PLUS
WORKS
II

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I. Introduction

Congradulations on purchasing PLUS-WORKS II. With it your Apple II+ or Franklin will be able to run AppleWorks, with all features available. Your II+ or IIe will have the expanded desktop you need with AppleWorks and any popular ram card device, be it Aux-ram or peripheral slot ram. All this with any version of AppleWorks, including the new 2.0 version.

II. HARDWARE REQUIREMENTS

- II+ or compatible -

PLUS-WORKS currently supports the following 80 column displays. Videoterm (with inverse), ultraterm, viewmax 80, franklin, viewmaster 80, magnum 80, wizard 80*, smarterm*, smarterm II, vision 80*, multiview 80/160, M&R Sup'r-terminal* and fullview 80*. The display card must be in slot 3. PLUS-WORKS and AppleWorks both require 64K RAM, therefore, the Apple language card or an equivalent 16K ramcard is required in slot 0. If your computer has the standard II keyboard, the popular game button shift-key modification is required (see back page of manual). Helpful, but not necessary, is an auto repeat device installed on your keyboard. Also, AppleWorks works best with a minimum of two disk drives.

PLUS-WORKS II supports desktop expansion into many peripheral slot ramcards from 64K to 1024K. The card may occupy any available slot. Those supported are all cards from Legend Industries, Titan/Saturn, Abacus, Prometheus, the Big Board, Quadram, Ramex, Orbital disco-ram*, Microtek Q disk*, Flash Card, Apple memory expansion card,Ramfactor, Sprint disk, Flipster, the PCPI Applicard , the Micropro star card and the Franklin ACE 80 CPU card.

- IIe owners -

An Apple Compatible auxillary slot 80 column card or an ultraterm or multiview(slot 3) is required. All auxiliary memory cards are supported including Ramworks, Legend E card, Neptune, Viewmax 80e and Multiram. The Franklin and Laser 512K boards are also supported. Additional destop expansion into peripheral slot ram (from 64 to 1024K) is available to owners of bank-switched ram cards. Note: some bank-switched cards originally designed for use with the Apple II+ will not function with the Apple IIe. Most cards with a motherboard ribbon connector fall into this category.

III. INSTALLATION

All steps are performed in drive 1 (boot drive). If you wish to use AppleWorks on a hard disk , you must first install the patches on a diskette. You may then transer the AppleWorks

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*Requires AppleWorks v2.0, users of AppleWorks v1.0 to 1.3 need PLUS-WORKS-XM

files to a ProDOS subdirectory on the hard disk (/HARD1 for the sider) as described in the AppleWorks manual. For II+ or II owners, the presence of a 16K ram card in slot 0 is assumed. References to "ram card" in the manual refer to additional ram.

A. On a properly configured computer (80 column display installed, set for 40 columns and ram card installed), insert the PLUS-WORKS II disk in drive 1 and turn on the machine.

B. The disk drive starts, quickly stops, and prompts you to insert the AppleWorks 'Startup' disk. Press a key to continue. If the message "UNABLE TO LOAD PRODOS" appears, you most likely inserted the AppleWorks 'Program' disk by mistake. Check the label and restart. Make sure the AppleWorks disk is not write-protected and that it is an unmodified copy of your original AppleWorks disk. (If necessary, consult the DOS, ProDOS, or AppleWorks manual for instructions on how to copy a disk).

C. When you are prompted to insert the PLUS-WORKS disk again, do so, then press a key to continue.

D. After the ProDOS greeting, you will see the "limited support for earlier versions of Apple-Works" message. If you have version 2.0 of AppleWorks you will press [N] if you wish to modify an earlier version of AppleWorks (1.0-1.3) then press [Y]. Note that some of the less popular 80 column cards and ram cards are not supported for earlier versions (see above). Following your selection you are prompted to select from a menu of 80 column display cards. Contact NDS if you have difficulty. Note the selection for IIe/Franklin 2000 and Laser 128 computers.

E. A second 40 column menu will appear asking you to select your ram card. Select the appropriate card. Note the IIe Aux card option. If you have only 64K total choose no ram card. Transwarp owners with a II+ should note that with AppleWorks versions 1.0-1.3 you should choose Auxillary slot card. With AppleWorks version 2.0 choose [No ram card]. Upon making your selection, the appropriate display driver is loaded and the 80 column screen becomes active. If your display switch is manual switch on now. The program prompts you to insert the 'Startup' disk. Press RETURN to continue. IIe owners skip to part G.

F. (II+ or compatibles only) Depending on your version, the program will ask for responses to a few questions. The first is 'keyboard type'. If you have the standard II keyboard with the shift–

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key mod installed press '1'. If your machine is a Franklin Ace 1200 (or newer Ace 1000 with a keyboard that is functionally a 1200) select '2'. If your non-type 2 machine has a full ASCII upper and lower case keyboard, press '3'. If you choose '3', you will be asked to make two selections in order to somewhat customize your keyboard driver. The first option is choice of 'lead–in' key. This is the keypress that emulates the open–apple (♢) key. Choose any non-used control character or function key. The computer will beep if an unacceptable key is entered. When in doubt, use ESC. The hex code for the key pressed will appear on the screen. If you made an error, don't worry, you'll have a chance to repeat the selection sequence. Second, your choice of the DELETE key is requested. The standard delete key (hex 7F) may not be available on your keyboard, but again, you may choose any unused control-key or function key. Note that the left-arrow (control-H) is acceptable. If your II/II+ has been hardware modified with Upper/Lower case (not just the lowercase chip) choose '4' from the keyboard menu.

G.   When you are satisfied with your keyboard choices you are then asked whether a printer patch should be performed. Choose 'no' unless you know for sure that you have printer problems. See Printer difficulties in the troubleshooting section for further details.

   IIe aux slot ram card users - at this time enter the apporpriate card from the displayed list. You then will be asked to confirm [OK?], then, if you have a bank-switched card, indicate its peripheral slot location, otherwise choose 'None'. Upon selection the card size is determined and displayed. If no card is found, you are notified. Recheck your ram card location and try again. Remember that the peripheral slot ram card must be of the"bank-switched" type. Repeated failuire may indicate a faulty ram card or some incompatibility. **Early appleworks versions** - You are offered to dedicate 16K for a desktop accessory (such as Pinpoint) to be installed after PLUS-WORKS is installed.

II/II+ owners - The rest of the configuration is automatic with one exception. You may be requested to indicate the slot which contains the ramcard. Be aware that while slot 0 is acceptable, the 16K required by ProDOS is not available to AppleWorks. Franklin users should use some other slot than 0 unless the top 16K of ram on the motherboard has been disabled. The card must be presently installed for successful configuration.

   Early AppleWorks only - If 256K or more of ram is found, you will be asked to decide on the permanent ram disk option. Responding 'yes' sets this feature up as the default at startup, however, the dynamic 'ram disk' will still be available at runtime. See section B for a complete description of 'ram disk' features. If your intention is to run AppleWorks on a hard disk or unidisk `you must choose no. At the conclusion of the configuration the database expand feature will be offered automatically. If you select not to expand at this time, you may do so later as per instructions at the end of this manual.

I. When the configuration is complete, press reset (or control-reset) to boot the disk. Apple-Works will start and away you go. The alterations to 'Startup' permit it to boot directly on your system from now on. If after using the program, you wish to change your configuration, repeat the procedure using a fresh copy of 'AppleWorks startup.'

IV. USING THE MODIFIED APPLEWORKS - II/II+ & compatibles

The key sequences necessary to achieve a fully functioning AppleWorks balanced with ease of use of the software has been the product of careful consideration and testing. We are confident that a user will be quite comfortable and satisfied with our choices. The following is not a description of how to use AppleWorks and it is assumed that the user is at least somewhat familiar with the operation of AppleWorks and we present only information on transposing the IIe/c keyboard functions.

A. KEYBOARD

PLUS-WORKS has been designed to adapt AppleWorks to several keyboard types in an effort to accomodate the limitations of the II/II+ as well as the versatility of some of the more modern add-ons. What follows is a general description of how AppleWorks functions are selected, and afterward, the special features of each keyboard type are discussed. Note that there may be several ways to select a given function. Please read this material carefully.

1. GENERAL KEYBOARD FEATURES

Open-apple (◌) functions (as described throughout the AppleWorks manuals) are available to you by first pressing the 'lead-in' key (lead-in) keys are discussed further in the individual keyboard sections below), then the desired function key. For example, if you want a <H>ardcopy of the current screen (◌-H), press the 'lead-in' key, then H. When the 'lead-in' key is pressed, an inverse '+' appears at the active cursor position. To return from an inadvertant 'lead-in' press, press an unused ◌ key such as 'Ø' (zero). Use of the game-button as the ◌ key is not supported.

Remapping of certain control keys has yielded a convenient, easy to remember, cluster of keys for cursor movement. While the two arrow keys, <ctrl-J>, and <ctrl-K>, are available as equivalent to the IIe arrows, greater ease of use in cursor movement has been achieved by remapping the ESDX cluster. When holding the control key down, pressing E, S, D, or X gives the corresponding ↑, ←, →, and ↓ cursor movement. The spacial arrangement

of these keys is a simple reminder of their direction of movement. ⌃–arrow functions, useful for moving by word or by page and for adjusting column widths, are obtained either by the 'lead–in' sequence or with <ctrl-A> and <ctrl-F> for ⌃← and ⌃→, and <ctrl-R> and <ctrl-C> for ⌃↑ and ⌃↓. The latter method has the benefit of repeatability since the 'lead–in' is not required. Similarly, the TAB key, <ctrl-I>, has an ⌃ function, alternately obtainable with <ctrl-V>. <Ctrl-G> can be used for DELETE.

We have introduced an alternate character function, <ctrl-Z>, to allow you to generate characters that otherwise are not available on your keyboard, and to allow control characters to be sent without remapping. For example, if you want to enter a <ctrl-A> into a printer set-up string, first, press <ctrl-Z>, then <ctrl-A>. The alternate characters are described in the following table. ⌃ functions of these are obtained with the 'lead–in' sequence.

<Ctrl-Z> then ...	gives	<Ctrl-Z> then ...	gives
>	]	A	Ä
<	[	o	ö
)	}	O	Ö
(	{	u	ü
/	\	U	Ü
!	¡	=	ß
'	'	C or c	<ctrl-\> (hex 1C)
=	~	D or d	<ctrl-]> (hex 1D)
-	‾	E or e	<ctrl-^> (hex 1E)
a	ä	F or f	<ctrl-_> (hex 1F)

Note that the German characters will appear only if a German character ROM is installed, otherwise the alternate characters earlier in the list will appear in their place. Conversely, with the German ROM installed, those alternate characters are not available. The hex codes 1C-1F are required by some printers to enable special features.

2. II/II+ KEYBOARD with one–wire shift–key modification

The 'lead–in' key is <ESC>. To generate a real <ESC> (very important), press <ESC> twice. The ability to read the SHIFT key has allowed for some additional flexibility in obtaining certain ⌃ functions. Simultaneously pressing <SHIFT><CTRL> and E, S, D or X emulates the ⌃-arrow functions. TAB is <CTRL-I>. The DELETE

function (destructive back–space) is handled with a simultaneous SHIFT ←.

Caps–lock toggle is <CTRL-W> or <Ctrl-Z><Ctrl-W> where the <Ctrl-Z> prepress allows transmission of the <Ctrl-W> to AppleWorks if desired. The ^ and @ are obtained by pressing <SHIFT–N> or <SHIFT–P> respectively, either with caps–lock on or after pressing <Ctrl-Z>. Keep that in mind when entering control codes for printer setups (requires ^ to exit). One additional note, ⌂-" (ditto) is obtained with <ESC><SHIFT-7> (').

3. ACE 1200 KEYBOARD

This keyboard has a numeric keypad, which, when activated with a <Ctrl–NUMLOCK>, will deliver an alternate set of control key functions. <Ctrl-NUMLOCK> also deactivates the keypad and restores its numerical functions. We have installed a rational set of AppleWorks functions based on the labels on these keypad keys. The keypad must be active when these functions are desired. The equivalent control codes mentioned below are the actual codes generated by the keypad keys when active. They are included for reference only and can be of some utility to users with programmable keyboards.

The 'lead–in' key is <MENU>. It is keypad-#5 and it is also equivalent to <Ctrl-Q>. The arrow keys at keypad-#8,4,2,6 give the ↑, ←, →, ↓ and are equivalent to <Ctrl-E,S,D,X>. <PREV WORD> and <NEXT WORD>, keypad-#7,9, give the ⌂← and ⌂→, respectively, and are equivalent to <Ctrl-A,F>. These keys are useful for moving left and right by word in the Word Processor and for widening or shrinking column widths. <PREV SCRN> and <NEXT SCRN>, keypad-#1,3, give the ⌂↑and ⌂↓ functions and are equivalent to <Ctrl-R,C>. These ⌂ keypad functions do not require a 'lead–in' press. <DEL CHAR>, kepayd-., is DELETE, equiv. to <Ctrl-G> and <INSERT>, keypad-#0, is ⌂TAB, equiv. to <Ctrl-V>.

4. OTHER FULL–ASCII KEYBOARDS

The 'lead–in' and DELETE keys were selected during configuration. The ramapped control keys described in the General Section above are available to you. If you have programmable function keys, you may wish to define them using the control codes described in the General section and in the section on the ACE 1200. Software caps–lock is not supported. If you have a later model ACE 1000, it may have a keyboard that is functionally equivalent to the 1200, buy without the function names on the keycaps. If you know this to be the case, or if during configuration, pressing <Ctrl-PAUSE> once allows keypad-#5 to give an acceptable 'lead–in' key, then choose keypad-. for DELETE and follow the instructions for the 1200 above.

5. HARDWARE MODIFIED II/II+ with upper/lower case

This selection is essentially the same as the standard II/II+ keyboard. The 'lead–in' key is <ESC>. The DELETE key, however, is <Ctrl-G>. Software caps-lock <Ctrl-W> is enabled and the @ and ^ symbols are available in the same fashion as on the standard II/II+. Keep in mind that all of the remapped control codes, all of the <Ctrl-Z> alternates, and all of the possible 'lead–in' sequences are available to you. A real <ESC> requires two <ESC> presses.

B. 'RAM DISK FEATURES' (Early AppleWorks versions only 1.0-1.3)

AppleWorks is a very large program, all the parts of which cannot be in main memory at the same time. For this reason, the 'Program disk' is called upon frequently to 'overlay' certain portions of memory in response to the user's functional requests. AppleWorks has a built in capability for dynamic storage of program code modules. It stores these modules in unused desktop space. With a sufficiently large desktop, a module need only be loaded once from disk. Subsequent requests are serviced by the desktop storage driver. The user's data, of course, has the highest priority and as the data grows, the available desktop space shrinks and modules are removed. This will force program disk access at a later time. With this in mind, it is apparent that a larger desktop represents not only greater space for data, but a savings in time when moving between different sections of the program. The following are descriptions of the two options available for further reducing or eliminating program disk access for ramcards of 256K or greater.

DYNAMIC 'RAM DISK'

With this option, the user elects to store all of the modules in the free desktop space at start up time. This procedure takes a bit of time to execute, but afterward, disk access is dramatically reduced. It is, however, not completely eliminated, and the 'program' disk must be left in the drive.

This feature is automatically enabled with 256K or larger ramcards, but will not function unless specifically called for at startup time. To select this option, do the following. During the AppleWorks startup, when prompted to insert the 'AppleWorks Program' disk, insert it in the drive and press <SPACE> instead of <RETURN>. Enter the date as usual and press

<RETURN>. The module transfer will begin and take approximately 75 seconds (early versions >2 min.) to complete.

This feature has limited utility and most user's will find the long startup time annoying. However, if AppleWorks is started early in the day and utilized for various purposes throughout the day, this feature is, indeed, useful.

PERMANENT RAM DISK (not available for lle aux ram cards)

This option is a <u>real</u> ram disk. It partitions the memory on the ram card into usable desktop space and a pseudo disk drive. The obvious disadvantage of this option is the loss of 136-144K of desktop space, but it does have two advantages over the dynamic 'ram disk'. One is loading time. You only have to wait 20 seconds after entering the date before reaching the main AppleWorks menu. The other is that drive one is now free! Chances are you have more data than can fit on a single diskette. Now you can swap less often.

The dynamic 'ram disk' is still an option that can be made at startup time. The same instructions apply as described above and the full desktop size is restored. This can be useful in temporarily expanding the desktop for special needs, but it is also useful for updating the program disk defaults, ie. printer setups, default disk drive, etc. Choices make while the permanent ram disk is operating will not be "remembered" on the startup disk. The date, however, will be. Once you have configured the program disk to your hardware and to your style, you'll seldom need to update it.

V. DATABASE EXPANSION UTILITY (Early AppleWorks versions only 1.0-1.3)

A database expansion is included on the PLUS-WORKS disk. A system program called DBEXP will alter your AppleWorks disk to allow 4,222 database records. You may have performed this operation at configuration time but it can be performed separately. To run this program boot your configured AppleWorks disk. If you have the permanent ram disk installed you must <u>enable the dynamic ram</u> disk by pressing the space bar at startup. Otherwise the patches will be made to your ram card instead of the program disk. Once the main menu is up select the quit function and if the screen goes blank, reset. Place the PLUS-WORKS disk in any drive and enter /PLUSWORKS2 as the prefix and DBEXP as the application and follow the instructions. Note that there is a loss of 8K from the desktop when this option is selected.

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VI. TROUBLESHOOTING

Configuration difficulties that result in the "ProDOS error $XX" message may be remedied by consulting the partial list of errors below. Many of the errors are the result of the wrong disk being in the drive at that particular time. One frequent source of errors is the attempt to configure an AppleWorks disk that is not a true copy of an original. Pre-release versions and Pinpoint or Ramworks modified copies WILL NOT WORK!! Your most reliable source for AppleWorks is your dealer.

A. ProDOS Error Codes

$27 I/O Error
$28 No device connected
$2B Write protected
$2E Volume switched
$44 Nonexistant path
$45 Volume not mounted
$46 File not found
$4E Access error
$51 File count bad
$52 Not a ProDOS disk
$53 Bad volume bit map

B. Printer problems

Printer difficulties are AppleWorks problems, not PLUS-WORKS problems. However, we recognize the fact that Apple Computer is not going to assist you since AppleWorks is not supposed to work at all on your machine. The following is a guide to trouble shooting printer problems. We hope it is helpful.

1. CONFIGURE YOUR PRINTER! Usually, nothing will print correctly with the default selections. Read the sections on printing (Ch. 13 & Appendix B) in your AppleWorks manual.

2. If your printer does not appear on the list of supported printers don't assume that you know which one to choose.

Choose 'Custom printer' for yours and 'remove' the Imagewriter and Apple DMP. Make sure that your printer is selected as the ⌘-H printer. Come back later to install the special codes (section 5 below).

3. Concentrate on getting an accurate screen dump with ⌘-H. If the printer doesn't advance or if it skips a line after each one it prints go back to the printer set-up menu and reverse the line feed setting. If you get nothing and the cursor is still active see section 6 below. If your dump starts a few spaces over and/or prints 80N, it means that your printer interface is not recognizing the <ctrl-I>8ØN set-up string. If that's happening, then the rest of your dump is likely to also be quite strange. YOU MUST FIX THIS! If the program hasn't crashed yet, it will. Some interface cards only work properly if they think they're working with Applesoft Basic. As a result, many of the characters that AppleWorks sends are interpreted in an unpredictable way. Perform the PLUS-WORKS configuration over again and choose 'Y' for the printer patch option. This usually does the trick for the GRAPPLER and other similar 'graphics' cards. If you have AppleWorks versions 1.0 or 1.1, the printer patch also replaces athe set–up string with <ctrl-I>ØN. This will help you in the future when you try to print wider than 80 columns. Later versions give you the option of installing your own interface set-up string, so if you're still having problems, go to your dealer and get a newer version of AppleWorks and install a set–up string that, according to your printer interface manual, will turn off the screen echo and inhibit the card from issuing carriage returns. Don't go on until you have an accurate dump.

4. Set–up strings are important for printing wider than 80 columns. With ⌘-O, you can use the SC option in the database and spreadsheet to put in <ctrl-I>nN (n=Ø-255), but you may have difficulty printing wider than 80 columns in the wordprocessor unless you have AppleWorks version 1.2 or 1.3. They allow you to enter your own set-up string in the main menu printer info section.
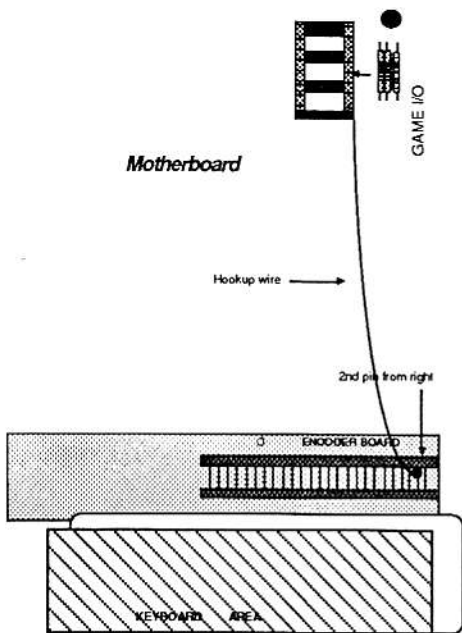
5. ⌘-P printing. If you're getting wierd things at the beginning of each line, you've chosen the wrong printer type. Even if your printer goes buy the name you chose or swears ultimate compatibility, don't knock yourself out - set up a custom printer. If your Epson printer won't stop underlining, subscripting, or superscripting, forget it. Apple made a mistake. Set up a custom printer. You'll need your printer manual.

The AppleWorks reference manual Appendix B will help. Put on caps–lock. Enter your printer codes for each function. SHIFT-N with caps-lock on gives you "^" for exiting each string entry. If you have an Okidata and need the hex codes 1C, 1D, 1E, and 1F, remember, <ctrl-Z> C, D, E, F (not on IIe). If you have an Epson, don't make the same mistake Apple did, when you need 'n=0', its not "0" it's <Ctrl-@>.

6. Dead printer? Is it switched on? Does it say its printing, but its not? If it works   properly with Basic, we can fix it. Give us a call.

PLUS-WORKS REFERENCE CHART

AppleWorks function	II/II+ w shift-key mod	Ace 1200	Full ASCII	U/L II+(hardware mod)
⌘	ESC	Menu keypad -#5	User defined	ESC
↑	Ctrl-E	keypad-#8	Ctrl-E	Ctrl-E
←	Ctrl-S	keypad-#4	Ctrl-S	Ctrl-S
→	Ctrl-D	keypad-#2	Ctrl-D	Ctrl-D
↓	Ctrl-X	keypad-#6	Ctrl-X	Ctrl-X
⌘↑	Ctrl-R Shift-Ctrl-E ESC, then Ctrl-E	keypad-#1 PREV SCRN	Ctrl-R Lead-in, then Ctrl-E	Ctrl-R ESC, then Ctrl-E
⌘←	Ctrl-R Shift-Ctrl-S ESC, then Ctrl-S	keypad-#7 PREV WORD	Ctrl-R Lead-in, then Ctrl-S	Ctrl-R ESC, then Ctrl-S
⌘→	Ctrl-F Shift-Ctrl-D ESC, then Ctrl-D	keypad-#9 NEXT WORD	Ctrl-F Lead-in, then Ctrl-D	Ctrl-F ESC, then Ctrl-D
⌘↓	Ctrl-C Shift-Ctrl-X ESC, then Ctrl-X	keypad-#3 NEXT SCRN	Ctrl-C Lead-in, then Ctrl-X	Ctrl-C ESC, then Ctrl-X
TAB	Ctrl-I	TAB	Ctrl-I	Ctrl-I
⌘TAB	Ctrl-V Shift-Ctrl-I ESC, then Ctrl-I	keypad-#0 INSERT	Ctrl-V Lead-in, then Ctrl-I	Ctrl-V ESC, then Ctrl-I
DELETE	Shift←	DEL CHAR	user defined	Ctrl-G

Motherboard

GAME I/O

Hookup wire →

2nd pin from right

ENCODER BOARD

KEYBOARD AREA

SHIFT KEY MODIFICATION

The shift key mod allows you to use your Apple II keyboard like a typewriter and is required to run AppleWorks with PLUS-WORKS. The modification is not required for full ASCII keyboards.

To install the modification follow these instructions. Refer to the drawing to the left.

1. Turn off the computer and remove the top.

2. Standing in front of the computer, note the game paddle port in the far right corner on the motherboard.

3. Insert small hookup wire into 4th hole on right side counting from keyboard.

4. Bend over computer and look under the keyboard. Note the 25 pins under the right side of the computer on the encoder board.

5. Attach the other end of the wire to the 2nd pin from the right and you have completed the modification. The mini clip leads from Radio Shack (part no. 278-016) work well for the modification (only one of the two clips is needed). You can also use plain wire with an alligator clip.

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