here. Let's start with installing the hardware and software.

While talking about the board, I will often refer to the diagram included with this file (Diagram). Please look it over now; perhaps you ought to print it out and have it handy while reading this file.

Warning: Before you handle the board and/or the chips on the board, it's probably a good idea to touch a nearby grounded metal surface before you do so. This will reduce the likelihood of damage to the chips.

Before installing the board, you may wish to make a few changes to the board. Let's start with the jumpers:

Setting the Jumpers

JP1 controls one of the address lines to the ROM SIMM socket; with the jumper set to the left, this line to the SIMM socket is an address line from the computer; when set to right, it is a line controlled by one the interface chips on the board. This line must be set to the right to be used with the current ROM dump program (256KDump).

JP2 is used to optionally provide writing capability to the SIMM socket. If the jumper is set to the left, the SIMM line is pulled up to +5V; if it is set to the right, the line is now a gated write select. If you plug in a MAC ROM SIMM board, this jumper must be set to the left, as MAC ROM SIMMs expect power to be apploed to that line.

JP3 to JP5 are used to provide power to a 28 pin DIP ROM/SRAM, or an address line to a 32 pin DIP ROM/SRAM. JP3 controls the line for the Auto-Boot socket; JP4 controls the two sockets opposite it; and JP5 controls the two sockets opposite it. When a jumper is set to the upper position, power is supplied to the proper pin for 28 pin DIP ROM/SRAMs; use this postion for 28 pin chips (like the initial 8K SRAM supplied in the Auto-Boot socket). When a jumper is set to the lower position, the line is now an address line needed for 32 pin DIP ROM/SRAMs; do not use the setting for 28 pin chips as they will not receive power if you do so; use this setting for 32 pin chips (e.g., 128K x 8 SRAMs).

JP6 is used to indicate to a MAC emulation module which audio output mode the user desires. When set to the upper position, the

emulation module will try to produce only mono audio; when set to the lower position, the emulation module will try to produce stereo audio.

JP7 is used to provide power to SCSI devices that require it. With a short block on the jumper, +5V is provided to the SCSI bus; most SCSI peripherals do not require power, so for these devices, do not have the block on the jumper. If in doubt as to whether a SCSI device needs power, please consult the device's owner's manual or manufacturer.

RCA is not really a jumper block; it is an input for the audio digitizer circuit. So, let's talk about it for a moment. The upper pin is ground and the lower pin is the audio input. The two empty 8 pin DIP sockets are for a LM741 (U1), and a TLC548 (U2). When software is released for the digitzer, additional instructions on the ADC circuit will be included.

Installing the ROMs

Now that we know about the jumpers, we can put various chips on the board. If you put 28 pin ROM/SRAM chips on the board, be sure and set the jumpers as described above. Another concern is where to place the chip in the socket; Diagram 2 shows the proper placement. Always have the back of the chip even with the back of the socket. Remember, the notched end marks the front of the chip. If SRAM chips are used, you will want to put a battery on the board for battery backup-up; a standard, coin-type lithium battery is used (DL2325 or equivalent). SRAMs up to 512K x 8 maybe used. When placing a ROM SIMM onto the board, the chip on the SIMM must face the gold edge connector and the jumpers must be set as described above.

Plugging the Board In

Once the board is setup to your satisfaction and needs, it may be plugged into your Amiga. At this point, you may connect external devices to the board.

Warning: Turn off and unplug the Amiga before you install this board or any internal expansion. Disconnect all your peripherals, as well. If you can, get this board installed by an authorized Commodore dealer or service technician. We will not be held liable for any damages that result from installation.

It may be a good idea to remove the other expansion boards while you install this board, just for testing purposes. If you find that this board works, but not with other particular boards, we may be able to find a solution to the conflict (but we have to know which board is having the problem, first!)

Hooking Up the Serial Ports

For those who have the serial option, serial devices may be connected to the board using the 8 pin mini-DIN connectors (shown as serial port a and b in Diagram 1). For example, to hook up a modem, plug a RS422 to RS232 conversion cable (available at many computer stores) into either port a or port b on the EMPLANT board; make sure that the "empser.device" is in the "DEVS:" directory of the drive on which you are running the Amiga Worbench; set the device driver of your terminal program to "empser.device" (see your

terminal program documentation for how to do this) and the unit to either 0 or 1 depending on whether you have the cable in port a or b respectively.

Connecting the SCSI Devices

Those with the SCSI option can hook up internal or external SCSI devices to the board. The internal SCSI connector is indicated in Diagram 1; be sure to note the position of pin one when connecting the SCSI ribbon. External SCSI devices are connected to 25 pin connector (which also holds the bracket in place). Be sure to have the SCSI device driver in the "DEVS:" directory. More information will be forthcoming when the SCSI driver is finshed.

Now we are ready to install and run the software.

Installation

Insert the MAC II disk and double-click on its icon. A window will then appear. In the window is an icon labeled "HardDisk_Installer". Double-click on this icon and then select the "Proceed" button when the install window comes up.

You may be tempted to copy the software yourself. Kick the habit. It's a good idea to use the installer, instead. The script handles all the little annoyances you would otherwise have to go back and find via trial-and-error. It was designed to install the software on your release disk to your hard drive and setup necessary steps to make the emulation run!

The installer window will always ask a question at the top of the window and expect you to select one of the answer buttons at the bottom. Don't worry, though! At all phases, the installer will help you along and provide information if you so desire.

If you have your rom image ready, place it with the other files. If you need to make one off the EMPLANT board, run the Dump256Kxxxx program and copy the file "ram:testfile" to your EMPLANT directory. You may rename it as you wish. Copy the rom image into the "EMPLANT:ROM_Images" drawer when it is all set to use.

Setting Up the Mac Emulation

You are now ready to run the emulation. If your CPU does not have an MMU, or if you are not sure, you will want to double-click on the 'EC_Launch_MAC' icon. Otherwise, double-click on the icon 'HardLaunch_MAC' (or 'SoftLaunch_MAC' if you are using a SuperKickstart A3000).

If the program comes up saying Hardware Error, please verify that the EMPLANT board is properly inserted into the Amiga; if it is, please call for help.

The first thing to do is to set the main block of memory; click on the Memory button on the screen; a window is displayed allowing the user to set the memory (and types) you wish to use. All memory available for your use is shown; if memory is not shown, it is not usable. Click on OK to go to the main screen; click on Cancel to reset the memory options to the original values.

Now click on Video Drivers. This will present to you two different driver windows. The window on the left contains a scrollable list of usable video display drivers. The window on the right will contain names of video drivers you select. You can select more than one, but for now let's just select one driver. If you want to undo your selection, simply click on the Clear button and select another driver.

Once your video driver is selected, you can obtain information by clicking on its name in the right window. The information about the driver is then displayed; this includes the name, version, video modes available, and the amount of memory needed to allocate to run (if any is needed). Whatever amount of memory this driver requires will be deducted from the amount of system memory you supplied in the Memory window.

Click on OK to exit with the current settings; click on Cancel to restore the initial settings.

Now click on Floppy Drives; all available drives are shown. Select which drives you want to use by clicking on the radio button next to the name of the drive. Interal 0 and Internal 1 can only have one drive each.

Click on OK to exit, or Cancel to reset to the previous settings. If you select Amiga for the Intial DOS, the emulation will not use the drives. (You will have to then go to the Control Window, explained in a later portion of the manual...)

Mass Storage is for customers who wish to use a real MAC formatted hard drive. Select the option 'Use EMPLANT SCSI' if you plan to use a SCSI device plugged into the EMPLANT's SCSI port. If you are not going to have a SCSI device plugged into the EMPLANT's SCSI port, then do not select this option.

Clicking on ROM Image brings up a window where the ROM image may be selected. Click on Select ROM Image to bring up a file requester; you may then select the rom image from anywhere, however, we are trying to standardize things a little and ask that you keep the ROM images in a drawer called, "ROM_Images" located in your "EMPLANT:" assigned area.

Port A Support and Port B Support allow you to select one of the following for each: The Amiga's serial port, the Amiga's parallel port, or the EMPLANT's respective port. (EMPLANT Serial is only available on "Serial" and "Deluxe" models.)

Devices to be used with the emulation can be selected in the Devices menu option. The left window shows all of the devices that can be used with the emulation. The right window shows the devices that you have selected for use with the emulation.

The order that you select the devices is used during the Mac bootup process. It starts with the one you select first and continues until it finds one that boots (floppies always get checked before devices, though).

Clicking on a selected device shows its attributes. Also displayed are the gadgets "Force Write Protect" and "DMA Restrictions." Leave "Force Write Protect" alone for now (it may come in handy, later). "DMA Restrictions" tells the emulation (if you check the box) that the device uses DMA I/O (as opposed to programmable I/O). For example, if the

device is the EMPLANT's SCSI--which is not a DMA device--you would leave the box unchecked. Consult your hard drive controller manual to see if what you have needs DMA restrictions turned on. Click on Exit when you are done.

Click on the Clear gadget to clear the selected devices list. Clicking on Cancel will restore the selected device list to the state it was upon entering the device selection window.

** NOTE ** YOU CAN NOT USE VALID AMIGADOS PARTITIONS (SUCH AS WORKBENCH) AS A MAC DEVICE! THE MAC WILL DESTROY YOUR DATA!

Click on Task Control to set the priority of the emulation. Task in Front/Background refers to the emulation. The higher the priority, the less likely your emulation will encounter possible slow-downs. The task should get at least 30% of the CPU time, in most cases.

Addressing Mode can be either 24 or 32 bit. 32 bit requires System 7.1 or higher. 24 bit mode requires an MMU. To run the 24 bit mode, however, you need to run the "HardLaunch_24" (or "SoftLaunch_24" with a SuperKickStart A3000).

From this window you can also engage Sound Support and Background Refresh settings. Click on OK if you are done or Cancel to reset to the previous settings.

Clicking on Hardware Info will show information concerning the EMPLANT board.

Now, select Misc I/O Control and load "Std_ADB" driver. This gives you the standard keyboard and mouse.

The cycle gadget in the lower right corner lets you select either the Hardware or Software Mouse Emulation. At the moment, you should probably set it to Hardware. Software Emulation allows you to have control over other devices--like light pens and graphic tablets--that act like the mouse, as well as the mouse itself.

Clicking on Configuration allows you to save or load the current configuration. Please note that the configuration that is loaded when the program is run is "S:MACII.config". You may save out configurations under other names, but you will then have to reload them using the Load option.

And now...

Finally, the big moment. Click on Start Emulator. If you have set up everything, you should only have to wait about five to ten seconds before you get the Mac boot screen.

Important Notes

Unless you have run the Mac before, the Mac will boot in black and white as the default mode. Please note that all Mac preferences set by the control panels are saved on shut down to a file called "PRAM.Config", located in your "S:" directory.

The emulation has 38 different error messages possible. You should be able to figure out quite easily what is going wrong from these messages.

If you still have problems, please call the office, or leave a message on the BBS. Please describe the problem, your program settings, and your Amiga system (memory, processor, OS version, etc.).

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