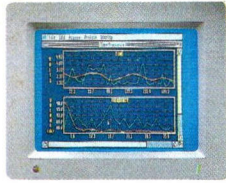


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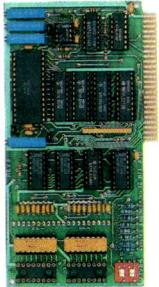
*As seen through the advertisements
run in A+ & inCider Magazines*



Bring real world data to your Apple.

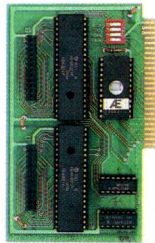
12 Bit, 16 Channel Programmable Gain A/D Monitor flow, temperature, wind speed and direction, humidity, light intensity, pressure, RPM, soil moisture and many other conditions.

Our complete 12 bit A/D converter has 16 single-ended channels, 9 programmable full scale ranges from ± 10 volts to ± 25 MV. Any of the 16 channels can have any range at any time. Other features include very fast (25 MS) conversion time and a user connector with +12 and -12 volts for powering your sensors. **\$279**



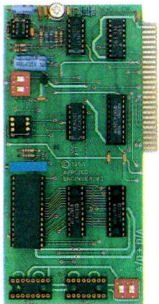
I/O 32

Set up a home burglar alarm, digital joystick or directional sensor, or use with relays to turn on lights, sound buzzers, start motors, control tape recorders and printers. All four 8-bit ports can be inputs or outputs. Inputs can vary from simple switches to high-speed logic. Onboard firmware makes programming easy. **\$89**



8 Channel A/D & 8 Channel D/A A/D specifications include fast conversion (.078 MS per channel) and totally transparent process (looks like memory). Wide range of user-programmable input ranges and continuous channel sequencing.

D/A has on-board output buffer amps able to drive 5 MA, totally transparent process, fast conversion (.003 MS per channel) and user-programmable output ranges of 0-5 volts and 0-10 volts. **\$199**



Signal Conditioner External 8 channel conditioner designed for both A/D converters and allowing almost any gain or offset. For example: an input signal varying from 2.00 to 2.15 volts or from 0-50 mV can easily be converted to 0-10V output for the A/D. Conditioner can be powered by your A/D or from an external supply. Large bread board area. **\$79**

Order today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.

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Before you spend anything on peripherals for your Apple



Spend absolutely nothing on this.

Before you add another peripheral to your Apple, bring home the new Applied Engineering catalog. You'll find the most complete collection of Apple, Laser and Franklin peripherals anywhere.

We've combined a great deal of information in the new catalog. Complete and thorough descriptions of more than a hundred Apple compatible products clearly written in plain English even beginners can understand. Plus loads of technical information and specifications even the most advanced users will appreciate.

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Why we make them where we make them.

Applied Engineering's products are made in America. Our main competitor's are manufactured in the Orient. We don't make ours in the U.S. out of habit or by accident.

There are patriotic reasons like doing something to favorably affect the trade imbalance and keeping American money in America.

There are also some very sound reasons why "Made in USA" makes a good deal of sense - to us as manufacturers and to you as our customers.

Quality control. We firmly believe that by manufacturing in America we can maintain better quality control by having a shorter communications pipeline between our engineering, technical support and production staffs.

Customer Service. Our business is one of continuous, close contact with our customers . . . often working with you on new ideas; always offering advice and technical support for the optimal use of our products. We're much better able to maintain that closeness by making our products here.

Flexibility. By manufacturing here, we can more quickly adapt to the Apple market's rapidly changing conditions: responding to

sudden demand, avoiding excessive inventories, utilizing available capital more efficiently.

Eight years ago, we began as a tiny garage operation, not unlike a couple of now-famous friends. Today, we have more than 185 products in our line, and Applied Engineering is universally recognized as the industry leader.

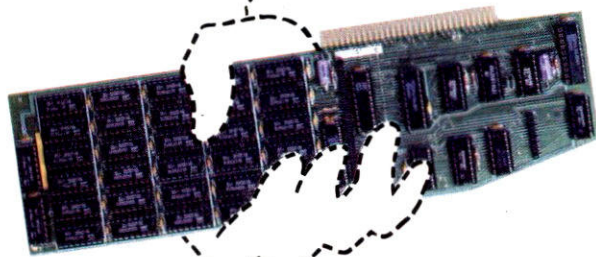
Applied Engineering's products are operating today from the White House to the Wozniak house. From helping the Department of Defense and NASA to helping save the whales off San Diego.

It was no accident our success story happened in America. We Americans may not have a monopoly on good ideas, or even technological innovation, but we DO have an environment in which a couple of folks with a good idea can make it work.

We're grateful for that. And today, on America's birthday, we wanted you to know.



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Don't buy a memory today from a company that may be a memory tomorrow.

Most of the companies making memory boards three years ago have gone out of business. That's why it pays to think not only about what you're buying, but whom you're buying from.

First, what happens if something should fail on the board? Or you just can't get it to work? If the company that sold it isn't there to support it, your board becomes a rather unattractive paperweight.

And your warranty — wastepaper.

What about compatibility? Software companies simply don't support expansion boards from defunct companies. And upgradability, when it comes time to add extra memory?

At Applied Engineering, our seven years of single-minded devotion to the Apple have paid off. Today we innovate and sell more Apple expansion boards than anyone else — including Apple

Computer. That's why you know we'll always be here to honor our five-year warranty. To offer you product upgrades. Or just to answer a question.

So stick with Applied Engineering. And let all your memories be good ones.

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A Comparison Between the #1 Maker of Apple Memory Cards (Applied Engineering) and the #2 Maker (Apple Computer)

FOR THE IIc			FOR THE IIgs			FOR THE IIc		
	RamWorks III®	Apple's™ Card		gsRAM™ gsRAM Plus™	Apple's™ Card		Z-RAM Ultra™	Apple's™ Card
Maximum Desktop	3017K	1012K	Maximum Desktop	8000K	1012K	Compatible with All IIc's	YES	NO
Maximum Number of Records in Database	22,600	6350	Maximum Number of Records in Database	22,600	6350	Maximum Desktop	727K	1012K
Maximum Number of Lines in Word Processor	22,600	7250	Maximum Number of Lines in Word Processor	22,600	7250	Maximum Number of Records in Database	22,600	6350
Maximum Clipboard Lines	2042	255	Maximum Clipboard Lines	2042	255	Maximum Number of Lines in Word Processor	22,600	7250
Autoloads All of AppleWorks	YES	NO	Autoloads All of AppleWorks	YES	NO	Autoloads All of AppleWorks	YES	NO
Multiple Disk Save	YES	NO	Multiple Disk Save	YES	NO	Multiple Disk Save	YES	NO
Built-in Printer Buffer	YES	NO	Built-in Printer Buffer	YES	NO	Built-in Printer Buffer	YES	NO
Compatible with All Versions of AppleWorks	YES	NO	Displays Time & Date on AppleWorks Screen	YES	NO	Compatible with All Versions of AppleWorks	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO	Time and Date Macros	YES	NO	Displays Time & Date on AppleWorks Screen	YES	NO
RGB Option	YES	NO	3.5 Disk Cache	YES	NO	16 Bit Co-Processor Port	YES	NO
16 Bit Co-Processor Port	YES	NO	Built-in Hi-Res Diagnostics	YES	NO	Built-in Hi-Res Diagnostics	YES	NO
Built-in Hi-Res Diagnostics	YES	NO	Memory Expansion Port	YES	NO	Built-in ProDOS, DOS 3.3 Clock	YES ¹	NO
Memory Expansion Port	YES	NO	ROM Expansion Port	YES	NO	Built-in CP/M Capability	YES ²	NO
80 Columns Built-in	YES	NO	Number of RAM Banks	6	4	Maximum Total Functions	5	1
Maximum Total Functions	6	1	Maximum Memory on Main Card	1.5 or 6 MEG	1 MEG	Software Standard	YES	YES
Software Standard	YES	YES	Software Standard	YES	YES	Made in	USA	Singapore
Made in	USA	Singapore	Made in	USA	Singapore	Warranty	5 years	90 days
Warranty	5 years	90 days	Warranty	5 years	90 days			

Apple makes good peripherals for their computers. Perhaps that's why they sell more monitors, printers, disk drives and other accessories for their computers than anyone else. Well, almost anyone else. You see, Applied Engineering is the only company to outsell Apple in the peripheral business. In fact, according to several independent studies we outsell them 2 to 1. Why? Are Apple's memory cards not up to par? No, actually they're just as good as their other peripherals, it's just that ours are a generation ahead. And we outperform all other memory cards in a similar way.

One look at the chart above will tell you why most Apple owners choose Applied Engineering when they want to

expand their Apple's performance.

You can find the number 1 memory cards for the Apple at over 2,000 Applied Engineering dealers worldwide. Call 214-241-6060 for the dealer nearest you or to place an order.

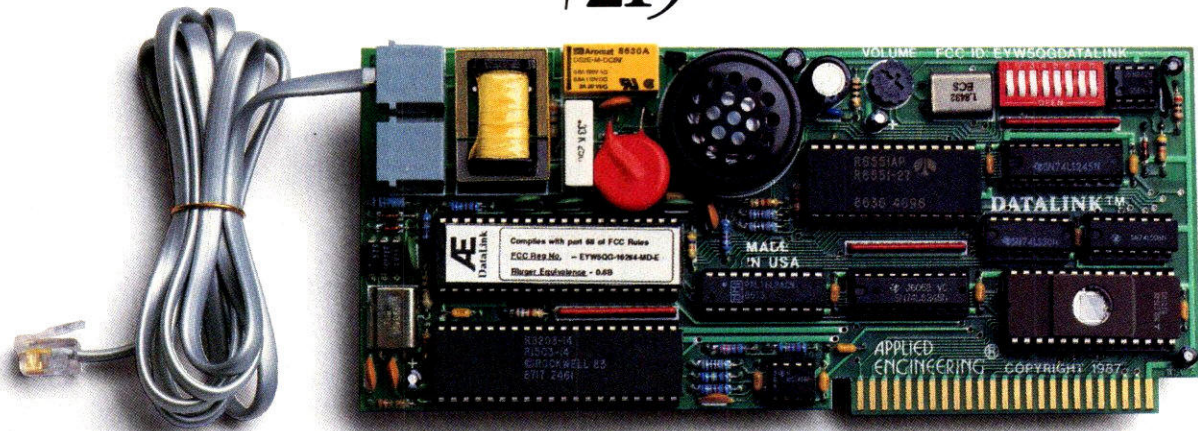
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1) Only on Ultra 2 or 3, 2) only on Ultra 3

Global communications. Down-to-earth price.

\$219



Introducing the DataLink™ modem.
Get instant access to networks and databases
— plus network memberships and discounts worth \$177.95!

Now you can tap into a world of information — without draining your resources. Our DataLink™ modem lets your Apple IIGS, IIe or II+ communicate with other computers, download free software from networks and bulletin boards, access database services and more. For a remarkably low price.

The world at your fingertips.

With the DataLink modem, you'll be able to draw information from thousands of databases. Send and receive electronic mail — even overseas. Join clubs and bulletin boards to exchange software or solve computing problems with other Apple users. Download free public domain software. And share files with personal computers and mainframes.

There's nothing missing on DataLink.

Unlike the Smartmodem®, DataLink comes with its own easy-to-use communications software in ROM and on disk that supports macros, file transfers, on-line time display, data capture and datascopes mode. The software also allows you to store hundreds of phone numbers for auto dialing and log on.

Because DataLink is 100% Super Serial Card compatible, you can also run virtually all other communication software, including Point-to-Point, Apple Access and ASCII Express, to name a few.

The compact design allows DataLink to fit in any slot — including slots 1 and 2 of the IIGS with a cooling fan installed. DataLink operates at 1200 or 300 baud. Built-in diagnostics check for accuracy of data transmission, and DataLink lets you track the progress of calls either electronically or via an on-board speaker.

Introductory offers from popular networks included.

When you purchase DataLink, you'll get a fee-waived membership to The Source worth \$49.95. \$60.00 worth of free on-line time from NewsNet. A free \$50.00 subscription to the Official Airline Guide. And a free subscription to the GENie network worth \$18.00!

	Applied Engineering DataLink	Hayes® Smartmodem 1200A
Price	\$219	\$349
Max. transmission rate	1200 baud	1200 baud
Warranty period	5 years at no charge	2 years or 4 years for \$75
Software included	YES	NO
Hayes AT command set	YES	YES
Help screens	YES	NO
On-board telephone jacks	YES	NO
Fits any slot (even with fan)	YES	NO

Smartmodem is a registered trademark of Hayes Micro Computer Products.

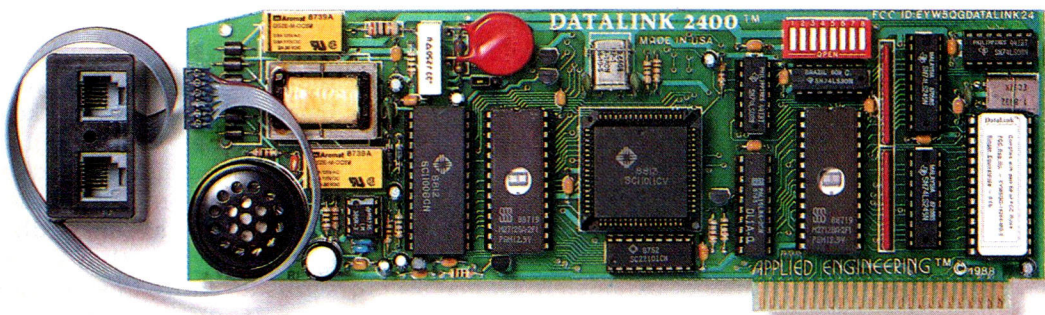
Order today!

To order or for more information, see your dealer or call Applied Engineering today, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 6¼% sales tax. Add \$10.00 outside U.S.A.

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The new DataLink™ 2400 modem from Applied Engineering, it's a lot more than just twice as fast.

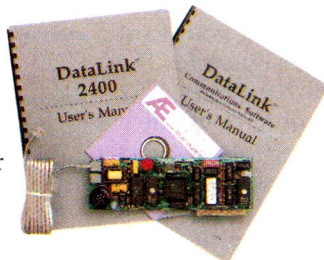


Applied Engineering's new DataLink™ 2400. Simply put, the finest modem on the market for your Apple IIGs, IIe or II+.

Bring home a world of information . . . from up to the minute flight information to whole libraries of resource materials. Even download free software and games.

Twice the speed.

At transmission speeds up to 2400 bps (bits-per-second), Applied Engineering's new DataLink 2400 is capable of putting text on the screen faster than the human eye can follow. That means you can capture a great deal more material in less time than with 1200 bps modems. And *unlike other modems*, the DataLink 2400 comes complete with powerful, easy-to-use communications software.



Complete communications software included.

Both our new DataLink 2400 and our DataLink 1200 modems feature AE's exclusive communications software—on disk and in ROM—everything needed to get you immediately up and running. Our powerful DataTerm software for the IIGs and IIe supports VT-52 screen emulation, macros, file transfers, on-line time display, recording buffer and more. It even stores hundreds of phone numbers for auto-dialing and log on. And for II+ and 64K IIe owners, our OnLine 64 software has many of the same powerful features.

Worldwide compatibility.

The DataLink 2400 is fully compatible with Bell 103 and 212 protocols, as well as European protocol CCITT V.22 BIS, V.22 and V.21. It operates at varying transmission speeds from 0-300, 1200 and 2400 bps.

The new 2400, like our best-selling DataLink™ 1200, carries a full five year warranty and comes complete with two modular phone jacks for data and voice calls, a thoughtful feature that means fewer wires to connect. We also include an extra long telephone cable, in case your computer is across the room from your telephone jack. You can track the progress of calls either electronically or via on-board speaker. And built-in diagnostics reliably check transmission accuracy.

Packed with important features:

- Non-volatile memory for modem configuration
- Full Hayes AT compatibility
- Point-to-Point, ASCII Express, Access II compatibility, in addition to AE's included DataTerm and OnLine 64 software.
- Super Serial Card "Front End" for highest software compatibility (unlike others)
- Adaptive equalization and descrambling
- Hardware configuration for DSR and DCD
- PC Transporter (MS-DOS) compatibility
- FCC certified design

\$204.90 in freebies.

We also throw in a nice collection of goodies—a free subscription to the GENie network worth \$29.95, \$60 of free on-line time from NewsNet, a free \$50 subscription to the Official Airline Guide and a fee-waived membership to The Source worth \$49.95 plus \$15 of free on-line time.

That's \$204.90 worth of free memberships, discounts and on-line time when you purchase the powerful DataLink 2400 at **\$239**.

DataLink 1200 reduced.

Loaded with all the features of the new 2400, (except CCITT, DSR/DCD and non-volatile ROM configurations) our 1200 bps DataLink modem, complete with software and freebies, is an affordable alternative at only **\$179**.



DataLink 1200..... **\$179**
DataLink 2400..... **\$239**

Order today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.

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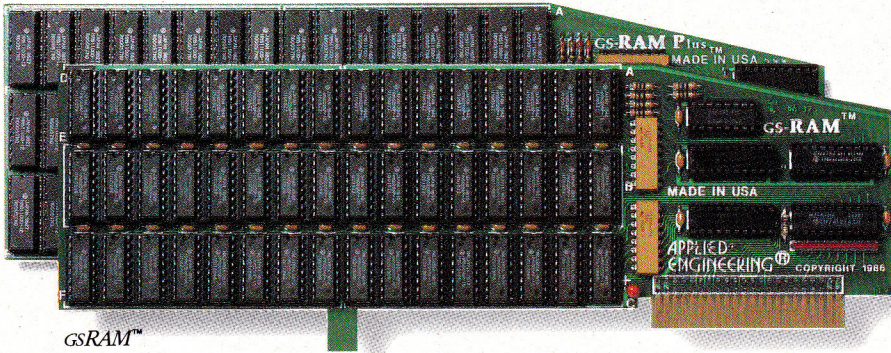
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Insist on GSRAM™ When You Buy Your IIGS™

Expand the IIGS RAM and ROM with the GSRAM or GSRAM Plus
with ROM Pak. Available now with 256K to 8 MEG!

Now the Fastest Memory Card
for IIGS with New Disk-Caching Feature

GSRAM Plus™



GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

- Lower cost
- Has 6 RAM banks (Apple's card has 4)
- Has memory expansion port
- Has ROM expansion port
- No configuration blocks to set
- No soldered in RAM chips
- Expandable to 8 MEG
- Expands AppleWorks internal limits
- Built-in Hi-Res self-diagnostic software
- 5 year hassle free warranty (Apple has a 90 day warranty)
- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminate AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increase the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offer a built-in printer buffer so you can continue using Appleworks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can

even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGS into a Giant

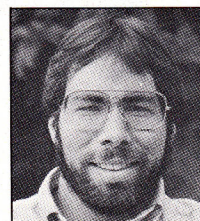
Simply plug GSRAM into the IIGS memory expansion slot and you've got up to 8 megabytes of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

We offer GSRAM in two configurations so you can increase your memory 256K at a time (GSRAM) or a megabyte at a time (GSRAM Plus). Both offer full compatibility, lower cost than other boards, and easy expandability. And both are extremely low in power consumption. A fully expanded GSRAM operates at only 375 ma, and GSRAM Plus at only 270 ma (even with 6 megabytes on board!)

GSRAM—for Normal Memory Requirements

GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.



Steve Wozniak, the creator of Apple Computer

"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

Easy Expansion

Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

Quality and Support of the Industry Leader

Applied Engineering is the largest supplier of Apple peripherals in the world. We invented the first large RAM cards for the Apple. With a 5-year "no-hassle" warranty and outstanding technical support, you can be sure GSRAM and GSRAM Plus will deliver the performance you're looking for—or return them within 15 days for a full refund.

GSRAM with 256K	\$169
GSRAM with 512K	\$219
GSRAM with 1 MEG	\$299
GSRAM with 1.5 MEG	\$379
GSRAM with 2-8 MEG	CALL
GSRAM PLUS with 1 MEG	\$459
GSRAM PLUS with 2 MEG	\$759
GSRAM PLUS with 3-8 MEG	CALL

Order today!

See your dealer or call Applied Engineering today, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome. Texas residents add 6¼% sales tax. Add \$10.00 outside U.S.A.

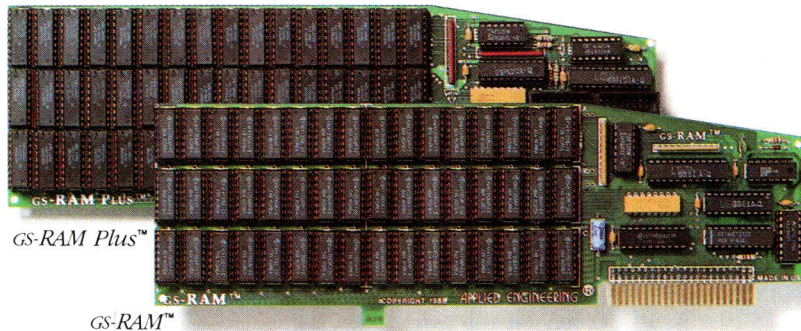
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Applied Engineering made an extra effort to make GS-RAM™ and GS-RAM Plus™ DMA compatible.



It was worth it.

Applied Engineering's IIGs memory cards, the GS-RAM™ and GS-RAM Plus™ are the ONLY large capacity¹ IIGs memory cards that are fully DMA compatible. Others are either totally non-compatible or compatible only in certain specific configurations.

That difference in memory cards is critical. Here's why: DMA (Direct Memory Access) tremendously speeds up computer operations by bypassing the microprocessor. All addressing and control logic is contained on our cards, enabling a DMA device to bypass the microprocessor and go straight to the heart of things...the computer's memory.

AE's full DMA compatibility means GS-RAM and GS-RAM Plus run all GS software, support all *current and future* DMA peripherals, and don't require you to adjust the size of your RAM disk everytime you use a DMA device...something every other large capacity memory card requires you to do.

Software

Both GS-RAM and GS-RAM Plus come complete with Applied Engineering's own powerful enhancement software.

Disk caching software is included, tremendously speeding up the com-

puter's access to the 3.5 drive and running most applications up to *seven times faster*.

Diagnostic utility software is also included free. It graphically shows the location of bad or improperly installed chips and even tests for CAS before RAS chips.

Your free software also includes AE's exclusive AppleWorks Expander program that dramatically enhances the capabilities and speed of AppleWorks. This powerful software also:

- Allows AppleWorks to recognize up to 8 MEG on the desktop
- Increases word processor lines from 7,250 to 22,600
- Increases database records from 6,350 to 22,600
- Increases clipboard capacity from 255 lines to 2,042
- Automatically loads AppleWorks (including print functions) into RAM
- Automatically segments files for saving on multiple floppies
- Provides a built-in print buffer

RamKeeper™ Option

Coupled with Applied Engineering's RamKeeper, your GS-RAM or GS-RAM Plus actually give you an internal "electronic hard disk" with an instant-on finder and emergency power backup. RamKeeper even supports an Apple IIGs memory card (and most others) alone or in combination with one of our cards. See our RamKeeper ad for more details on how this \$189 wonder gives your IIGs all the speed and power it was meant to have.

Compare Our Features

- GS-RAM expands from 256K to 1.5 MEG

- GS-RAM Plus expands from 1 MEG to 6 MEG
- GS Expander™ adds up to 2 MEG to either card
- Full DMA compatibility in *any* configuration
- 5-year warranty - parts and labor
- 6 RAM banks (most cards have only 4)
- Piggyback memory expansion port
- No configuration blocks to set
- RamKeeper option available for permanent storage
- 15-day money-back guarantee²
- Proudly made in the U.S.A.

GS-RAM w/ZeroK	\$139
GS-RAM 256K	\$239
GS-RAM w/512K	\$369
GS-RAM w/1 MEG	\$629
GS-RAM w/1.5 to 3.5 MEG	CALL
GS-RAM Plus w/ZeroMEG	\$169
GS-RAM Plus w/1 MEG	\$649
GS-RAM Plus w/2 MEG	\$1149
GS-RAM Plus w/3-8 MEG	CALL
RamKeeper Option	\$189

Order Today!

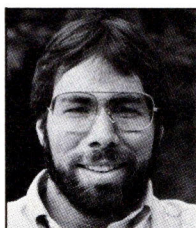
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"In quality, performance, compatibility, expandability and support, Applied Engineering's GS-RAM and GS-RAM Plus are number one."

Steve Wozniak, the creator of Apple Computer.



Now Apple speaks IBM. Three times faster than IBM.

Introducing PC Transporter.[™] The Apple[®] II expansion board that lets you run MS[®]-DOS programs.

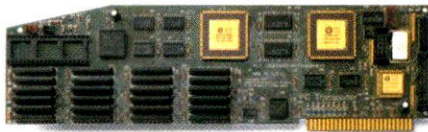
Now your Apple II can run over 10,000 programs you could never use before. Like Lotus[®] 1-2-3[®], MultiMate[®], dBASE III PLUS[®], Even Flight Simulator[®].

With PC Transporter, MS-DOS programs run on your Apple II like they do on IBM[®] PC's or compatibles. With one important difference. PC Transporter runs most of those programs *three times faster* than an IBM PC/XT[®].

Plus, to speed through number-crunching tasks, you can use our optional 8087-2 math coprocessor chip. It plugs into a socket on the PC Transporter.

Less expensive than an IBM clone.

Sure, a stripped-down IBM



clone costs about the same as the PC Transporter. But the peripherals it takes to get the clone up and running make the clone cost about three times what our American-made card costs.

You don't have to buy new hardware to use PC Transporter.

Works with the hardware you already own.

With PC Transporter, MS-DOS programs see your Apple hardware as IBM hardware. You can use the same hardware you have now.

With IBM software, your Apple hardware works just like IBM hardware. Including your drives, monitors, printers, printer cards, clock cards and serial clocks.

You can use your IIe[®] or IIgs[™] keyboard with IBM software. Or use our optional IBM-style keyboard (required for the II Plus).

You can use your Apple mouse. Or an IBM compatible serial mouse.

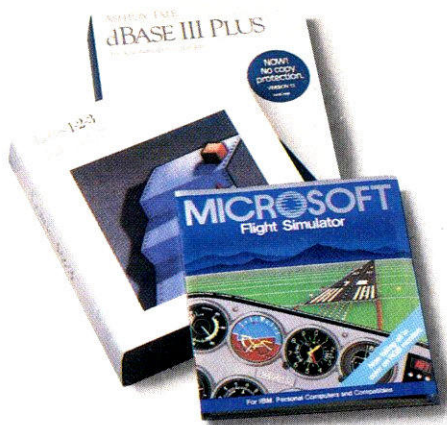
Plenty of power.

PC Transporter gives you as much as 640K of user RAM and 128K of system RAM in the IBM mode.

PC Transporter also is an Apple expansion card, adding up to 768K of extra RAM in the Apple mode. The Apple expansion alone is a \$300 value.

Easy to install.

You can install PC Transporter in about 15 minutes, even if you've never added an expansion board. You don't need special tools. Simply plug it into an Apple expansion slot (1 through 7 except 3), connect a few cables and a disk drive, and go!



PC Transporter taps into the world's largest software library. Now your Apple can run most of the IBM software you use at work. And it opens a new world of communications programs, games and bulletin boards.

A universal disk drive controller.

PC Transporter supports 3.5" and 5.25" MS-DOS and ProDOS formatted diskettes. You'll shift instantly between Apple ProDOS and IBM MS-DOS.

You'll need our versatile 5.25" 360K drive system to run IBM applications from 5.25" floppy disks. Use your Apple 5.25" drive for Apple 5.25" disks.

An Apple Disk 3.5 Drive will support the new 3.5" disks whether they're IBM MS-DOS formatted or Apple ProDOS formatted. The PC Transporter acts like an Apple Disk 3.5 Drive disk controller for IIGs, IIE, and II Plus users.

PC Transporter supports up to 5 drives in a number of combinations.

For example, you can connect a 5.25 Applied Engineering 360K dual-drive system directly to the card. Then plug two daisy-chained Apple 3.5 Drives (not the Apple UniDisk 3.5) to the dual-drive system. For a fifth drive, use a ProDOS file as an IBM hard disk.

PC Transporter controls Apple and IBM compatible disk drives. It supports 3.5" and 5.25" MS-DOS and ProDOS formatted diskettes.



Versatile data storage.
PC Transporter reads MS-DOS and translates it into Apple native ProDOS. You can store IBM programs and data on any ProDOS storage device including the Apple 3.5 Drive, Apple UniDisk™ 3.5, Apple 5.25" drive, SCSI or ProDOS compatible hard drives. (You can use the Apple UniDisk 3.5 with its own controller card for storing programs and data, but not for directly booting an IBM formatted disk.)

You can even use our 360K PC compatible drive for ProDOS

Make your Apple speak IBM.

PC Transporter memory choices.

RAM in Apple mode:	RAM in IBM mode:	Price:
384K	256K	\$489.00
512K	384K	529.00
640K	512K	569.00
768K	640K	609.00

Note: The IBM mode is 128K less because the PC Transporter uses 128K for system memory.

IIGs Installation Kit 49.00

IIE/II Plus Installation Kit 39.00

PC Transporter Accessories

5.25" IBM Format 360K Drive Systems

Single-Drive System 269.00

Dual-Drive System 399.00

Half-Height Drive 135.00
(add to Single-Drive system to make Dual-Drive)

IBM-Style Keyboard 139.00
(required for Apple II Plus. Requires IBM Keyboard Cable.)

IBM Keyboard Cable 34.00

Sony RGB Monitor 499.00

Analog RGB Cable 39.00
(for use with Sony monitor)

Digital RGB Cable 39.00
(for use with Sony monitor)

Digital RGB Adapter 24.00

ColorSwitch 44.00
(included with IIGs Installation Kit)

128K ZIP 40.00

PC Transporter per set

Memory Expansion

Chip Set

8087-2 Math

Co-processor 229.00

Chip

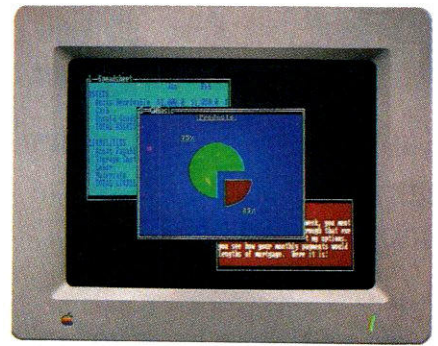
Heavy Duty 69.00

Power Supply

(IIE and II Plus only)

(IIE and II Plus only)

See your dealer or call or send check or money order to Applied Engineering. MasterCard, VISA and COD welcome. Texas residents add 6¼% sales tax.



PC Transporter produces better IBM graphics than IBM. Analog is sharper than digital. So with an analog RGB monitor, PC Transporter's CGA graphics and text are superior to IBM's digital display — even while running IBM software!

And, you can also use an Apple composite monitor in IBM text or graphics mode.

storage and a 143K Apple 5.25" drive for MS-DOS storage.

Created by Apple's original designers.

The brains behind PC Transporter were also behind your Apple II.

The PC Transporter design team includes the former project managers for the creation of the Apple IIE and IIC. The co-designer of the Apple II disk controller. And the first full-time Apple programmer and author of the ProDOS operating system.

So you know the PC Transporter and your Apple were made for each other.

Support and service from the leader in Apple add-ons.

Applied Engineering sells more Apple peripheral boards than anyone else — including Apple Computer. So you know we'll be around after the sale.

PC Transporter comes with a 15-day money back guarantee. If you're not fully satisfied after using it, return it for a full refund. PC Transporter also comes with a 1-year warranty.

How to get your PC Transporter today.

See your dealer. Or call Applied Engineering any day between 9 a.m. and 11 p.m. CST at 214-241-6060.

AE Applied Engineering
The Apple enhancement experts.

P.O. Box 798, Carrollton, TX 75006
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A Division of AE Research Corporation.



*Requires Apple IIe or II+ (64K minimum) with one disk drive.

Prepare to be blown away by your Apple.™

*Phasor produces sound effects, music, and speech so striking,
Applied Engineering feels you should be warned.*

Have a weak heart? Don't read any further. And by all means, *don't go near* an Apple IIe or II+ equipped with the new Phasor sound synthesizer from Applied Engineering.

But those of you with the right stuff ... prepare yourself. Because the Phasor is like nothing you've heard before. It's a sound effects synthesizer that makes games explode into life. A music synthesizer that will stun you with 4 watts of stereophonic sound. And a speech synthesizer so realistic, it will send shivers up your spine.



"I recommend Applied Engineering products wholeheartedly!"

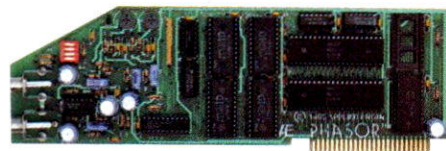
*Steve Wozniak, the creator
of Apple Computer*

What's best, the Phasor works with more off-the-shelf software than any other sound card you can buy. So now all your favorite games — like Skyfox™, Under Fire™, Willy Byte™, Tactical Armor Command™, Maze Craze™, Zaxxon™ and Ultima IV™ — can have shattering sound effects. Educational packages like Music Construction Set™, Guitar Master™ and Music Star™ are also dramatically enhanced.

The Phasor has *four times* the output power and *twice* the accuracy of any other sound card — but of course, you can easily turn down the volume if you need a rest. The Phasor is equipped with 12 simultaneous sound channels, 4 white noise generators, and a voice channel expandable to 2 voices. Programs written for other sound cards, including Mockingboard™, ALF music card™, Synphonix™ and the Super Music Synthesizer™, sound even better with the Phasor. And you can control speech, pitch, volume and more with simple commands.

The Phasor comes with its own easy-to-use software (ProDOS based), including 30 ready-to-run, non-copy protected songs and sound effects along with a Music Editor, Sound Effects Editor and Text to Speech program. And of course, it carries our no-hassle, five-year warranty.

Order a Phasor for your Apple today — and prepare to be blown away! Call (214) 241-6060 to order (9 a.m. to 11 p.m. 7 days). Or send check or money order for \$179 to:



AE Applied Engineering
The Apple enhancement experts.

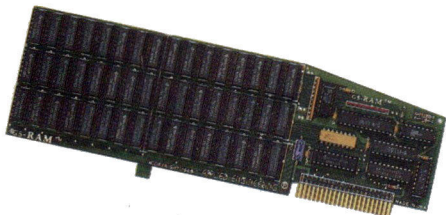
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Three good reasons to buy a memory card from Applied Engineering.

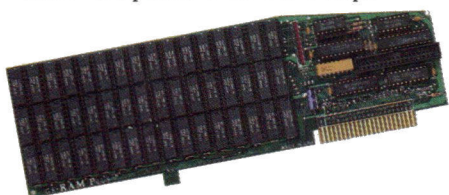
Applied Engineering makes three different memory cards for the IIGS because every IIGS owner is different. Each card was designed to suit specific needs:

1. **GS-RAM™** Start with as little as 256K of memory and grow in affordable 256K increments to 1.5 MEG (an amount that once sounded large, but is now considered a moderate amount of memory expansion.) Incorporates 256K x 1 chips.



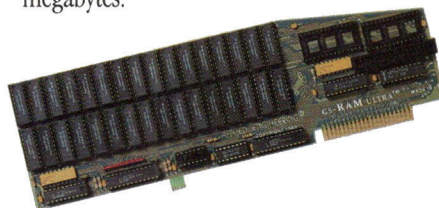
GS-RAM w/256K	\$219
1 MEG	\$639
1.5 MEG	\$919

2. **GS-RAM Plus™** Expands from 1 to 6 MEG in 1 MEG increments. Originally designed for power-users requiring a great deal of internal memory, this card has recently found favor with many moderate users. MEG-sized jumps in memory have now become practical for many users because of the enormous memory requirements of today's software titles. Incorporates 1 MEG x 1 chips.



GS-RAM Plus w/1 MEG	\$599
2 MEG	\$1049
3-6 MEG	CALL

3. **GS-RAM Ultra™** AE's newest memory card incorporates a new chip - the 256K x 4, which has four times the density of 256K x 1 chips. GS-RAM Ultra offers incremental expansion like the GS-RAM and ultimate size like the GS-RAM Plus. It's expandable from 256K to 4 MEG in 256K increments, so you can start small and still grow to a massive 4 megabytes.



GS-RAM Ultra 256K	\$239
512K	\$399
768K-4 MEG	CALL

We've also added ROM sockets to the GS-RAM Ultra. ROM sockets allow hardware-based applications to be loaded permanently into EPROMs...an increasingly important feature when application become available from Applied Engineering and others.

Consider your needs.

Need a moderate amount of memory? **GS-RAM** lets you start small and takes you up to 1.5 MEG. Need lots of memory right away? **GS-RAM Plus** is your best bet. Want to start small and leave open the possibility of a huge internal memory? **GS-RAM Ultra** is your card. And our **GS Expander™** piggyback card adds up to 2 MEG to any of the three cards. Call AE for prices.

Trade in your Apple card.

We even offer a trade-in credit for your Apple IIGS memory card, so you can switch to an AE card with more features and greater capacity. Still have questions? Call us, we'll be happy to discuss your particular applications.

DMA compatibility.

All three of our GS memory cards are fully DMA compatible (and they're the ONLY large-format cards that are), so they not only run all GS software, they also support *current and future* DMA peripherals.

Installation couldn't be easier, the cards just plug in. And all three cards feature Applied Engineering's meticulous craftsmanship, along with our 5-year warranty, our 15-day money-back guarantee* and our American-made pride.

Still more:

Each of our GS memory cards comes with many other exclusive features, *disk caching* that tremendously speeds up many programs, including AppleWorks, by virtually eliminating disk access. Our *diagnostic utility* feature graphically detects the presence of bad or improperly installed chips and tests for CAS before RAS chips. And our *AppleWorks enhancement* package dramatically increases AppleWorks' word processor lines (from 7,250 to 22,500), database records (from 6,350 to 22,500), clipboard capacity (from 255 lines to 2,042) and more.

Order today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.

AE APPLIED ENGINEERING®

The Apple enhancement experts.

A Division of AE Research Corporation.

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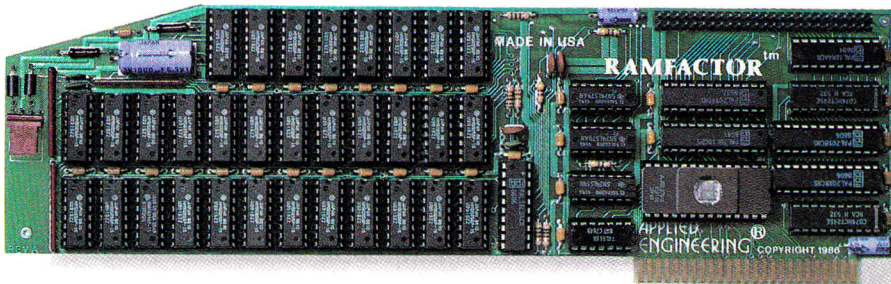
*When purchased from Applied Engineering or thru a participating dealer.

RamFactor™

Boot any II+, IIe, or IIGs and be up and running your favorite software in less than 1 second.

Now anyone with an Apple II+, Franklin, Laser 128, Apple IIe or IIGs preferring to use slots 1 through 7 can now enjoy the speed and performance that they've been waiting for.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 MEG on the main board and an expansion connector can address an additional 16 MEG of memory for possible future expansion. Since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets. And with the battery back-up option, you can switch on your Apple and your favorite software will be up and running in less than 1 second!



Very Compatible

All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDos, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other slot 1-7 memory card is more compatible with commercial software.

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of records in the database and lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load all of AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDos clock. RamFactor will automatically segment large files so they can be saved on 5¼", 3½", and hard disks. All this performance is available on the Apple II+,

IIe, Franklin, or Laser 128 when used with an 80 column display. RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

The "Instant On" Apple.



With the RamCharger battery backup option, RamFactor will retain programs and data during power failures or even when you turn your computer off. And because RamFactor plugs into slots 1-7, it's the only memory card that can cold boot an Apple without using slow floppy or hard disks. An available "Y" cable allows one RamCharger to power two RamFactors.

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDos in under a second. And with our battery back-up option, you can have permanent storage for up to 20 years.

Features:

- 256K to 1 MEG on main board. Expansion connector for possible further expansion to 16 MEG.
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+, IIGs, Franklin and Laser 128
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDos, DOS 3.3, Pascal, and standard CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or 2.0
- Allows Apple II+ and IIe to run your AppleWorks without buying any additional software
- Accelerates AppleWorks
- Displays time and date on the AppleWorks screen with any ProDos clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	\$239
RamFactor with 512K	\$289
RamFactor with 1 MEG	\$369
RamFactor with 2-16 MEG	CALL
RamCharger backup option	\$179
"Y" cable	\$24
<small>(Allows one RamCharger to power two RamFactors.)</small>	

Order RamFactor today... with 15 day money back guarantee and our "no hassle" five year warranty. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering MasterCard, Visa and C.O.D. welcome. Texas residents add 6¼% sales tax. Add \$10.00 if outside U.S.A.

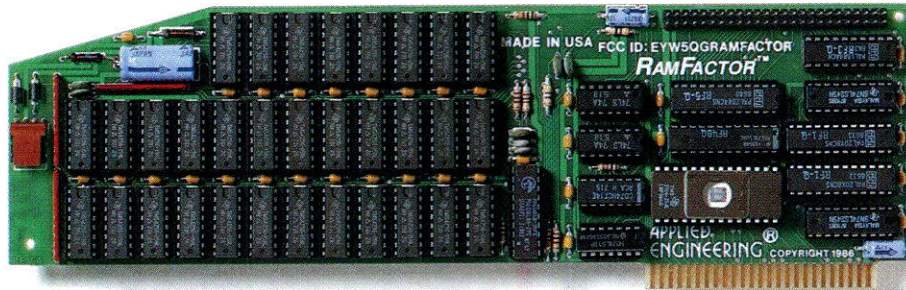
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RamFactor™

The Ultimate Slot 1-7 Memory Card



RamFactor is automatically recognized as additional workspace memory by AppleWorks 1.3 and 2.0. In addition, RamFactor's memory can be used for creating the ultimate in program speed—a lightning-fast RAMdisk for the Apple IIGs, IIE, II+, Franklin and Laser 128. A RAMdisk does not depend on the slow moving parts of a conventional floppy drive. RAMdisks eliminate wear and tear on your disk drive plus your programs run up to 20 times faster! When a program is in RAM, your computer won't have to search for it in the mechanical disk drive during program operation. With RamFactor, you can have up to 9 separate simultaneous RAMdisks—even in different operating systems! Now you can instantly switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/AM to Apple Pascal 1.3 to ProDOS.

Apple Memory Expansion Card Compatible

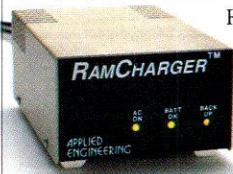
RamFactor is 100% Apple Memory Expansion Card compatible. This means that software designed for Apple's card is automatically compatible with RamFactor. Thousands of software programs—including AppleWorks, Pinpoint, MacroWorks, MultiScribe, and Managing Your Money—can take advantage of the speed and performance RamFactor provides. But with Apple's card, you can have only one RAMdrive partition instead of the 9 simultaneous RAMdrives that RamFactor offers. And that's only part of the story . . .

2.0 AppleWorks Power

Other slot 1-7 cards can give AppleWorks a larger desktop, but that's the end of their story. RamFactor provides many more powerful functions. It's the only slot 1-7 card that increases AppleWorks 2.0 internal limits by increasing the maximum number of records in the database to 22,600, increasing the maximum number of lines permitted in the word processor to 22,600, and expanding the clipboard size to 2,250 lines maximum. RamFactor is the only standard slot card that will automatically load all of AppleWorks into RAM, dramatically increasing speed and

eliminating the time required to access the program disk. It will even display the time and date on the AppleWorks screen with a ProDOS clock. RamFactor will automatically segment large files so they can be saved on multiple 5¼" and 3½" floppies or a hard disk. All this performance is available for the Apple IIE, Laser 128, Franklin or 64K Apple II Plus when used with an 80 column card. No other standard slot card comes close to enhancing AppleWorks so much.

The "Electronic Hard Disk"



RamCharger is an optional battery back-up device, (about the size of a disk drive), that can plug into a connector on RamFactor. With Ram-

Charger added to RamFactor, your program will appear almost instantaneously when you turn on your computer. RamCharger contains LED's that let you know RamFactor's reserve power status. Since RamCharger has its own built-in power supply, it can retain RamFactor's memory indefinitely. Plus, RamCharger's battery will continue backing up RamFactor's memory for up to 10 hours during power failures. An optional "Y" cable is also available that allows one RamCharger to power two fully expanded RamFactors.

If 1 MEG Isn't Enough



A 4 MEG RamFactor Expander can be plugged into the expansion port on RamFactor for up to 5 MEG's total. RamFactor Expander uses standard 1 MEG chips and can be expanded in 1 MEG increments. With the addition of RamCharger, both RamFactor and the expander will provide up to 5 MEG's of lightning-fast battery backed storage.

Features

- Compatible with Apple IIGs, IIE, II+, Franklin and Laser 128
- 256K to 1 MEG on main board with 256K

memory chips; expansion port supports up to 5 MEG with Expander option

- 100% Apple Memory Expansion Card compatible
- RamCharger battery back-up option available for permanent storage
- Reduces power strain to internal power supply with RamCharger option
- Fully socketed and user upgradeable
- Expands internal limits of AppleWorks 2.0
- Automatically recognized by ProDOS, DOS 3.3, Apple Pascal 1.3 and CP/AM
- Built-in RAMDrive software (true RAMdisk not disk caching)
- Graphic memory test included
- Allows Apple II+ to run AppleWorks 2.0 without buying additional software
- Automatically recognized by AppleWorks 1.3 and 2.0
- Fits in any I/O slot except slot 3
- 5 year warranty — parts and labor
- Proudly made in the U.S.A.

RamFactor with 256K	\$269
RamFactor with 512K	\$389
RamFactor with 1 MEG	\$629
RamFactor Expander with 1-4 MEG	CALL
RamCharger backup option	\$179
"Y" cable	\$24

(Allows one RamCharger to power two RamFactors.)

Order RamFactor today . . . with 15 day money back guarantee and our five year warranty. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 if outside U.S.A.

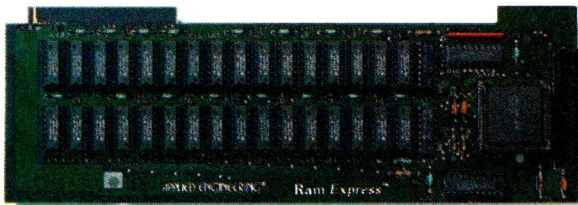
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Ram Express™ for the IIC and IIC Plus



More than a memory card.

The IIC is a fine computer and Apple is rightfully proud of their new IIC Plus. With two operating speeds, a 65C02 processor and an internal 3.5 drive, the 128K computer has almost everything going for it. Almost.

We say 'almost' because for many software titles, 128K just won't cut it. That's why AE makes Ram Express™, the fully compatible memory card for the IIC Plus and original IIC's with memory expansion connectors. Available in user-upgradeable 256K, 512K and 1 MEG sizes, Ram Express adds the memory you need, and a whole lot more.

AppleWorks Enhancement

With Ram Express, AppleWorks word processor lines rocket from 7,250 to more than 22,500 and the maximum number of records zooms from 6,350 to more than 22,500! Ram Express even expands the clipboard and automatically segments large files so they can be saved on two or more disks. And with Ram Express you'll run AppleWorks 10 times faster with one disk drive than an ordinary IIC could with two disk drives.

Ram Express is also a high speed, solid-state disk drive, loading and saving your programs more than 20 times faster. Copy a disk in one pass by simply inserting and removing the original, and inserting a blank disk.

And installation in the IIC Plus is easier than ever. Remove six screws from the cover, lift the keyboard, plug Ram Express into the connector and start enjoying a world of software titles you couldn't touch with 128K.

Optional Clock

Ram Express's optional clock displays the time and date on screens and automatically time and date stamps AppleWorks files. The clock option is even compatible with Apple's memory card for the IIC.

Ram Express w/256K	\$249
Ram Express w/512K	\$399
Ram Express w/1 MEG	\$699
Clock Option	\$59

Order today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.

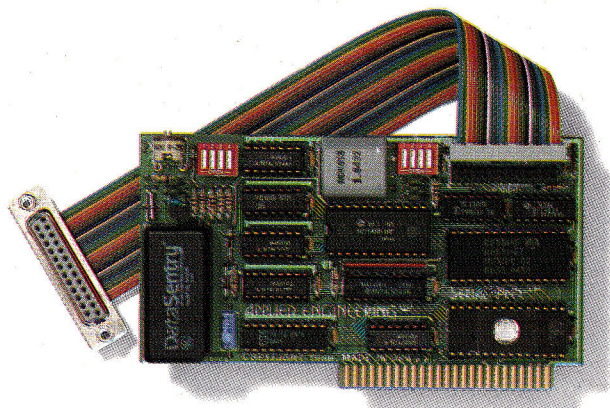
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Serial Pro® The intelligent multifunction card from Applied Engineering.



Serial Pro is a powerful multifunction card for the Apple IIe, II+, IIGs and compatible computers. Serial Pro combines a powerful serial port for interfacing to a printer, modem or other serial device, with a full function clock/calendar. Serial Pro's serial port is compatible with virtually all letter quality and dot matrix printers, including Apple's Imagewriter and Imagewriter II, and can communicate with the fastest external modems at baud rates from 50 to 19,200.

Set up is easy, because unlike other cards, there are no switches to program serial parameters or disks to use. Serial Pro has a built-in setup screen that allows all parameters to be set. And on-screen help that makes it super-easy. An on-board battery stores your selections for over 20 years, but you can change them at any time. Serial Pro is the perfect upgrade for Super Serial card owners looking for more performance or a built-in clock.

Serial Port Features

- Fully Super Serial Card compatible but more versatile and easier to use
- Compatible with printers
- Compatible with modems
- Prints graphics to printer (without software) in normal mode, 90° rotation, double size, side by side, and black/white inversion
- Variable word length, number of stop bits and parity selection
- Crystal controlled circuits are used to provide ultra accurate baud rates.

Clock Calendar Features

- ProDOS, DOS and AppleWorks compatible. Displays time and date on the AppleWorks screen
- Automatically time and date stamps AppleWorks files
- 20 year auto recharging nickel-cadmium battery
- Realtime interrupts
- Built-in on screen time and date settings (no software needed)
- Does not use phantom slots.

Serial Pro is perfect for Apple IIe, II+, IIGs or compatible owners in need of a serial port or clock/calendar or both. But unlike other multifunction cards on the market, Serial Pro does not use phantom slots, so all the slots in your computer are useable.

Serial Pro comes complete with manual, cable and instructions for connecting to all the leading printers and modems.

Serial Pro **\$159**

Order Today! See your dealer or call Applied Engineering, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 outside U.S.A.

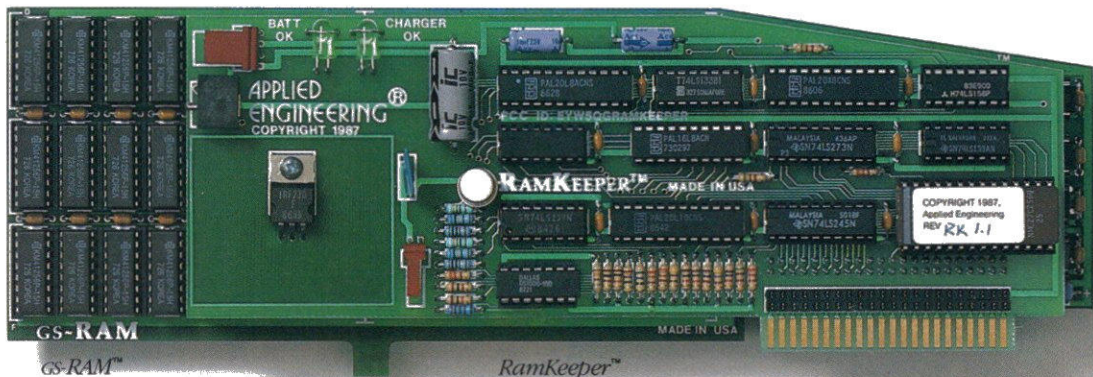
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RamKeeper™

For the "Instant On" Apple IIGS.



Permanent Storage with an "Electronic Hard Disk"

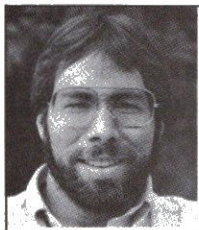
Now when you turn on your IIGS your favorite program can appear on screen in just a few seconds! With RamKeeper, your IIGS memory card will retain stored programs and stored data while your IIGS is turned off. RamKeeper allows you to divide your IIGS memory into part "electronic hard disk" and part RAM for your programs workspace—in almost any way you want and at anytime you want. GS-RAM, GS-RAM Plus, Apple IIGS memory card and most other IIGS memory cards are compatible with RamKeeper.

Supports Up to Two IIGS Memory Cards at the Same Time

If you bought your IIGS with Apple's memory card and later wished you had the GS-RAM, no problem. RamKeeper will support both cards plugged into RamKeeper simultaneously!

How it Works

Just unplug your IIGS memory card



"I've purchased several Applied Engineering products over the years. They're always well made and performed as advertised. I recommend them wholeheartedly."

Steve Wozniak, the creator of Apple Computer

from your computer, plug your IIGS memory card into RamKeeper, plug RamKeeper into the IIGS memory slot. If you have another IIGS memory card, an additional card socket on RamKeeper will accommodate your second card. That's all there is to it!

Reliability from the Most Experienced

Applied Engineering has the most experience in the industry with battery-backed memory for the Apple so you are assured of the most reliable memory back-up system available. And in the world of battery-backed memory, reliability is everything! That's why Applied Engineering uses the more dependable Gel-Cell's instead of Ni-Cad batteries (if Ni-Cad's aren't discharged periodically, they lose much of their capacity). RamKeeper has close to 6 times (about 6 hours) the "total power failure" back-up time of other systems. When power returns, RamKeeper automatically recharges the battery to a full charge. With power from your wall outlet, RamKeeper will back-up your IIGS memory cards RAM indefinitely.

RamKeeper Has and Does It All!

- Allows instant access to your programs without slow disk delays
- Configure Kilobytes or Megabytes of instant ROM storage for your favorite programs

- Reduces power strain to your internal IIGS' power supply
- Contains back-up status L.E.D.'s
- Can support up to two IIGS memory cards simultaneously
- Supports both 256K installed memory chip boards like GS-RAM and the Apple IIGS Memory Expansion Card as well as 1 MEG installed memory chip boards like GS-RAM Plus
- 5-year hassle-free warranty
- 15 day money back guarantee
- Proudly made in the U.S.A.
- RamKeeper comes *complete* with battery, software and documentation

Only \$179.00!

(GS-RAM card shown in photo not included)

Order Your RamKeeper Today!

See your dealer or call (214) 241-6060, 9:00-11:00 CST, 7 days a week, or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 if outside U.S.A.

AE APPLIED ENGINEERING™
The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

Prices subject to change without notice.

In about the time it takes to read this headline, you can have the Finder up and



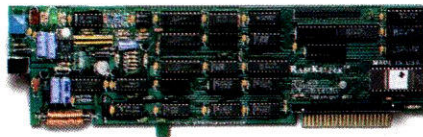
Now your favorite program can be ready to go seconds after you flip your Apple IIcs on.

With Applied Engineering's RamKeeper™ card, your IIcs retains stored programs *and* data when you turn your computer off.

RamKeeper powers up to two memory cards simultaneously when your Apple IIcs is off. And battery backup keeps power to the boards even during power failures. Your programs and data are stored in a permanent, "electronic hard disk," always ready to run.

Superior power backup.

Applied Engineering has the most experience in battery-



RamKeeper lets you keep programs and data in permanent, "electronic hard disk" memory. Turn your Apple IIcs on and you're ready to work.

backed memory for Apple computers. We were the first to offer battery-backed memory with our RamFactor™/RamCharger™ combination. Now RamKeeper sets the standard for IIcs memory backup.

Our experience shows in the way we designed and built RamKeeper. We used sealed Gel/

Cell batteries — far more reliable than Ni-Cads in this application. Ni-Cads lose much of their capacity if they're not discharged periodically. Just when you need them most, Ni-Cads could run out of power.

Our Gel/Cell pack, which is included in our price, gives you up to six hours of total power failure backup. That's about 6 times longer than other systems.

RamKeeper uses a Switching Power Supply — the same technology used by Apple for the IIcs power supply. This design uses energy much more efficiently to keep your Apple running cooler.

Our sealed Gel/Cell battery

stays *outside* your computer case. With other systems, the batteries are installed under the IIGs power supply where a leak could ruin computer circuitry.

Put two memory boards in the same slot.

You might have bought your IIGs with Apple's memory card. But now you want the features of Applied's GS-RAM™ card. RamKeeper efficiently resolves the dilemma.

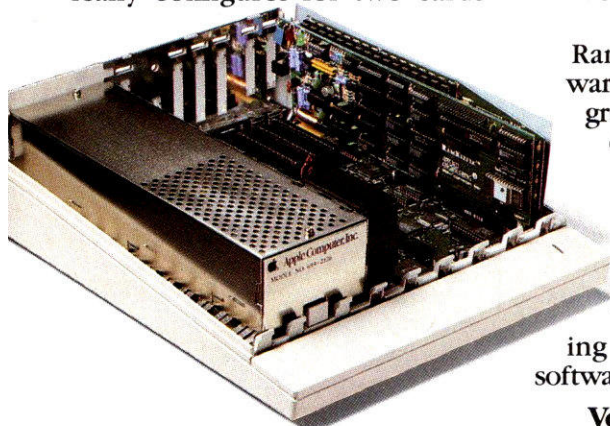
You can use RamKeeper with your current IIGs memory card *and* add another memory card — all in the same slot. Just attach your current memory card to one side of your new RamKeeper card, connect the second card to the other side and plug RamKeeper into the slot.

Of course RamKeeper works fine with just one memory card. But you can use two and still keep Slot 7 open with our optional Slot-Mover.

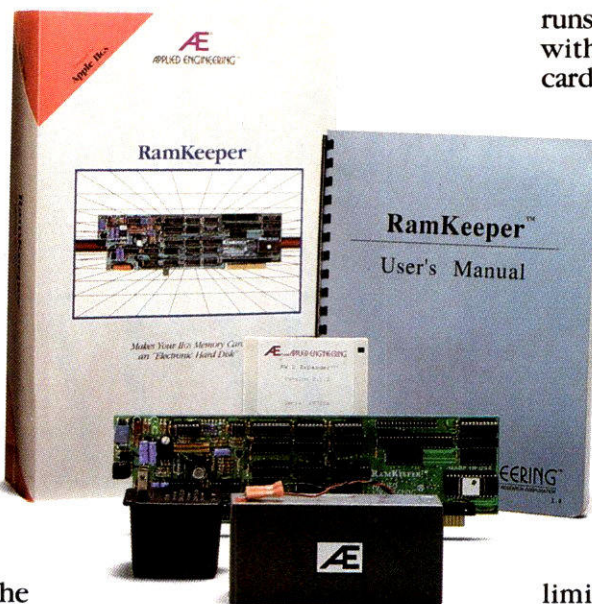
Makes all of your memory usable memory.

RamKeeper can power up to 16 Meg of memory. Other systems are limited to only 8 Meg. In addition, RamKeeper lets you mix and match different types of cards. For example, you can have a GS-RAM Plus™ using 1 Meg RAM chips and an Apple card using 256K RAM chips. Other systems are limited in the combinations they allow.

RamKeeper firmware automatically configures for two cards



RamKeeper is easy to install. Just plug it in. Even when you use two memory boards, you don't have jumpers. You can have two memory boards but use only one slot.



It all comes with RamKeeper ... board, Gel/Cell battery pack, easy-to-understand instructions, and Applied's powerful AppleWorks Expander software.

when the second card is installed. Other systems make you manually move jumpers.

RamKeeper configures memory linearly. Other systems don't, so they create memory gaps that can cause program crashes or keep some programs from using as much as half of your memory.

You easily decide how much memory you'll devote to ROM and to RAM from the IIGs Desk Accessories menu. You can configure Kilobytes or Megabytes of instant ROM storage for your favorite programs. And you can change ROM size any time without affecting stored files.

Protected from program crashes.

RamKeeper controlling firmware is in an EPROM. A program crash can't take out the operating software. With other systems, operating software is installed in RAM from a floppy. If the program crashes, it can take the operating software with it; and reinstalling the disk-based operating software destroys data in memory.

Verifies data security.

RamKeeper firmware uses optional startup checksums to verify that no data has been lost while power was off. The firmware also

runs ROM and RAM memory tests without disturbing data on the card.

Free AppleWorks Enhancement software.

Applied's powerful AppleWorks Enhancement software is free with RamKeeper. It makes AppleWorks faster and far more powerful by eliminating AppleWorks internal memory limits. Word processor limits go from only 7,250 lines to 22,600 lines. Database limits go from 6,350 records to 22,600 records. The clipboard size limit is increased from 255 to 2,042 lines. It even automatically segments large files so you can save them on multiple floppies. No other company expands your IIGs' AppleWorks internal limits.

In addition, the most powerful disk-caching program available comes with the RamKeeper. The cache significantly increases access time to the Apple 3.5 Drive. Most applications will run up to 7 times faster.

The largest maker of Apple expansion boards.

Applied Engineering has sold more expansion boards than anyone else. And we've been in business 8 years, long enough to see the vast majority of our competitors come and go.

All of our products are crafted in the U.S.A. We back RamKeeper with a five year parts and labor warranty. And a 15-day, no questions asked, money back guarantee.

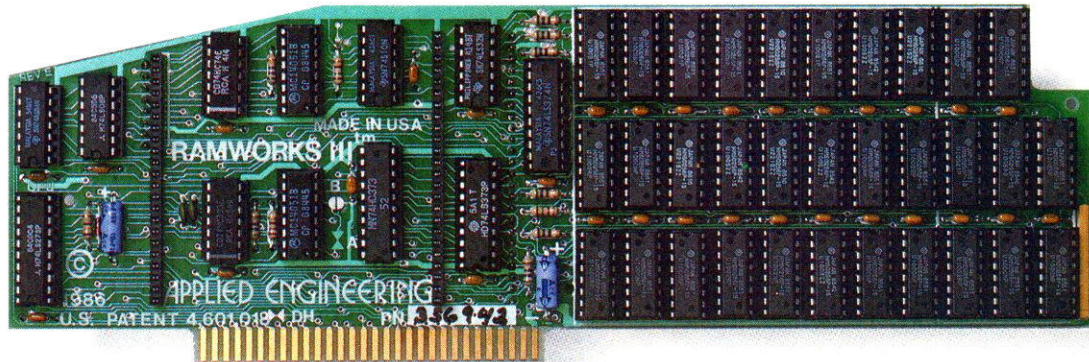
Only \$189.00.

See your dealer. Or call 214-241-6060, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering, MasterCard, VISA, C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 outside U.S.A. Prices subject to change without notice.

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Patented Performance from the Recognized Leader



The Best Selling, Most Compatible, Most Recommended, Most Expandable Card Available.

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RamWorks eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 22,000. *Only* RamWorks increases the number of lines permitted in the word processing mode from 2,250 to over 22,000. *Only* RamWorks expands the maximum clipboard limit from 250 to 2,042 lines. And *only* RamWorks offers a built-in printer buffer, so you won't have to wait for your

printer to stop before returning to AppleWorks. And auto segments large files so they can be saved on two or more disks. You can even have Pinpoint or MacroWorks and your favorite spelling checker in RAM for instant response.

RamWorks, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, TimeOut series, HowardSoft, FlashCalc, ProFILER, Managing Your Money, SuperCalc 3a and VIP Professional to name a few (and most hardware add on's like ProFile and Sider hard disks). RamWorks is even compatible with software written for Apple cards. But unlike other cards, RamWorks plugs into the IIe auxiliary slot providing our super sharp 80 column text (U.S. Patent #4601018) in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

RamWorks III is compatible with all Apple IIe's, enhanced, unenhanced, American or European versions.

Highest Memory Expansion.

Applied Engineering has always offered the largest memory for the IIe and

RamWorks III continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 MEG is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks III has the widest selection of expander cards available. Additional 512K, 1 MEG, or 2 MEG cards just snap directly onto RamWorks III by plugging into the industry's only low profile (no slot 1 interference) fully decoded memory expansion connector.

It Even Corrects Mistakes.

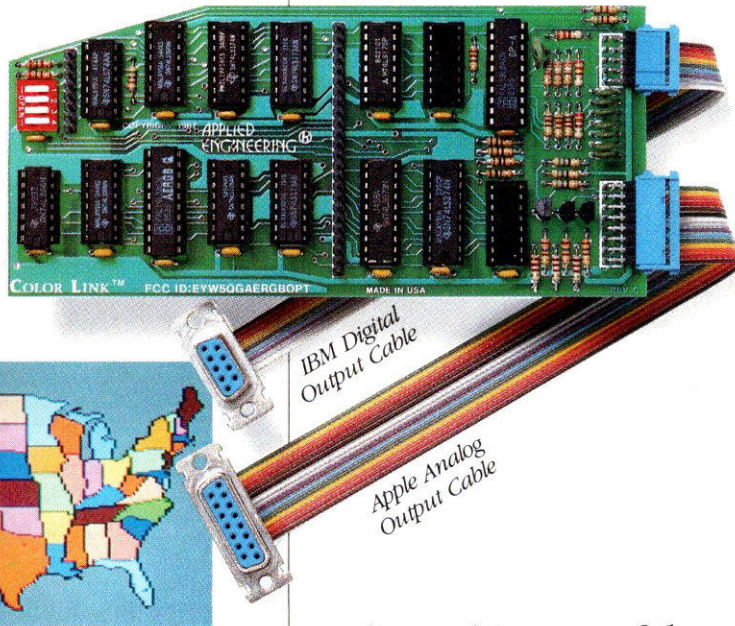
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks III, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks and with good reason. Some others combine RGB color output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks RGB option offers better color graphics plus a more readable 80 column text (that blows away any

composite color monitor). For only \$129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks RGB option provides both the new Apple standard analog and the IBM standard digital RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference and remember you can order the RGB option with your RamWorks or add it on at a later date.

*ColorLink™
RGB Option*



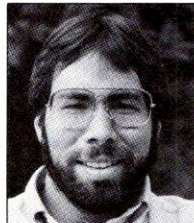
True 65C816 16 Bit Power.

RamWorks III has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 MEG of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 while maintaining full 8 bit compatibility.

Endorsed by the Experts.

A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider

magazine said "RamWorks is the most powerful auxiliary slot memory card available for your IIE, and I rate it four stars..For my money, Applied Engineering's RamWorks is king of the hill."



"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks."

Steve Wozniak, the creator of Apple Computer

Apple experts everywhere are impressed by RamWorks' expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIE. With a RamWorks in your Apple, you'll make IBM PC's and AT's look like slowpokes.

- Can use 64K or 256K RAMs
- Powerful linear addressing 16 bit coprocessor port
- Automatic AppleWorks expansion up to 3017K desktop
- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- 100% compatible with all standard IIE software
- RamDrive™ and ProDrive™ the ultimate emulation software included free
- Memory is easily partitioned allowing many programs in memory at once
- Compatible RGB option featuring ultra high resolution color graphics and multiple text colors with cables for both the new Apple and standard IBM type monitors
- Self diagnostics software included
- Lowest power consumption (U.S. Patent #4601018)
- Takes only one slot (auxiliary) even when fully expanded
- Socketed and user upgradeable
- Software industry standard
- Advanced Computer Aided Design
- Used by Apple Computer, Steve Wozniak and virtually all software companies
- Displays date and time on the AppleWorks screen with any ProDOS compatible clock
- Much, much more!

RamWorks III with 64K	\$209
RamWorks III with 256K	\$219
RamWorks III with 512K	\$339
RamWorks III with 1 MEG	\$579
RamWorks III with 1.5 MEG	\$849
RamWorks III with 3.0 MEG	\$1749
Ram Expander+ 1 MEG	\$689
Ram Expander+ 2 MEG	\$1189
65C816 16 Bit Card	\$159
ColorLink RGB Option	\$129

Quality and Support of the Industry Leader.

RamWorks III is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

It's Got It All.

- 15 day money back guarantee
- 5 year warranty
- Built-in super sharp 80 column display (U.S. Patent #4601018)
- Expandable to 1 MEG on main card
- Expansion connector for possible future expansion to 16 MEG

RamWorks III. The industry standard for memory expansion of the Apple IIE. ORDER YOUR RamWorks III TODAY. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering.

MasterCard, Visa and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 if outside U.S.A.

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It takes
this many IIe's

to store as
much as this IIe.

Add up to 3 MEG memory with the RamWorks® III expansion board.

You command vast power with RamWorks III — up to 12 times more memory than your IIe came with.

You work faster, more efficiently. Your IIe does things it could never do before.

Memory intensive software like AppleWorks runs faster. You can put Pinpoint or MacroWorks *and* your spelling checker into RAM at the same time for instant response. And you can work with massive files without constantly going back to your disk drive.

Run AppleWorks 20 times faster.

With 512K or larger RamWorks, *all* of AppleWorks (including printer routines) automatically loads into RAM.

The result? AppleWorks runs up to 20 times faster. You don't waste time accessing the program disk drive. You switch instantly from word processing to spreadsheets to database. Anytime. And without wear on disk drives.

No other expansion board, not even

Apple's, gets so much out of AppleWorks.

RamWorks III gives you a huge AppleWorks desktop — 366K with the 512K RamWorks III and on up to 2251K with the 3 MEG RamWorks III (even after *all* of AppleWorks automatically loads in memory).

RamWorks eliminates AppleWork's internal memory limits. While AppleWorks 2.0 makes up to 6,350 database records available, you get up to 22,600 with RamWorks. Instead of AppleWorks' 7,250 word processing lines, you get up to 22,600 lines. And Clipboard capacity zooms from AppleWorks' 255 lines to 2042 lines.

RamWorks boards include an AppleWorks print buffer — up to 125K in the 512K model — so you can keep working while your printer is printing. Also, you don't have to buy a separate print buffer, a savings of up to \$250.00.

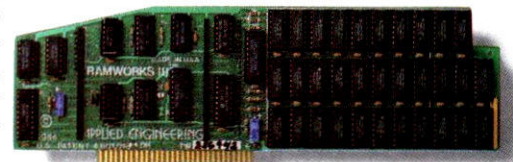
Autosegments large files.

RamWorks automatically segments large files so they can be saved on two

or more disks. When you need to work with the file, you simply load it in the same sequence you saved it.

Add up to 3 MEG without using a single expansion slot.

RamWorks III, even when it's carrying its full 3 MEG of new memory, fits in your IIe's auxiliary slot. Your valuable expansion Slots 1 through 7 are free for other peripheral cards.



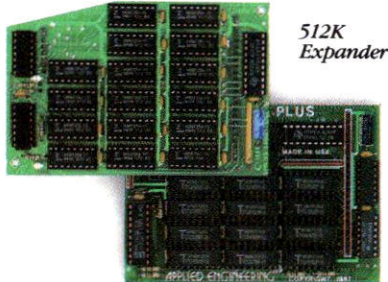
RamWorks III expansion board

If you don't need all of that power now, you can start with as little as 64K. It's easy to add memory to the expandable RamWorks III board as your needs grow.

You can go to 1 MEG on the main board using standard RAMs. That's

more memory than most people ever use. (1 MEG is about 500 pages of text.)

For even more power, snap an Applied 512K, 1 MEG or 2 MEG expander card into the RamWorks III low profile connector. The expander card won't interfere with Slot 1.



2 MEG plus Expander

Recover your investment in the wrong card.

Most of it anyway.

If you bought some one else's RAM card — one that's not recognized by your programs — RamWorks III can help recoup your loss. Pull the memory chips off your old card and plug them into RamWorks III.

Truly compatible.

RamWorks III is compatible with more off-the-shelf software than any other RAM card. It is recognized by all memory intensive programs.

Its power enhances AppleWorks, Pinpoint, Tax Preparer, Sensible Speller, ProFILER, Managing Your Money, SuperCalc 3a, VIP Professional and many, many more ... even software written specifically for Apple cards.

RamWorks III is compatible with most hardware add-ons like ProFile and Sider hard disks.

Of course, RamWorks III is fully compatible with all IIs — enhanced or unenhanced, American or European.



"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks"

Steve Wozniak, the creator of Apple Computer.

Easy to install and use.

RamWorks III quickly plugs into your IIs auxiliary slot. You get memory expansion and super-sharp 80 column text (U.S. Patent 4601018).

RamWorks III comes with every-

thing you need to get up and running. The easy-to-understand manual shows you how to get the most from your new memory. The two accompanying 5¼" disks include a graphics utility program, AppleWorks enhancement program, ProDOS and DOS 3.3 RamDrive™ and other useful utility software.

Superior color graphics, more readable text.

The ColorLink™ RGB option gives brilliant, sharp graphics and text.

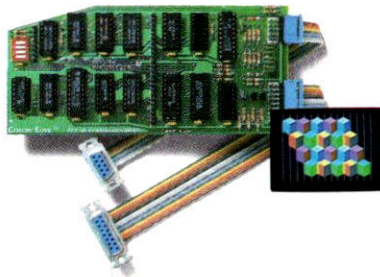
It meets all Apple standards for RGB output control. So it's compatible with more off-the-shelf software.

You can use Apple or IBM RGB monitors. ColorLink provides Apple standard analog and IBM standard digital RGB outputs (cables included).

ColorLink offers four text colors so you can use the one that's easiest on your eyes (others offer only green).

The ColorLink option plugs into the back of RamWorks III. It doesn't interfere with Slot 1.

You can order ColorLink with your RamWorks III board or add it later.



ColorLink® RGB option. IBM digital output cable. Apple analog output cable.

Optional 16 bit power.

You can explore powerful programming possibilities with Applied's optional 65C816 card. It's capable of linearly addressing more than 1 MEG.

It connects to RamWorks III's built-in CPU port. Instead of using another slot, Applied's 65C816 card simply replaces the 65C02. It maintains complete 8-bit compatibility.

The RamWorks basic® alternative.

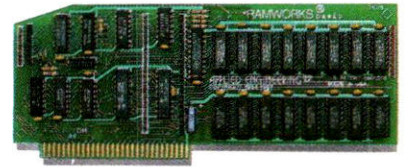
Need power but not all the capabilities of RamWorks III? Look at RamWorks basic. It has the same performance features as RamWorks III, it's attractively priced and it's available with up to 512K memory.

Backed by the leader.

All RamWorks boards are backed by Applied Engineering's 15 day money back guarantee. And by our 5 year, hassle-free warranty.

Applied Engineering has been de-

signing and building Apple enhancements for over 8 years. We invented large RAM cards for the Apple. Today, our innovative technology leads the



RamWorks basic® expansion board.

field. We sell more Apple enhancements than any one else, including Apple Computer. So you know we'll be around to solve problems and answer questions.

Order now.

See your dealer now. Or call Applied Engineering at 214-241-6060 between 9am and 11pm CST 7 days. Or send your check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome.

RamWorks basic with 64K	\$ 149
RamWorks basic with 256K	\$ 179
RamWorks basic with 512K	\$ 239
RamWorks III with 64K	\$ 179
RamWorks III with 256K	\$ 199
RamWorks III with 512K	\$ 259
RamWorks III with 1 MEG	\$ 379
RamWorks III with 1.5 MEG	\$ 539
RamWorks III with 3 MEG	\$1399
512K Expander	\$ 219
2 MEG Plus Expander with 1 MEG	\$ 599
2 MEG Plus Expander with 2 MEG	\$1049
65C816 16 Bit Card	\$ 159
ColorLink RGB Option	\$ 129
Optional Software:	
Pinpoint with RAM Enhancement Software	\$ 79
VIP Professional, Enhanced Ii version	\$ 199

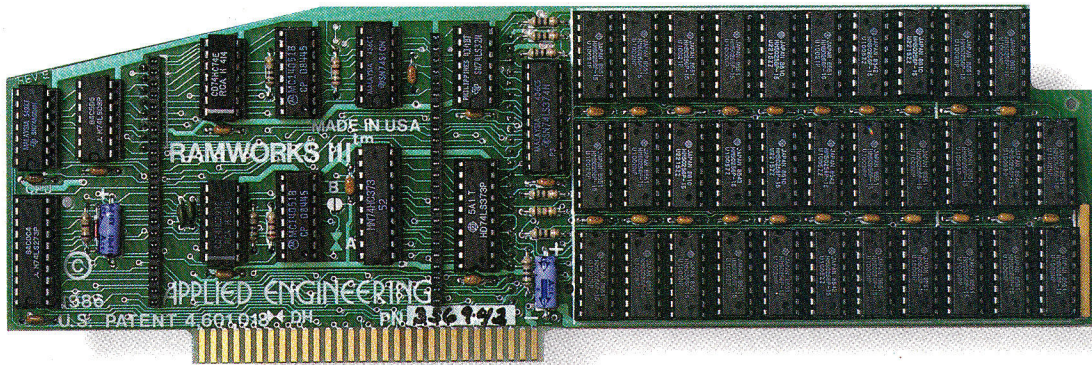
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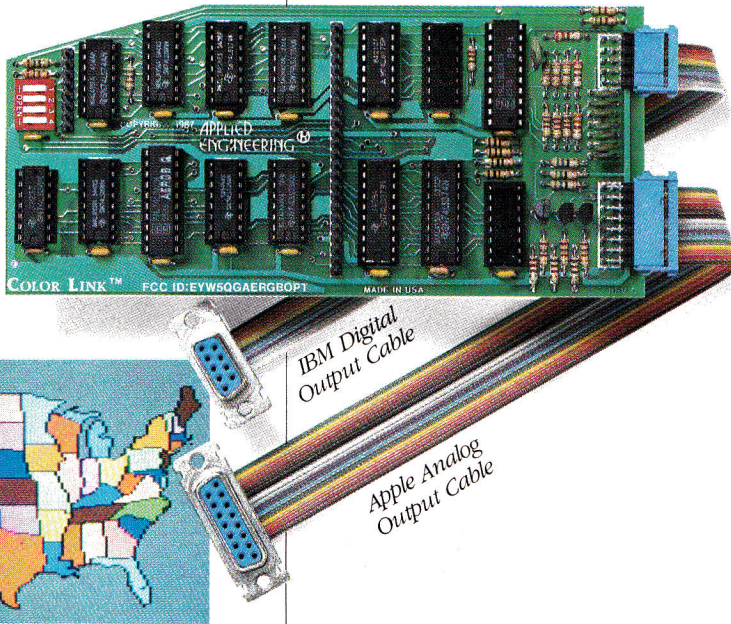
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- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- 100% compatible with all standard Iie software
- RamDrive™ and ProDrive™ the ultimate emulation software included free
- Memory is easily partitioned allowing many programs in memory at once
- Compatible RGB option featuring ultra high resolution color graphics and multiple text colors with cables for both the new Apple and standard IBM type monitors
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- Displays date and time on the AppleWorks screen with any PRO-DOS compatible clock
- Much, much more!

RamWorks III with 64K	\$179
RamWorks III with 256K	\$199
RamWorks III with 512K	\$249
RamWorks III with 1 MEG	\$329
RamWorks III with 1.5 MEG	\$489
RamWorks III with 3.0 MEG	\$1099
Ram Expander+ 1 MEG	\$499
Ram Expander+ 2 MEG	\$799
65C816 16 Bit Card	\$159
ColorLink RGB Option	\$129
Optional Software:	
Pinpoint with RAM Enhancement Software	\$79
VIP Professional	\$219

Quality and Support of the Industry Leader.

RamWorks III is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

It's Got It All.

- 15 day money back guarantee
- 5 year hassle free warranty
- Built-in super sharp 80 column display (U.S. Patent #4601018)
- Expandable to 1 MEG on main card
- Expansion connector for possible future expansion to 16 MEG

RamWorks III. The industry standard for memory expansion of the Apple Iie. ORDER YOUR RamWorks III TODAY. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering.

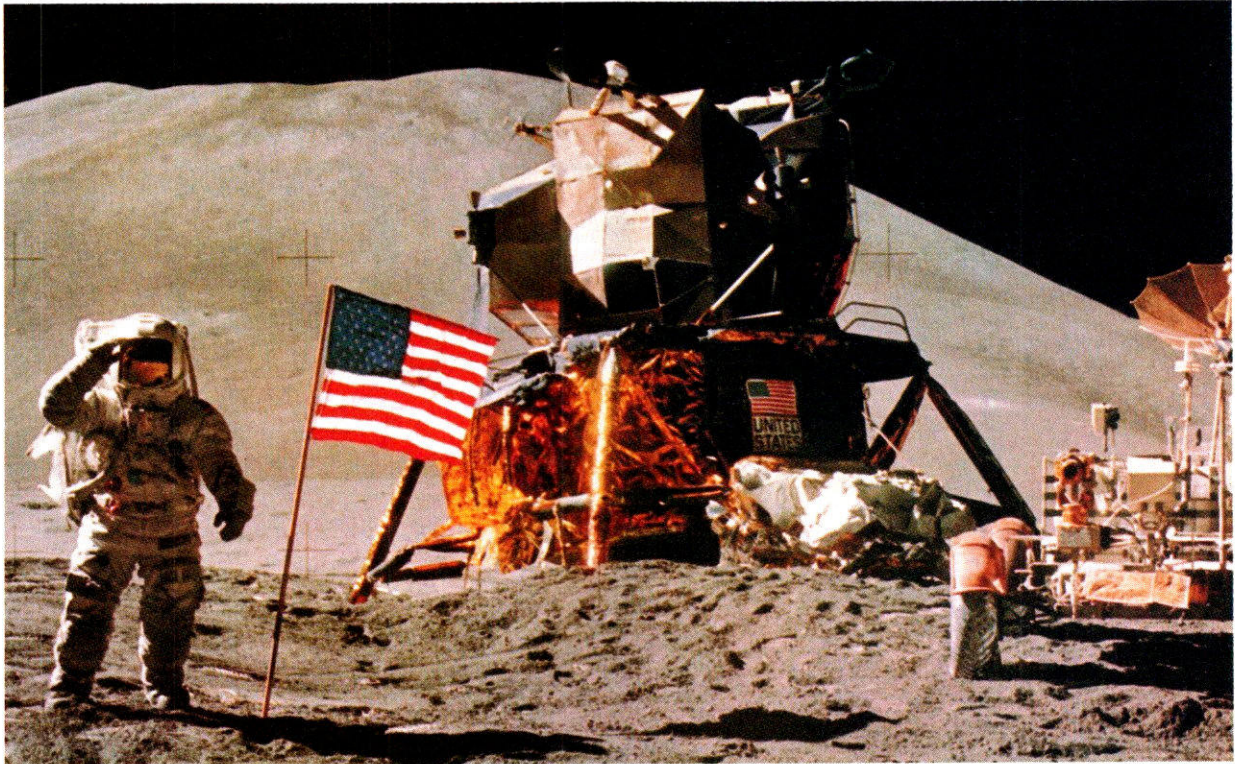
MasterCard, Visa and C.O.D. welcome. Texas residents add 6¼% sales tax. Add \$10.00 if outside U.S.A.

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The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

THE AMERICAN WAY TO THE TOP



This July 4th, we at Applied Engineering hope that all Americans will take time out to ponder who and what we are.

It is hoped that we can remind ourselves what it means to be an American.

We invented the telephone, the electric light, the phonograph, and the airplane. Americans invented the first vacuum tube, transistor and the integrated circuit, without which the personal computer would have been impossible. Over 95% of the world's new inventions are invented by Americans. We lead the world in all phases of technology; electronics, physics, chemistry, health science, space and robotics. We've sent men to the moon, landed a robot on Mars, and sent our probes out across the galaxy! Americans by their very nature are inventors, thinkers, winners and doers.

America is a country where two young men started a company in their garage and three years later Apple Computer became the industry leader. Applied Engineering started much the same way and we became the leading Apple peripheral manufacturer, with no outside sales force, no marketing strategy,

and no commissioned sales people.

Our business plan at Applied Engineering is simple. BE THE BEST. That means producing tomorrow's peripherals today, it means hard work, high quality, total dedication to Apple Computer and good service at competitive prices.

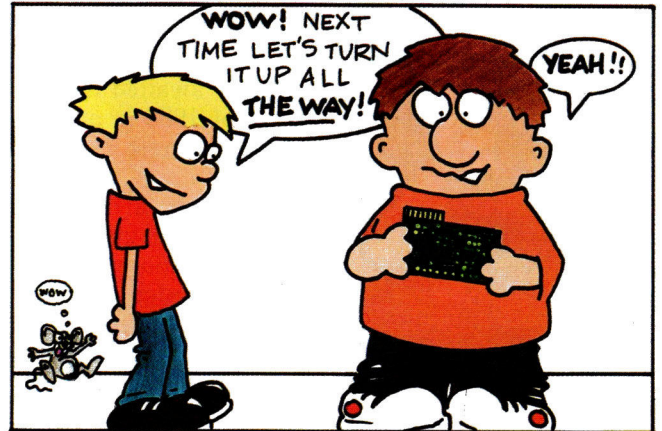
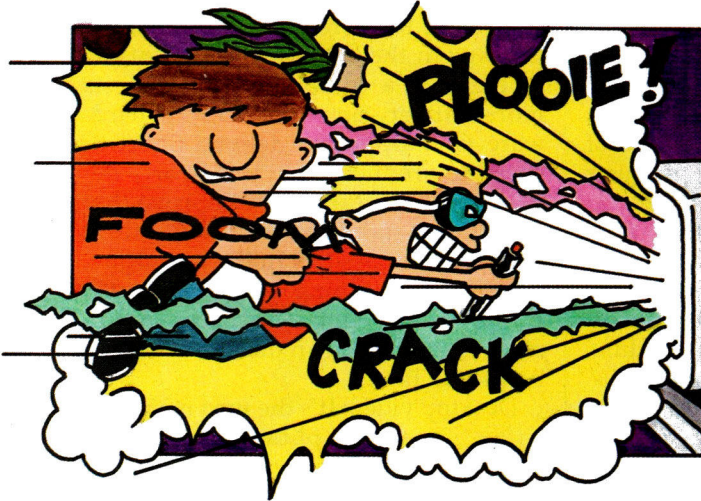
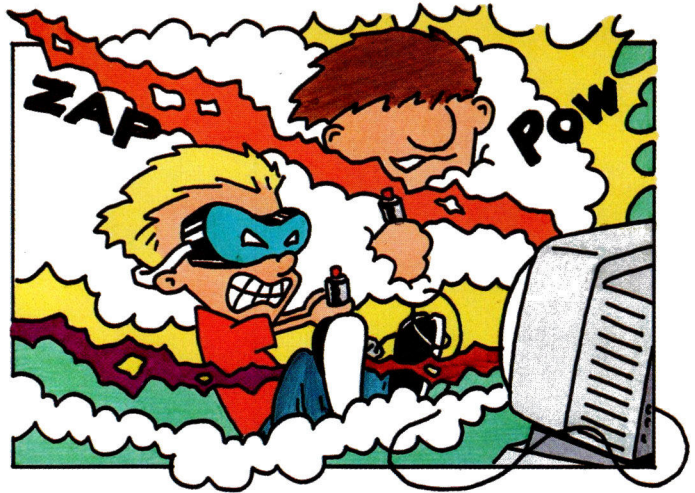
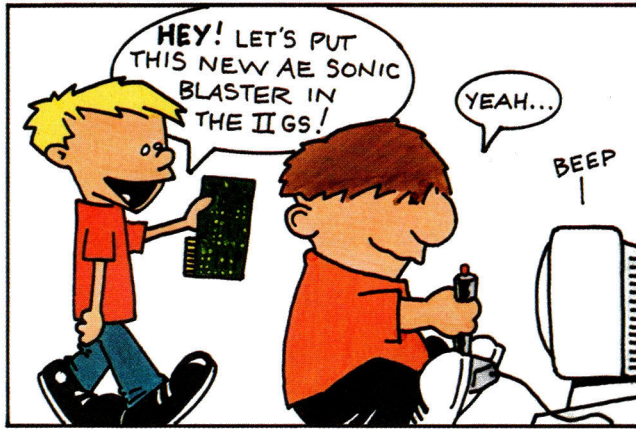
While some other guys are losing the ball game . . . we're adding to our roster. In the past few months, we've added 6 new products to our line up for a total of 41 and we're working on more. We've added more order lines and more knowledgeable people to serve you.

While others look to the Orient for solutions to their engineering and manufacturing problems, we at Applied Engineering feel differently because we know America's inventive past and her inventive future and we're excited.

To quote Dr. Robert Goddard in a letter to H. G. Wells, "There can be no thought of finishing, for 'aiming at the stars,' both literally and figuratively, is a problem to occupy generations, so that no matter how much progress one makes, there is always the thrill of just beginning."



APPLIED ENGINEERING
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Serious Fun

Okay, we're willing to admit that sometimes we take things a little too seriously. We get wrapped up in developing ways to make your IIGs more productive, and occasionally forget how much fun it can be.

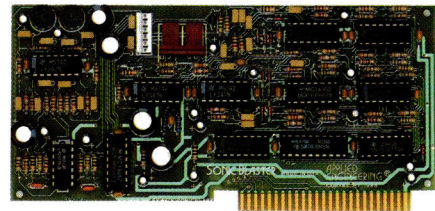
Our new Sonic Blaster™ is a full-featured stereo digitizer. You can record, amplify, edit and play back in rich, full stereo...and that's just the serious side.

It's also an awesome sound effects amplifier that'll knock your socks off playing great new IIGs games like Tomahawk, 4th and Inches, Winter Games, Silent Service and Zany Golf, to name a few.

Noises and sound effects fill the room. The difference is incredible. Use your own speakers, amplified or unamplified. Our own powerful software is included free, so there's nothing more to buy.

Sonic Blaster. It's why they put the "S" in IIGs. \$129.

Order today! To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.



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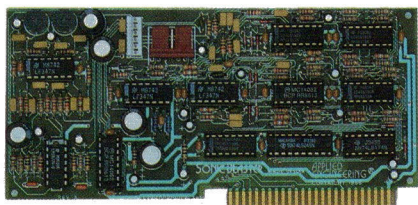


Sonic Blaster.™ It's why they put the "S" in IIGs.

Sonic Blaster™, the IIGs's first full-featured stereo digitizer, brings a new dimension to computing...the element of fun.

Record sounds, tailor them with extensive editing options and play your own amplified versions back through your home stereo speakers. Sonic Blaster automatically digitizes and play back GS games that use the computer's built-in Ensoniq sound chip (as almost all do), with thundering results.

Kick back with your favorite computer game and immerse yourself in a roomful of sound effects. Create strange answering machine messages. Drop an interesting background sound into your phone conversations (we provide 17 to get you started). Change screen colors with a virtually infinite palette of color.



Sonic Blaster's ultra-low-noise digital design is certified by the FCC.

Use your own equipment.

Use the equipment you already have. You don't need special amplified speakers because Sonic Blaster's built-in amplifier works with standard 8 Ohm speakers, small or large, including those monsters next to your stereo. Take sounds from your favorite TV show, album, compact disk, VCR, even a microphone. Then amplify, play backward, create echoes and

fades, cut, copy and paste with the Super Hi-Res software we include.

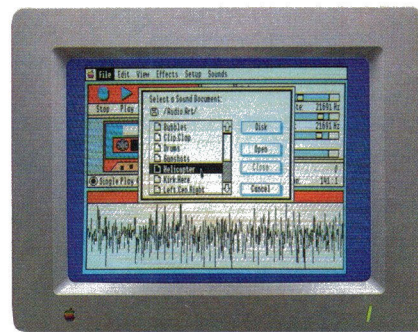
We designed Sonic Blaster to be complete. Here's a quick tour of part of the software screen:

The Buttons

Stop, Play, Pause and Record buttons, perform the same functions they do on a tape recorder. Also included are Single and Continuous Play buttons and a VU Meter to visually represent input levels.

The Sound Graph

The Sound Graph is the waveform at the bottom of the screen. Portions of the Sound Graph are selected with the mouse and then edited using the cut, copy and paste options within the Edit menu.



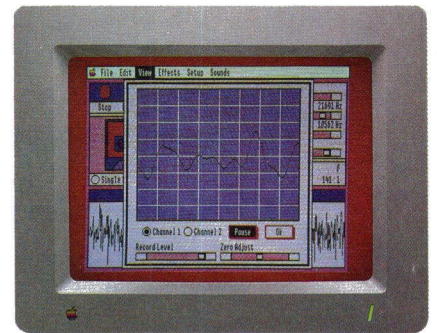
Seventeen sound effects to get you started. Add your own collection of sounds.

The Bars

The Volume bar controls amplitude of the playback. Playback and Record mode sample rates are adjusted with the next pair of bars and the Record Level bar adjusts the level from the source connected to the Sonic Blaster's input connector.

The Blocks

Three blocks give readouts of file length, available memory, bytes selected and resolution ratio.



"See" the sound on the oscilloscope.

The Oscilloscope

Sonic Blaster's built-in oscilloscope gives you a real-time display of input sounds. Use it to set your input levels before recording. Or use the Auto Gain feature to adjust the level automatically.

Sonic Blaster

\$129

Order Today!

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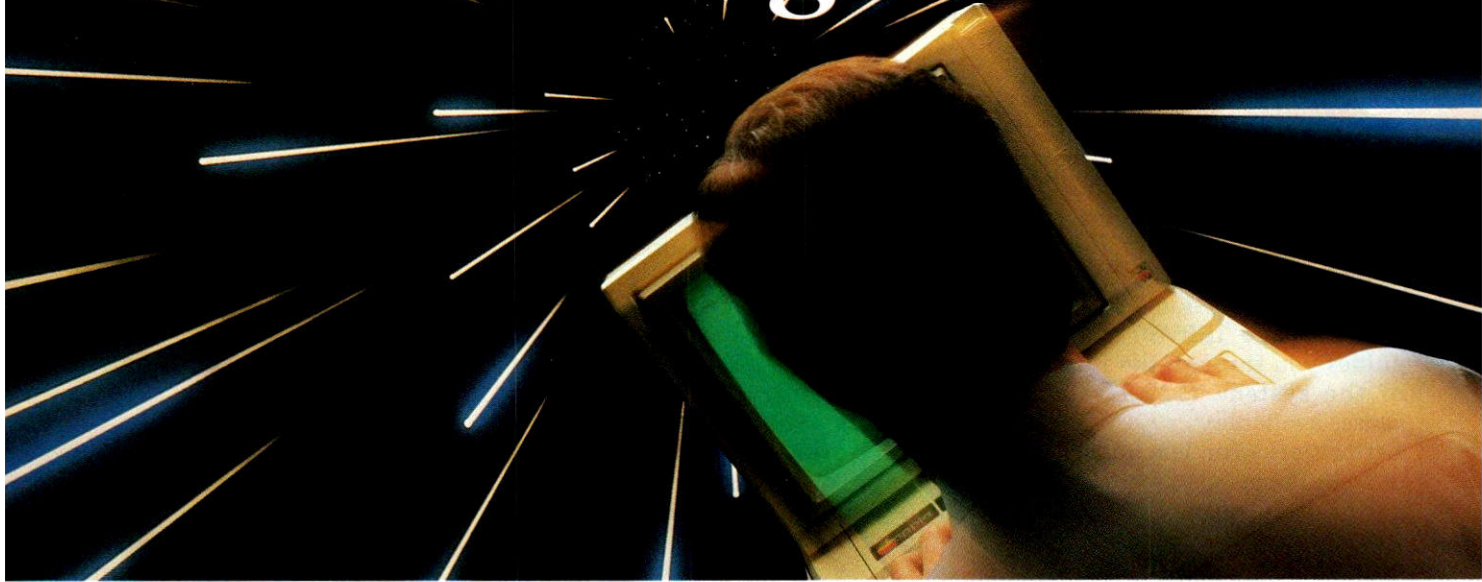
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To boldly go at speeds no man has gone before.

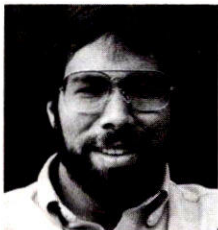


Make your Iie or II+ 40% faster than the IIGs! The TransWarp Accelerator: A Proven Product. Available now!

Computing at warp speed!

It's an experience you shouldn't miss. And with TransWarp, you won't have to. Because TransWarp will run your Iie or II+ software *3.6 times faster* — that's 40% faster than Apple's IIGs!

No more yawning while your Apple slowly rearranges text or calculates spreadsheets. With 256K of ultra-fast RAM, TransWarp speeds up *all* Apple software — including AppleWorks, and all educational software, graphics and games. And it's compatible with all standard peripheral cards (such as RamWorks and Apple memory cards), hard disks, 3½" UniDisks, 80-column cards, modems, clock cards, mice and more! You name it, TransWarp accelerates it. There's even a 16 bit upgrade chip available.



"TransWarp is great! I have replaced all my other accelerators with it!"

*Steve Wozniak, the creator
of Apple Computer*

An important difference.

With TransWarp, software runs up to three times faster than with other cards, since the others can't accelerate programs in auxiliary memory. That's why TransWarp is so much faster than the rest. Nearly all of today's more powerful programs run partially or completely in auxiliary memory: programs like AppleWorks, Pinpoint, Managing Your Money, SuperCalc 3a, BPI and Pascal, to name a few. Why settle for a card that accelerates only part of the memory?

There's one more important difference. Since TransWarp doesn't use memory caching, you get *consistent* high speed performance.

A cinch to use.

Simply plug TransWarp into any slot in your Apple II, II+ or Iie — including slot 3 in the Iie. Instantly you'll be computing

at speeds you only dreamed about before. And should you ever wish to run at normal speed, simply press the ESC key while turning your Apple on.

Since TransWarp is completely transparent, you won't need preboot disks or special software. It's ready to go right out of the package!

Speed = Productivity

Imagine the productivity gains you'll achieve when your programs are running over three times faster. TransWarp is so powerful, your Apple will make IBM PCs and even ATs look like slowpokes.

- 3.6 MHz 65C02
- 256K of ultra-fast on-board RAM
- Accelerates main *and* auxiliary memory
- Low power consumption for cool operation
- Totally transparent operation with all software
- Plugs into any slot, including slot 3 on the Apple Iie
- Accelerated 16 bit option available
- 5-year warranty

Satisfaction guaranteed!

Give *your* Apple the TransWarp advantage. With our risk-free 15-day money back guarantee, you have nothing to lose but wasted time. Call today!

TransWarp accelerator \$219
65C802 16 bit upgrade (may add later) \$69

For fast response:

See your dealer now. Or *call* Applied Engineering, 9 a.m. to 11 p.m., 7 days at (214) 241-6060. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 if outside U.S.A. Or *mail* check or money order to Applied Engineering, P.O. Box 798, Carrollton, TX 75006. Prices subject to change without notice.

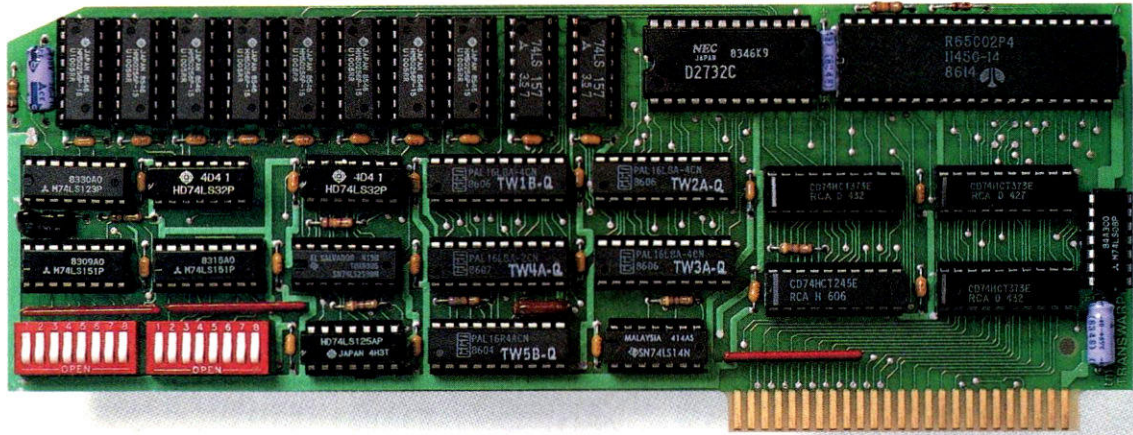
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To boldly go at speeds no Apple has gone before.

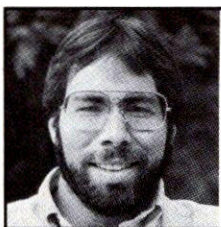


With the TransWarp™ accelerator, your IIe™ or II+™ is 40% faster than the IIGs!

Computing at warp speed!

It's an experience you shouldn't miss. And with TransWarp, you won't have to. Because TransWarp will run your IIe or II+ software *3.6 times faster* — that's 40% faster than Apple's IIGs!

No more yawning while your Apple™ slowly rearranges text or calculates spreadsheets. With 256K of ultra-fast RAM, TransWarp speeds up *all* Apple software—including AppleWorks, and all educational software, graphics and games. And it's compatible with all standard peripheral cards (such as RamWorks and Apple memory cards), hard disks, UniDisk 3.5's, 80-column cards, modems, clock cards, mice and more! You name it, TransWarp accelerates it. There's even a 16 bit upgrade chip available.



"TransWarp is great! I have replaced all my other accelerators with it!"

*Steve Wozniak, the creator
of Apple Computer*

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There's one more important difference. Since TransWarp doesn't use memory caching, you get *consistent* high speed performance.

A cinch to use.

Simply plug TransWarp into any slot in your Apple II, II+ or IIe including slot 3 in the IIe. Instantly you'll be computing

at speeds you only dreamed about before. And should you ever wish to run at normal speed, press the ESC key while turning your Apple on.

Since TransWarp is completely transparent, you won't need preboot disks or special software. It's ready to go right out of the package!

Speed = Productivity

Imagine the productivity gains you'll achieve when your programs are running over three times faster. TransWarp is so powerful, your Apple will make IBM PCs™ and even ATs™ look like slowpokes.

- 3.6 MHz 65C02
- 256K of ultra-fast on-board RAM
- Accelerates main *and* auxiliary memory
- Low power consumption for cool operation
- Totally transparent operation with all software
- Plugs into any slot, including slot 3 on the Apple IIe
- Accelerated 16 bit option available
- 5-year warranty

Satisfaction guaranteed!

Give *your* Apple the TransWarp advantage. With our risk-free 15-day money back guarantee, you have nothing to lose but wasted time. Call today!

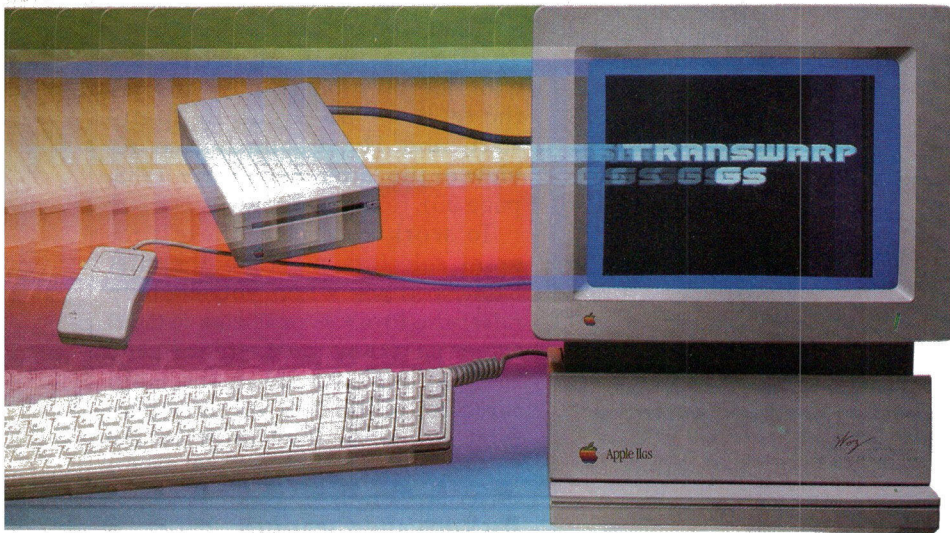
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For fast response:

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The IIGS just got up to speed.

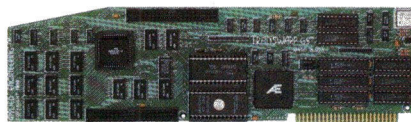
TransWarp GS,[™] Applied Engineering's new accelerator for the IIGS, is shipping now.

Employing the latest surface-mount technology. Incorporating not two, but five layers of circuitry. Meet the most technologically advanced board we've ever produced. TransWarp GS.

With it, your IIGS rips along at 7 MHz, compared to its native 2.8. The difference isn't merely noticeable, it's astounding. Pull-down menus fly open, folders leap off the finder, screens change in an eyeblink. Your IIGS feels like a color Mac...it's an entirely new computer environment!

Full compatibility.

Completely compatible with all standard hardware and software, TransWarp GS has been extensively



More than twice as fast—that's computing at TransWarp speed!

tested by all the major publications and by Applied Engineering.

So complicated, it's simple.

Plug in one connector, then insert TransWarp GS into slot 3 or 4 (the board won't override either slot's function), set your control panel and prepare yourself for warp speed.

Switching back to normal (or merely fast) speed is as easy as accessing the control panel. And in the future, when even faster micro-processor chips become available, you'll be able to switch-out chips inexpensively.

From AppleWorks GS to Zany Golf,

TransWarp GS transforms the IIGS into the computer we all knew it could be.

TransWarp GS Accelerator \$399

Order Today!

To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10 outside U.S.A.

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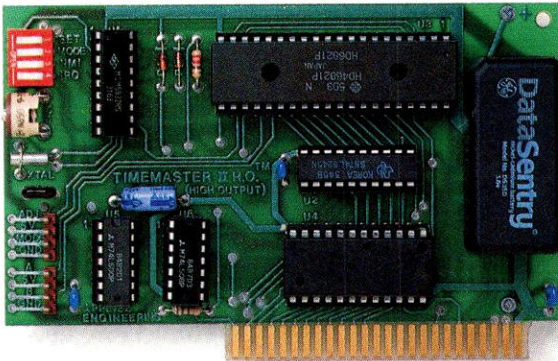
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The first clock card to add time and date to AppleWorks™ screens and files.



Timemaster H.O. So many features it's become the world's best selling clock card.

It's the smart way to put the time and date on your Apple II® or II+®. Because only the Timemaster H.O. packs ALL the important features of all the competition *combined*, including leap year, year (not just in PRO-DOS), month, date, day of week, hours, minutes, seconds and milliseconds. It's totally PRO-DOS, DOS 3.3, PASCAL and CPM compatible. And, of course, it works better than any other clock with AppleWorks.

With the Timemaster H.O. you're assured of reliable, trouble-free operation along with simple, built-in, one-command time setting, accuracy through leap years, and a firmware maintained interrupt setting.

If you're using or writing software for other clock cards, you're still covered. Because the H.O. will *automatically* emulate them. And only the Timemaster H.O. adds 15 new commands to BASIC. The H.O. even comes complete with two disks full of sample programs, including a computerized appointment book, a DOS dating program, interrupt programs, and over 30 programs that others charge you extra for — or don't even offer. As a low-cost option, you can add true BSR remote control to the H.O., giving you remote control of up to 16 lights and appliances in your home or office.

- Time in hours, minutes, seconds and milliseconds; date with year, month, day of week and leap year • 24-hour military format or 12-hour AM/PM format • Eight software controlled interrupts so you can run two programs at the same time (many examples included) • Can be set precisely to the exact second • Digital I/O port for advanced applications • Allows AppleWorks to time and date stamp all data automatically • Displays time and date on AppleWorks screens and files • Five-year warranty

Timemaster H.O. \$99.00
BSR option (may be added later) \$29.00

Order Timemaster today ... with 15-day money back guarantee and our "no hassle" five-year warranty. See your dealer or call (214) 241-6060, 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 6¼% sales tax. Add \$10.00 if outside U.S.A.

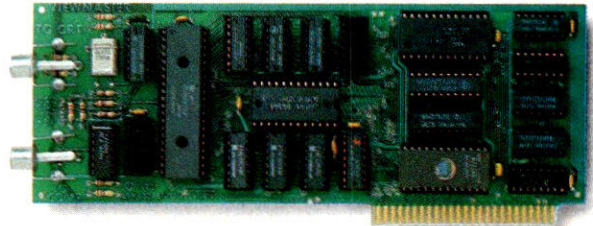
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Viewmaster 80

Now run AppleWorks™ on your II+ and keep full 80 column compatibility!



	BUILT-IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN MODE	7.5 DOT MATRIX	LIGHT PEN INPUTS	80 COLUMN OVERMODE	INVERSE CHARACTERS
VIEWMASTER 80	✓	✓	✓	✓	✓	✓	✓	✓
SUPRTERM		✓				✓	✓	✓
WIZARD 80					✓			✓
VISION 80	✓	✓			✓			
OMNIVISION		✓					✓	✓
VIEWMAX 80	✓	✓			✓		✓	✓
SMARTERM	✓	✓			✓		✓	✓
VIDEOTERM		✓	✓		✓		✓	✓

One look at the chart will give you some of the reasons there's only one smart choice in 80 column cards for your Apple. But the real secret to Viewmaster 80's success is something even better: Total compatibility.

Each Viewmaster 80 includes our powerful AppleWorks expand software, allowing AppleWorks to run on the II+ with only 64K (or more) memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work.) The software provides our full range of AppleWorks enhancements, including expanded records, word processor, multi-disk saving, time and date display on screen with any PRO-DOS clock, and more!

The Viewmaster 80 works with all 80 column applications, including DOS 3.3, PRO-DOS, CPM, Pascal, WordStar, Format II, Applewriter II, dBase II, Visicalc, Multiplan, and *hundreds* of others — including AppleWorks.

Here are just a few of the powerful features the Viewmaster 80 delivers for a great price (\$149):

- 80 Characters by 24 lines • Fully compatible with all Apple languages and software • Highest compatibility with existing 80 column software • Very low power consumption • High speed (18 MHZ) scroll rate • Upper and lower case characters and true descenders, both inverse and normal; all on-screen editing functions are supported • User-definable cursor shape • Compatible with Apple II, II+ and IIe • Five-year warranty

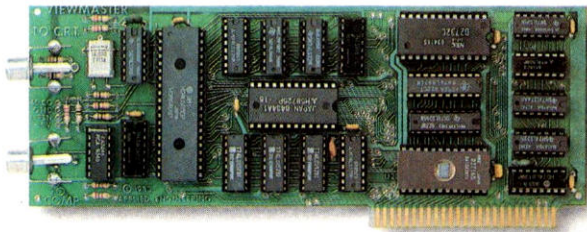
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FOR THE II+

There used to be a dozen 80 column cards . . . only the best survived



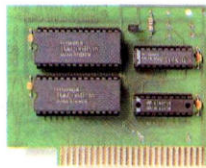
Viewmaster 80™

There's a good reason why Viewmaster 80™ has left the competition in the dust . . . total compatibility. From our free AppleWorks enhancement software to our famous warranty and complete technical support, Viewmaster 80 stands head and shoulders above any other 80 column card.

The powerful software we include allows your II+ to run AppleWorks with as little as 64K (or more) of memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work). AppleWorks runs with expanded records and word processor lines, and added features like multi-disk savings, time and date display with any ProDOS clock and many, many more.

16K Pocket Rocket™

Also for II+ owners, our Pocket Rocket expands your internal memory 16K to 64K and allows your II or II+ to run ProDOS. It's fully compatible with Applesoft, CP/M and Pascal and the low chip count reduces power requirements.



Lowercase ROM Chip™

Add lowercase capability to your II or II+ with AE's Lowercase ROM Chip. Fully supported by AppleWriter and other word processing programs, the chip makes communicating easier. Also supported by AE's On Line 64 communications software, included with our DataLink™ modem.

Viewmaster 80	\$159
16K Pocket Rocket	\$89
Lowercase ROM Chip	\$24

Applied Engineering also makes a complete line of II and II+ compatible memory cards, accelerator cards and other peripherals.

Order today!

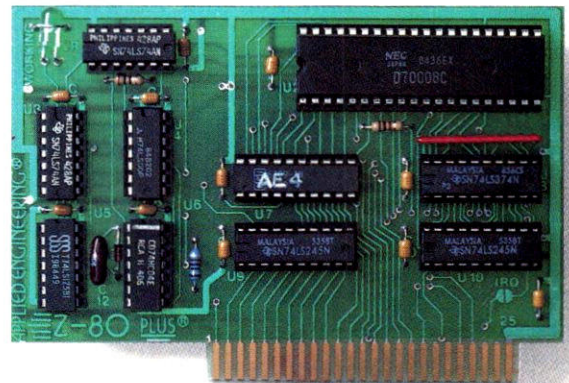
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With the Z-80 Plus®, run over 5000 new CP/M® programs.



Now, get two computers in one, and all the advantages of both.

Enter the CP/M world with the new Z-80 Plus card from Applied Engineering, and introduce your Apple IIe, IIgs or II+ to thousands of CP/M programs. Only the Z-80 Plus comes standard with the new 5.1 software, the most advanced system ever for running CP/M programs.

The new 5.1 boasts advanced features like built-in disk emulation for popular memory expansion boards, boosting both system speed and storage capacity. And menu-driven utilities that let you get to work faster. The Z-80 Plus also lets you run older CP/M programs—all the way down to Version 1.6 (2.2 is the most popular).

The Z-80 Plus is the only card on the market capable of accessing more than 64K. If you have an extended 80-column card, all 128K is usable. And if you have RamWorks, RamFactor, gsRam, gsRam Plus, or an Apple memory card in your IIe, IIgs or II+, up to 1088K is available.

Each Z-80 Plus comes with our CP/M Ram Drive software, enabling most memory cards to work as a high-speed Ram disk so CP/M software can run up to *twenty times faster*. So packages like WordStar, dBASE II, Turbo Pascal and most others run at blinding speed.

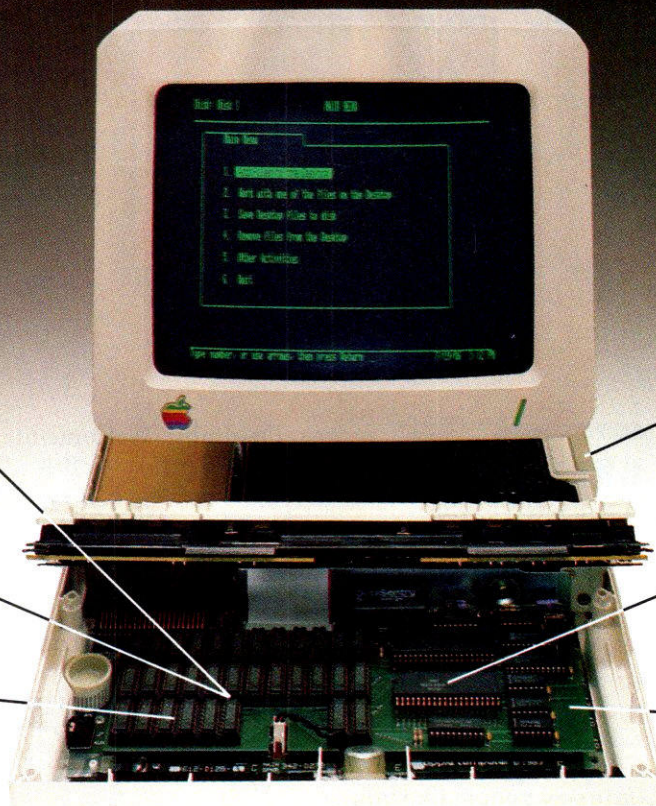
Simply plug the Z-80 Plus into any slot in your Apple. You'll get the benefits of two computers in one—all at an unbelievably low price (only \$149!).

- Fully compatible with ALL CP/M software
- Fully compatible with 5¼" and 3½" disk drives as well as most hard disks including the Sider
- Fully compatible with Microsoft disks (no pre-boot required)
- Specifically designed for high speed operation
- Runs WordStar, dBASE II, Turbo Pascal, and ALL other CP/M software with *no pre-boot*
- Semi-custom I.C. and low parts count allows Z-80 Plus to fly through CP/M programs with extremely low power consumption (we use the Z-80B)
- Does EVERYTHING other Z-80 boards do, *plus Z-80 interrupts*
- Five-year warranty

To get your Z-80 Plus or for more information see your dealer, or call 214-241-6060 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5½% sales tax. Add \$10.00 outside U.S.A.

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CPM is a registered trademark of Digital Research.



Multiply memory — Add up to 1 MEG with Z-RAM Ultra.

Built-in clock — Time and date stamping clock powered by an on-board 20 year auto-recharging battery.

Multiply speed — Run and load programs up to 30 times faster.

Multiply efficiency — Optional 65C816 16-bit processor plugs in easily with no other component changes.

Multiply production — Printer buffer lets you keep working while the system prints AppleWorks files.

Multiply applications — Run CP/M programs with built-in Z-80B microprocessor.

IIC multiplied.

Imagine multiplying your AppleWorks word processor capacity over threefold to 22,600 lines from its present 7,250.

Multiplying your maximum number of records to 22,600 from the current 6,350. And available desktop memory rockets to over 700K with *all* of AppleWorks loaded into RAM.

You can do all of that and more with the Z-RAM Ultra expansion board for Apple IIc's.

Z-RAM Ultra completely loads programs into RAM, then runs them up to 30 times faster. And the included RAM disk is compatible with Applesoft, ProDOS, DOS 3.3, PASCAL and CP/M®.

Z-RAM Ultra even expands the clipboard and autosegments large files so they can be saved on two or more disks. Nothing else even comes close to enhancing Appleworks like this!

There's lots more.

Memory and speed just begin the story. Z-RAM Ultra 3 has a built-in Z-80B microprocessor so it can run CP/M programs. That's one of the largest bodies of software in existence and includes WordStar, dBase II, Turbo

PASCAL, Microsoft BASIC and more.

With Ultra 2 & 3, there's a ProDOS compatible, battery-backed up clock that displays time and date on AppleWorks screens *and* time and date stamps any ProDOS file.

There's an AppleWorks printer buffer so you keep working while files are printed.

With its patented technology and computer aided design, Z-RAM Ultra runs with less than half the power drain of other memory cards.

Easy to install.

It's easy to get all that performance. Z-RAM Ultra installs in just a few minutes with a screwdriver — no jumper wires, no clips, no drive removal.

A complete package.

Z-RAM Ultra comes with simple, easy-to-follow instructions, RAM disk software, Z-80 operating system, CP/M manual, a five-year parts and labor warranty, and all the AppleWorks enhancements we're famous for.

See your dealer or call today.

For more information or to order your Z-RAM Ultra, see your dealer or call 214-241-6060 between 9 am and

11 pm, 7 days. Or send check or money order to Applied Engineering.

Prices	
Z-RAM Ultra 3 (with memory, clock and CP/M)	
256K — \$369.00	512K — \$489.00
1 MEG — \$729.00	
Z-RAM Ultra 2 (with memory and clock)	
256K — \$289.00	512K — \$409.00
1 MEG — \$649.00	
Z-RAM Ultra 1 (Memory only — expandable to 512K)	
256K — \$219.00	512K — \$339.00
16-bit 65C816 Upgrade \$79.00	
Z-80c Card to run CP/M software (no memory upgrade) \$159.00	
MasterCard, VISA and C.O.D. welcome. Texas residents add 7% sales tax. Add \$10.00 outside U.S.A.	
<small>Prices subject to change without notice.</small>	

AE Applied Engineering
The Apple enhancement experts.
 P.O. Box 5100, Carrollton, TX 75011
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"Amazing as it may sound, VIP Technologies has managed to copy 1-2-3, add a Mac interface, and transport the whole thing to the Apple II."

Editor's Choice Award
inCider Magazine

Apple®II owners—rejoice. There's finally a spreadsheet that treats your Apple like a serious computer.

It's called VIP Professional® and it establishes once and for all the Apple II's place in the business world.

VIP Professional not only incorporates familiar Lotus® 1-2-3® functions, but it's compatible with all Lotus 1-2-3 compatible files. This alone makes it a new spreadsheet standard for Apple users.

But we didn't stop there. VIP Professional's mouse interface and pull-down menus give it the best of Excel® too. And its massive database and text processing capabilities outshine even AppleWorks®.

The result is the most powerful business tool ever available to Apple users. Mini and supermini versions are already in use worldwide. Now VIP Professional is available for the Apple IIe, IIc and IIGS.

Better than 1-2-3.

Because VIP Professional is designed to work exactly like 1-2-3, those familiar with the program will be instantly productive. And novices can take advantage of existing 1-2-3 tutorials and productivity aids, as well as our user-friendly dialog boxes.

VIP Professional also incorporates a mouse interface that allows easy, Macintosh®-like interaction with your Apple (or use the keyboard if you prefer).

Now you can instantly choose functions from pull-down menus and enter data with the click of a button. Icons and scroll bars help you organize information.

You'll also enjoy superior color graphics. InCider Magazine said, "Graphics is one area where VIP really outshines Lotus, as the on-screen

pictures are much better on the Apple than on the IBM®"

And VIP Professional offers more raw spreadsheet power: A large 8,192 row by 256 column sheet and additional data query fields. Plus, VIP Professional is the *only* mouse-driven spreadsheet that features pull-down menus *and* addresses over 4 megabytes of memory on IIe or IIc and 8 megabytes on IIGS.

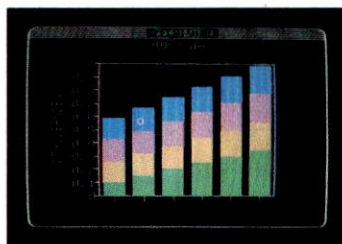
Better than AppleWorks.

Like AppleWorks, VIP Professional integrates a spreadsheet, database and text processing. But VIP Professional's spreadsheet and database are far more powerful—and VIP also offers colorful graphics and a mouse interface.

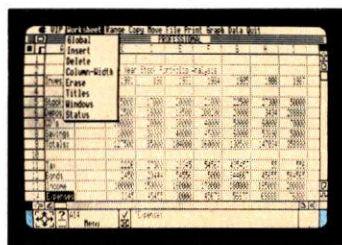
VIP Professional reads all AppleWorks' files and is supported by templates and macros to speed common functions.

Better than Excel.

In giving Excel a mouse interface, Microsoft® stripped it of many of 1-2-3's qualities—including calculation speed and spreadsheet memory. Only VIP Professional gives you more speed and power than 1-2-3 with the ease-of-use of Excel. All at a much better price.



Superior color graphics for dynamic charts and graphs.



Pull-down menus make using VIP Professional easy.

"When you get tired of playing around with the others and want to get serious, VIP Professional is something worth looking into. There are few serious business products for any microcomputer that I would give a higher recommendation to than VIP Professional."

1986 Editor's Choice Award
AmigaWorld, November-December 1986

"If power spreadsheeting is what you've got in mind, this is the package for you."

inCider Magazine

Special offer!

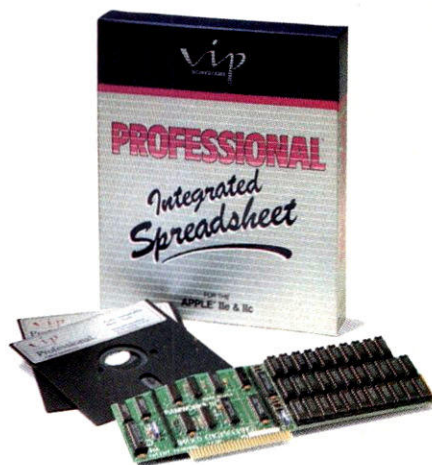
VIP Professional requires at least 256K of auxiliary RAM to operate. It works with a range of Applied Engineering memory and accelerator boards, including all RamWorks and Z-RAM boards (256K required), all GS-RAM boards (512K required), and TransWarp boards.

Apple System	VIP software (with purchase of board)	VIP software only
IIe, IIc	\$199	\$219 (reg. \$249)
IIGS	\$249	\$269 (reg. \$299)

Applied Engineering offers special prices on VIP Professional software and even better prices when purchased with Applied Engineering boards.

To order or for more information, see your dealer or call Applied Engineering, 9 a.m. to 11 p.m., 7 days at (214) 241-6060. MasterCard, VISA and C.O.D. welcome. Applied Engineering, P.O. Box 798, Carrollton, TX 75006.

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***Prepared by Dr. Kenneth Buchholz
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