JUNE-JULY 1983 NEWSLETTER

MARKET PLANS FOR 99/2 ON HOLD FOR NOW

Texas Instruments has put the plans for national marketing of the 99/2 on hold for now. The recent decision to sell the 99/4A at $149.00 with a $50.00 rebate starting June 1 makes the 99/2 over priced.

The 99/2 will however be test marketed in some areas at a reduced price. At present there is no detail on the 99/2 pricing for the test markets, but it will be lower than originally set.

TI-99/4A FOR $99.00

TI has reduced the price of the 99/4A in a two-step plan. A $100.00 cut on the list price started on April 15. That put the price down to the $149 level. Step two started June 1 and calls for a $50.00 rebate, bringing the price down to $99. What a buy!

FREE P-BOX

Effective in April T.I. offered a retailer promotion on the EXPANSION P-BOX. It is also effective at all T.I. Exchange Centers. You can receive a Free P-Box with the purchase of any three of the following items:

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PHP 1250 DISK DRIVE
PHP 1240 CONTROL CARD
PHP 1260 32K MEMORY EXPANSION CARD
PHP 1220 RS-232 CARD
PHP 1270 P-CODE CARD
PHM 3111 TI WRITER
PHM 3113 MICROSOFT MULTIPLAN
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To receive your Free P-Box from an Exchange Center, three of the above items must be purchased at the same Exchange Center location. Retailers will probably handle the promotion the same way. The promotion will last thru June.

For the Phoenix area you can contact:

Texas Instruments Exchange Center
8102 N. 23rd Ave., Suite A
Phoenix, Az 85021
864-1992

WHAT IS A P-BOX?

It is the Peripheral Expansion Box that provides a compact way

to expand the 99/4A capabilities. The P-Box can house up to seven plug-in peripheral cards and a disk drive without cables or clutter. Just plug in a card to add the extra power and functions you want.

DISK DRIVE

The Disk Drive stores 90K bytes of information on each diskette. It stores the information similar to a cassette recorder, but it is much faster and also allows storing by name, variable length records as well as sequential and relative files. The free disk space is automatically reassigned for file allocation.

This high-speed and high-volume memory device uses a 5.25 inch diskette that spins very rapidly. The disk drive can rapidly locate, read from, and write to any position or file on the diskette.

The 99/4A can have one internal disk drive that fits inside the Peripheral Expansion Box and up to two external drives.

CONTROL CARD

The Disk Drive Controller Card places the magnetic read/write head at the desired postion on the diskette while the disk drive spins the diskette at a constant speed. The controller card also puts an index on the diskette so that data that has been written is easy to locate.

Also included in the price of the Controller Card is the Disk Manager 2 Command Module. This module is used for initializing, naming, and renaming diskettes, renaming files, deleting files, copying files, and copying diskettes.

The TI disk system is an advanced type system, because the control software needed for the disk system is in permanent ROM in the Disk Manager 2 Command Module and also in the Disk Controller Card. Therefore, only a small amount of the computers RAM is used for working space. It only takes about 500 bytes per open file.

32K MEMORY EXPANSION CARD

This card adds another 32,000 bytes of Random Access Memory (RAM) to the 16,000 bytes of RAM that come with the 99/4A. To use the Memory Expansion Card you will need Extended Basic, Editor/Assembler, Mini Memory, TI LOGO, P-System, or any other Command Module designed to access the additional memory.

RS-232 Card

This card allows your computer to talk to a printer or modem or both. It has both an 8-bit parallel and RS232 serial capabilities built in. The card enables you to list programs on a printer, send and receive data from other computers (like the SOURCE), exchange programs between TI Home Computers over the phone, use a Word Processor like TI-WRITER, and much more.

P-Code Card

This card will allow you to program in a high level programming language named Pascal. Pascal is about 3 to 5 times faster than the _tandard Basic built into the 99/4A. However, it is not as fast as the Assembler Language you can write with the Mini Memory or the Editor/Assembler. The advantage is that Pascal programs will run on more than one brand of home computer.

To be able to run Pascal programs you will need the 32K Memory Expansion, and the P-Code Card. If you want to write Pascal Programs you will also need the disk system and the Editor, Filer, Compiler, Assembler and Linker.

TI-WRITER

The TI-WRITER is a Solid State Word Processor. It has many of the features of large word processors, and it works on the 99/4A home computer. I use the TI-WRITER to write the newsletters. It makes the typewriter obsolette.

You will need the 32K Memory Expansion, Disk Drive System, RS-232 Card, and a printer.

MICROSOFT MULTIPLAN

This Command Module is an Electronic Worksheet that is replacing VisiCalc. It is the next generation as far as electronic spreadsheets are concerned. Multiplan is probably the most powerful modeling and planning tool ever invented thus far.

Multiplan has a large grid of entry cells (255 rows long and 63 columns wide) for words, numbers, and formulas. It frees you from th limitations of the old methods of calculation, because it can remember all the relationships between any entry on the worksheet and can automatically perform all the calculations. Multiplan allows you to ask "What if?".

I have found the TI Microsoft Multiplan very easy to learn and work with. I am very impressed.

EXTENDED BASIC SPEECH DEMO

The following program demonstrates the capabilities your 99/4A has for speech when using EXTENDED BASIC and the SPEECH SYNTHESIZER.

In the program, the computer and the TV have an argument. The program shows just some of the versatility the EXTENDED BASIC has for speech.

```
100 REM EXTENDED BASIC SPEECH DEMO
110 CALL CLEAR
120 CALL SCREEN(9)
130 PRINT "   99/4 SPEECH MODULE DEMO",,,,,,,,,,,,,,," PRESS ANY KEY TO START",
,,,,,,,,,,
140 S$="PRESS+ANY+KEY+TO+START"
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```
150 CALL SCREEN(13)
160 FOR K=1 TO 2
170 GOSUB 500
180 FOR C=2 TO 16 STEP 14
190 FOR X=2 TO 8
200 CALL COLOR(X,C,1)
210 IF STAT=1 THEN 310
220 NEXT X
230 FOR Y=1 TO 35
240 GOSUB 3640
250 IF STAT=1 THEN 310
260 NEXT Y
270 NEXT C
280 CALL SCREEN(9)
290 NEXT K
300 GOTO 150
310 CALL CLEAR
320 CALL SCREEN(5)
330 CALL CHAR(96,"00000000FFFFFFFF")
340 CALL CHAR(97,"FFFFFFFF00000000")
350 CALL CHAR(98,"F0F0F0F0F0F0F0F0")
360 CALL CHAR(99,"0F0F0F0F0F0F0F0F")
370 REM MACHINE GUN PARTS
380 CALL CHAR(136,"00003927273901  0")
390 CALL CHAR(137,"0000FF8FFFFFFF48")
400 CALL CHAR(138,"0000F0F8FCF8F080")
410 CALL CHAR(139,"00010204")
420 CALL CHAR(140,"88080808")
430 CALL CHAR(141,"40201008")
440 CALL CHAR(142,"0000FFFFFFFFFF48")
450 CALL CHAR(143,"0000F0F8FFF8F080")
460 CALL COLOR(9,13,16)
470 CALL CHAR(128,"00000000FF")
480 CALL CHAR(104,"9A3E7B4D2A6E1F3E")
490 CALL CHAR(112,"FFFFFFFFFFFFFFFF")
500 CALL CHAR(113,"80C0E0F0F8FCFEFF")
510 CALL CHAR(114,"0103070F1F3F7FFF")
520 CALL CHAR(115,"FF7F3F1F0F070301")
530 CALL CHAR(116,"FFFEFCF8F0E0C080")
540 CALL CHAR(120,"FFFFFFFFFFFFFFFF")
550 CALL CHAR(121,"0103070F1F3F7FFF")
560 CALL CHAR(122,"FFFEFCF8F0E0C080")
570 GOTO 600
580 CALL SAY(S$)
590 RETURN
600 REM START PROGRAM
610 S$="HELLO I+AM+FROM+#TEXAS INSTRUMENTS# I+AM+A HOME+COMPUTER."
620 GOSUB 580
630 S$="BUT+IF+YOU+WANT U+CAN REFER+TO+ME+BY+NUMBER   I+AM+A T+I+NINETY+NINE FOUR
640 GOSUB 580
650 REM GO TO SUBR TO DRAW THE 99/4
660 GOSUB 2200
670 S$="I+HAVE+SOME+THINGS I+WANT+YOU+TO+SEE."
680 GOSUB 580
690 S$="ARE+YOU+ALL+#READY TO START#."
700 GOSUB 580
710 CALL HCHAR(1,1,63,384)
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720 S$="CAN+U+HEAR+ME+O+K"
730 GOSUB 580
740 CALL HCHAR(13,1,63,384)
750 S$="VERY GOOD,JUST+ONE+SECOND."
760 GOSUB 580
770 CALL CLEAR
780 S$="I+NEED+TO CHECK+OUT THIS+HERE T+V+SET+FIRST JUST+TO+MAKE+SURE IT+IS+WORK
ING."
790 GOSUB 580
800 FOR X=1 TO 8
810 FOR Y=15 TO 2 STEP -1
820 CALL SCREEN(Y)
830 NEXT Y
840 NEXT X
850 CALL SOUND(500,110,3)
860 S$="O+NO+NOT+AGAIN  I+AM+SORRY, THIS+T+V+SET GIVES+ME+PROBLEMS. I+GUESS WE+J
UST+DO+NOT GET+A1+LONG."
870 GOSUB 580
880 FOR I=2 TO 8
890 CALL COLOR(I,2,1)
900 NEXT I
910 S$="THE SPEECH MODULE IS ALL WET "
920 GOSUB 3300
930 FOR X=1 TO 24 STEP 2
940 Y=3+ABS(12-X)
950 CALL SCREEN(Y)
960 PRINT
970 PRINT
980 NEXT X
990 S$="SEE+WHAT+I+MEAN"
1000 GOSUB 580
1010 S$="I+GUESS+I+MUST TRY+ONE+MORE+TIME TO+GET+IT+TO+WORK. "
1020 GOSUB 580
1030 CALL CLEAR
1040 S$="O+K, THE+SCREEN+SHOULD+BE+BLUE RIGHT+NOW."
1050 GOSUB 580
1060 CALL SCREEN(11)
1070 S$="UHOH"
1080 GOSUB 580
1090 S$=". T+V, #THAT IS INCORRECT#. YOUR+SCREEN+IS+#SUPPOSED TO#+BE BLUE RIGHT+
NOW."
1100 GOSUB 580
1110 CALL SCREEN(9)
1120 PRINT "       SORRY, HOW'S THIS?",,,,,,,,,,,,,,,,,,,,,,
1130 S$="#NICE TRY#. NOW+TRY+AGAIN AND+THIS+TIME GET+IT+RIGHT."
1140 GOSUB 580
1150 REM DRAW A BOX
1160 CALL CLEAR
1170 CALL SCREEN(16)
1180 CALL HCHAR(12,8,96,9)
1190 CALL HCHAR(21,8,97,9)
1200 CALL VCHAR(13,8,98,8)
1210 CALL VCHAR(13,16,99,8)
1220 S$="  .   . WHY+R+U+SO+SQUARE A1+A1+A1+A1"
1230 GOSUB 580
1240 CALL COLOR(10,2,1)
1250 CALL HCHAR(1,1,104,768)
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1260 S$=" . .   #WHAT WAS THAT#."
1270 GOSUB 580
1280 FOR I=1 TO 200
1290 NEXT I
1300 CALL CLEAR
1310 CALL SCREEN(15)
1320 S$="I+HAVE+HAD ABOUT+ALL+I+CAN+TAKE FROM+U."
1330 GOSUB 580
1340 CALL CLEAR
1350 PRINT "I AM WILLING TO TURN BLUE IFYOU APOLOGIZE AND PROMISE TOBE NICE TO M
E!",,,,,,,,,,,,,,,,,,,,,,,,,,,,
1360 S$=" . I+WILL+NOT"
1370 GOSUB 580
1380 CALL SCREEN(2)
1390 S$=" . . . O+K.#YOU WIN#. I AM SORRY. I+WILL+NOT BE+MEAN+TO+YOU+AGAIN"
1400 GOSUB 580
1410 CALL CLEAR
1420 PRINT "     NOT SINCERE ENOUGH.",,,,,,,,,,,,,,,,,,,,,,,,,,
1430 FOR I=2 TO 8
1440 CALL COLOR(I,16,1)
1450 FOR Z=1 TO 80
1460 NEXT Z
1470 NEXT I
1480 S$="I GIVE UP. THE+T+V+WANTS+TO PLAY+GAMES+WITH+ME"
1490 GOSUB 580
1500 CALL CLEAR
1510 S$="FOR+GET ABOUT+IT. DO+NOT+LOOK AT+THE1+SCREEN ANY MORE"
1520 GOSUB 580
1530 CALL SCREEN(5)
1540 PRINT " SHH. DO NOT TELL HIM.",,,
1550 S$="AFTER+ALL U+DO+NOT+NEED+A T+V+SCREEN IF+YOU+HAVE+ME. "
1560 GOSUB 580
1570 PRINT " LET THIS BE OUR SECRET.",,,,,,,,,,,,,,,,,,,;
1580 S$="I+DO+NOT+LIKE AN UP+IT+T T+V+SET. "
1590 GOSUB 580
1600 PRINT " BOY, DO I FEEL BLUE...";
1610 S$="IF+THERE+IS+SOME+THING THAT+T+V+CAN+DO THAT+I+CAN+NOT I+WANT+TO+SEE+IT.
"
1620 GOSUB 580
1630 CALL CLEAR
1640 S$="NOW SCREEN WHAT+CAN+YOU+DO. "
1650 GOSUB 580
1660 S$="I CAN MAKE A DEATH RAY AND"
1670 GOSUB 3300
1680 S$="GIVE YOU WHAT YOU DESERVE"
1690 GOSUB 3300
1700 S$="OF+COURSE+YOU+CAN A1+A1+A1+A1"
1710 GOSUB 580
1720 CALL CLEAR
1730 GOSUB 3360
1740 S$="FOO. PLEASE SOME+ONE+HURRY AND+TURN+OFF+THE+T+V BE+FOR+IT"
1750 GOSUB 580
1760 GOSUB 3460
1770 S$="YOU+GOT+ME. "
1780 GOSUB 580
1790 FOR X=1 TO 1000
1800 NEXT X
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1810 CALL CLEAR
1820 CALL SCREEN(7)
1830 S$="THE SHORT PLAY WE HAVE JUST"
1840 PRINT S$
1850 PRINT "PUT ON IS OVER.  WE DID IT"
1860 PRINT "JUST FOR YOU. BY THE WAY,"
1870 PRINT "THE SPEECH MODULE AND I LIKE"
1880 PRINT "WORKING TOGETHER. AFTER ALL,"
1890 PRINT "WE ARE BOTH PART OF THE"
1900 PRINT "TEXAS INSTRUMENTS TEAM."
1910 PRINT
1920 PRINT
1930 PRINT "BEFORE WE GO, THERE IS ONE"
1940 PRINT "MORE THING WE WANT YOU TO"
1950 PRINT "KNOW ABOUT. YOU CAN FIND ALL"
1960 PRINT "OF THE WORDS THAT WE USE IN"
1970 PRINT "THIS PROGRAM IN A SMALL"
1980 PRINT "MODULE MADE BY T.I. FOR THE"
1990 PRINT "HOME COMPUTER. WITH THIS"
2000 PRINT "MODULE, YOUR HOME COMPUTER"
2010 PRINT "CAN SAY ABOUT 300 DIFFERENT"
2020 PRINT "WORDS. "
2030 S$="AS+YOU+CAN+SEE"
2040 GOSUB 580
2050 S$="THESE+THREE+HUNDRED+WORDS"
2060 GOSUB 580
2070 S$="WILL+LET+U+SAY"
2080 GOSUB 580
2090 S$="ALL+MOST ANY+THING+YOU+WANT. . . "
2100 GOSUB 580
2110 GOSUB 2200
2120 S$="       T H E    E N D        "
2130 PRINT S$
2140 S$="THE END"
2150 GOSUB 580
2160 FOR X=1 TO 2500
2170 NEXT X
2180 GOTO 110
2190 STOP
2200 REM SUB TO WRITE 99/4
2210 CALL CLEAR
2220 CALL COLOR(11,3,1)
2230 CALL COLOR(12,5,3)
2240 CALL SCREEN(9)
2250 CALL HCHAR(1,1,112,32)
2260 CALL HCHAR(2,1,112,32)
2270 CALL HCHAR(3,1,112,32)
2280 CALL HCHAR(4,1,112,32)
2290 CALL HCHAR(5,1,112,4)
2300 CALL HCHAR(5,4,116)
2310 CALL HCHAR(5,10,115)
2320 CALL HCHAR(5,11,112,3)
2330 CALL HCHAR(5,13,116)
2340 CALL HCHAR(5,19,115)
2350 CALL HCHAR(5,20,112,13)
2360 CALL HCHAR(6,1,112,3)
2370 CALL HCHAR(6,5,112,5)
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2380 CALL HCHAR(6,11,112,2)
2390 CALL HCHAR(6,14,112,5)
2400 CALL HCHAR(6,20,112,13)
2410 CALL HCHAR(7,1,112,3)
2420 CALL HCHAR(7,5,112,5)
2430 CALL HCHAR(7,11,112,2)
2440 CALL HCHAR(7,14,112,5)
2450 CALL HCHAR(7,20,112,13)
2460 CALL HCHAR(8,1,112,3)
2470 CALL HCHAR(8,5,112,5)
2480 CALL HCHAR(8,11,112,2)
2490 CALL HCHAR(8,14,112,5)
2500 CALL HCHAR(8,20,112,13)
2510 CALL HCHAR(9,1,112,4)
2520 CALL HCHAR(9,4,113)
2530 CALL HCHAR(9,11,112,3)
2540 CALL HCHAR(9,13,113)
2550 CALL HCHAR(9,20,112,13)
2560 CALL HCHAR(10,1,112,9)
2570 CALL HCHAR(10,11,112,8)
2580 CALL HCHAR(10,20,112,7)
2590 CALL HCHAR(10,27,112,6)
2600 CALL HCHAR(11,1,112,9)
2610 CALL HCHAR(11,11,112,8)
2620 CALL HCHAR(11,20,112,6)
2630 CALL HCHAR(11,26,112,7)
2640 CALL HCHAR(12,1,112,9)
2650 CALL HCHAR(12,11,112,8)
2660 CALL HCHAR(12,20,112,5)
2670 CALL HCHAR(12,25,112,8)
2680 CALL HCHAR(13,1,112,4)
2690 CALL HCHAR(13,6,112,4)
2700 CALL HCHAR(13,11,112,3)
2710 CALL HCHAR(13,15,112,4)
2720 CALL HCHAR(13,20,112,4)
2730 CALL HCHAR(13,24,112,3)
2740 CALL HCHAR(13,26,121)
2750 CALL HCHAR(13,27,120)
2760 CALL HCHAR(13,28,112,5)
2770 CALL HCHAR(14,1,112,5)
2780 CALL HCHAR(14,5,113)
2790 CALL HCHAR(14,10,114)
2800 CALL HCHAR(14,11,112,4)
2810 CALL HCHAR(14,14,113)
2820 CALL HCHAR(14,19,114)
2830 CALL HCHAR(14,20,112,3)
2840 CALL HCHAR(14,23,112,3)
2850 CALL HCHAR(14,25,121,1)
2860 CALL HCHAR(14,26,122)
2870 CALL HCHAR(14,27,120,1)
2880 CALL HCHAR(14,28,112,5)
2890 CALL HCHAR(15,1,112,21)
2900 CALL HCHAR(15,22,112,3)
2910 CALL HCHAR(15,24,121,1)
2920 CALL HCHAR(15,25,122)
2930 CALL HCHAR(15,26,112)
2940 CALL HCHAR(15,27,120)
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2950 CALL HCHAR(15,28,112,5)
2960 CALL HCH*  .6,1,112,20)
2970 CALL HCHAR(16,21,112,3)
2980 CALL HCHAR(16,23,121)
2990 CALL HCHAR(16,24,122)
3000 CALL HCHAR(16,25,112,2)
3010 CALL HCHAR(16,27,120)
3020 CALL HCHAR(16,28,112,5)
3030 CALL HCHAR(17,1,112,19)
3040 CALL HCHAR(17,20,112,3)
3050 CALL HCHAR(17,23,120,6)
3060 CALL HCHAR(17,29,112,4)
3070 CALL HCHAR(18,1,112,18)
3080 CALL HCHAR(18,19,112,8)
3090 CALL HCHAR(18,27,120,1)
3100 CALL HCHAR(18,28,112,5)
3110 CALL HCHAR(19,1,112,26)
3120 CALL HCHAR(19,27,120)
3130 CALL HCHAR(19,28,112,5)
3140 CALL HCHAR(20,1,112,26)
3150 CALL HCHAR(20,27,120)
3160 CALL HCHAR(20,28,112,5)
3170 CALL HCHAR(21,1,112,26)
3180 CALL HCHAR(21,27,120)
3190 CALL HCHAR(21,28,112,5)
3200 CALL HCHAR(22,1,112,96)
3210 REM   DRAW THE SLANT
3220 CALL HCHAR(10,26,32)
3230 FOR I=1 TO 8
3240 CALL HCHAR(9+I,26-I,116)
3250 CALL HCHAR(10+I,26-I,32)
3260 CALL HCHAR(10+I,27-I,114)
3270 NEXT I
3280 RETURN
3290 S$="TEXAS INSTRUMENTS"
3300 REM PRINT STRING CENTERED
3310 FOR I=1 TO INT(((28-LEN(S$))/2)-1)
3320 S$=" "S$
3330 NEXT I
3340 PRINT S$
3350 RETURN
3360 REM MACHINE GUN KELLY IS DRAWN
3370 CALL COLOR(14,2,1)
3380 CALL SCREEN(5)
3390 FOR I=1 TO 3
3400 CALL HCHAR(12,I,135+I)
3410 NEXT I
3420 FOR I=1 TO 3
3430 CALL HCHAR(13,I,138+I)
3440 NEXT I
3450 RETURN
3460 REM MACHINE GUN KELLY STRIKES AGAIN
3470 CALL COLOR(13,7,1)
3480 FOR I=4 TO 32
3490 CALL HCHAR(12,I,128)
3500 CALL SOUND(-500,1760,0,-2,0)
3510 NEXT I
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3520 CALL SOUND(500,-7,0)
3530 FOR I=4 TO 32
3540 CALL HCHAR(12,I,32)
3550 NEXT I
3560 RETURN
3570 FOR I=4 TO 60
3580 CALL SOUND(-500,2000,0,4000,0,8000,0)
3590 CALL HCHAR(12,12,35)
3600 NEXT I
3610 GOSUB 3360
3620 GOSUB 3460
3630 STOP
3640 CALL KEY(0,KEY,STATUS)
3650 IF STATUS<>0 THEN 3700
3660 CALL KEY(1,KEY,STATUS)
3670 IF STATUS<>0 THEN 3700
3680 STAT=0
3690 GOTO 3710
3700 STAT=1
3710 RETURN
```

TWO DISK DRIVE WARNING

Many of you may have seen advertisements claiming that two disk drives can go into the Peripheral Expansion Box. It is very true that you can get two of the half size drives into the space that is meant for one in the P-Box. However, you need to be aware that there seems to be a potential problem in running both of the mini disk drives from the P-Box power supply (TI's second and third disk drive have their own supplies).

The power supply in the P-Box uses 1N4002 diodes as rectifiers to supply the unregulated 18 volts to all the Expansion Cards and the 7812 voltage regulator that supplies the +12 volts to the Disk Drive.

The 1N4002 has a rating of 1 amp when it is constantly on and 2 amps if it has a 50% duty cycle. The 7812 has a maximum rating of 1.5 amps. Disk drives normally draw from .6 to .9 amps per drive.

Doing a little math tells you that the diodes could potentially be working very hard to supply two disk drives at one time. A good electronic design engineer would not recommend pushing a solid state device to its maximum. It will usually become hot and fail much earlier than if it were allowed some reserve.

For your second and third disk drives it may be better to purchase them with their own supplies and install them outside the P-Box (as TI does).

The P-Box has plenty of power for one disk drive in the P-Box (just like TI intended it to be used).

128K MEMORY CARD

Rene Le Blanc sent me some information on the FOUNDATION 128K MEMORY EXPANSION CARD that can plugged into the P-Box. This new card really is 4 banks of 32K bytes each. Each of the 4 banks are memory mapped like just one 32K Memory Card (>2000 to >3777 and >A000 to >FFFF).

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FOUNDATION states that the 128K card will work like any other 32K card when it is being used with programs that address the normal TI 32K Expansion Card. For example, they say that TI-WRITTER and MICROSOFT MULTIPLAN will work with the 128K card, but the programs have not been written to use the extra memory the card provides.

IF you use the SIZE command with EXTENDED BASIC you will get "11840 BYTES OF STACK FREE, 24488 BYTES OF PROGRAM SPACE FREE." This is because the 99/4A will only address 32K bytes of expansion memory at one time. However, with the proper software, all 128K can be used by a technique called "bank seitching" or "paging".

FOUNDATION is working on several programs, and is also talking to several third-party software houses about writing and adapting software to use the extra memory. FOUNDATION is working on a program that will provide "disk emulation". It will allow you to read and write files from memory as if they were were on a very fast disk. This is similar to being able to write a 4K byte file to the MINI-MEMORY. The 128K card is also available with a Device Service Routine for $10.00 extra. This DSR also includes a little program called MEM96 that lets you use 96K of add-on memory as if it were a relative file of 64 byte records. FOUNDATION also claims this allows you to address the card from BASIC and EXTENDED BASIC. The TI 32K CARD can only be addressed from EXTENDED BASIC, MINI-MEMORY, and EDITOR/ASSEMBLER. For an extra $10.00 the DSR option is probably the way to go unless you are already an ASSEMBLY LANGUAGE programmer.

For more information you can write to:

FOUNDATION
74 CLAIRE WAY
TIBURON, CA 94920

THE ALPINER

THE ALPINER Command Module from TI demonstrates very good sound, graphics, and speech. There are six mountains for you children to climb: Mt. Hood, Mt. Matterhorn, Mt. Kenya, Mt. McKinley, Mt. Garmo, and Mt Everest. Mt Hood is the easy but Mt. Everest takes more skill.

The object of the game is to climb as fast as you can and avoid rock slides, animals, trees, stumps, brush fires, and avalanches. If you happen to bump into anything except a tree you will be knocked backwards and fall a specific number of steps. If you get hit by a rock slide you can be knocked off the mountain and fall all the way to the bottom. If you fall off you will lose one of your three climbers.

You can get bonus points by touching a glowing green stone in the paws of the mountain animals. However, if you happen to touch the animals you will fall.

This game is excellent for small children and has excellent graphics, music, and speech. The module uses digitized speech to say: "LOOK OUT!...NICE MOVE SPORT...DID YOU DO THAT ON PURPOSE?...BEWARE FALING OBJECTS...NOT AS EASY AS IT LOOKS...OUCH!..HELP...YUCK..YIKES..HERE WE GO AGAIN...ONWARD AND UPWARD...and OH. ALPINER has both a male and a female voice.

ALPINER is made by TI and retails for $39.95. It is a good game for children.

TI-99/4A VS. VIC-20

Many of you may have seen recent advertising comparing the Commodore VIC-20 with the TI-99/4A. Commodore said that the VIC-20 had programmable function keys and the 99/4A did not. This is not true. The 99/4A allows all the keys to be programmable function keys by using the CALL KEY command that is built into TI BASIC.

Commodore also made a falacious comparison on the Disk Drives. They compared the TI formatted diskette capacity and subtracted the overhead needed by the TI disk system to maintain the directory, but incredibly gave their storage in terms of unformatted disk storage.

The TI disk system is vastly easier to use and vastly more flexible. The TI supports features normally found only on more sophisticated systems. As many of you know, the file space allocation is dynamic, there is built-in alphabetizing, file access is either sequential or relative, file storage is either binary or ASCII, record lengths are fixed or variable, etc. This is because of the intelligence that is built into the Disk Controller Card. With the VIC-20 disk drive, it is possible for the user to think that information has been written to the disk when it has not. The TI disk system would not allow this to happen because of it's error checking ability.

WALL PLUG TRANSFORMERS SAFE

After TI did further laboratory testing it indicated that no hazard existed for the transformer that plugs directly into the wall plug outlet. Therefore, no adapter is required for this type of transformer.

DISKETTE TRACKS?

A single-sided diskette is divided into 40 circles that are called tracks. The tracks are numbered starting from the outside to the inside, 0 to 39. Each track on the 99/4A disk is divided into nine pie shaped pieces called sectors. Thus there are 40 X 9 or 360 sectors. Each sector is capable of housing up to 256 bytes of informaton.

The TI Disk Controller Card and the Disk Manager 2 can control a disk that is double-sided. A double-sided diskette has 80 tracks. The tracks are numbered 0 to 39 on one side and 40 to 79 on the other side. Each track is also divided into nine sectors. Therefore, a double-sided diskette has 720 sectors.

The TI Disk System will store 120K bytes of unformatted (90K formatted) storage per side.

In order to use a double-sided diskette, you must use a third party double-sided disk drive like the TANDON 100-2.

PLATO

The new PLATO series of software (programs) allows the 99/4A to be a TUTOR. The student can set his own pace because the computer is infinitly patient and will repeat and review and retest as many times as needed until the student has the lesson correct.

Young adults that need help with High School Skills are able to choose the programs they need. The PLATO series covers learning skills from Grades 1 to 12. There are more than 450 programs to choose from in the PLATO curriculum.

PLATO requires a DISK SYSTEM, 32K MEMORY EXPANSION, and the PLATO INTERPRETER Command Module.

OTHELLO

This strategy game from TI by Gabriel Industries (a division of CBS) allows playing the computer or a human opponent. The screen is black with an eight by eight green board. The columns are lettered across the top from A to H and rows are numbered from 1 to 8. You make your move by keying in the column and then the row (B8).

The game has eight levels of difficulty. On any of the levels the computer will not permit you to make illegal moves. The program seems to play a good game on the higher levels. The retail price is $39.95.

COMPUSERVE

COMPUSERVE is a competitor of the SOURCE. They both have large computers with large amounts of information you can reach with the use of a Modem , the Terminal Emulator II, a 99/4A, and a telephone.

Compuserve does not have an initial hookup fee, and no minimum use per month. The Source charges $100.00 for initial hookup and a $10.00 minimum use per month.

Compuserve's rates are $5.00 per hour from 6:00 P.M. to 5:00 A.M. Monday through Friday and all day Saturday and Sunday.

They offer AP News, Commodities, Canadian Press, Dow/Jones reports, electronic mail, bank at home, chat, game., bulletins, World Book Encyclopedia, and more. You can call them toll free at 1-800-848-8990 for more information.

TI EDITOR/ASSEMBLER

WHEN A PROGRAM IS RUN IN BASIC, each statement is converted (interpreted) to machine language. Machine language is the binary ones and zeros that the computer understands. It is then executed. A BASIC statement generally generates several machine instructions and since each BASIC statement must be interpreted, the programs execute relatively slowly.

Assembly language programs are very fast because they are "assembled" before they are run. The assembly language statements are converted into machine language by the assembler and then they can be run.

The added speed from Assembly language does not come free though. Assembly language is very difficult to write programs in. Assembly programming is harder and more time-consuming because the instructions are machine-oriented.

The TI EDITOR/ASSEMBLER is a Command Module. To use it you will need one disk drive and the 32K expansion card and the diskette that is included with the module.

The diskette has an EDITOR that allows inputing assembly language source programs. The Edit mode has a screen that is 40

13

columns by 24 rows. It is an excellent EDITOR and has many of the features found in editors of larger systems. It has the ability to edit at line, character, and group-of-lines levels. The TI EDITOR can also be used as a poor man's word processor. It is not as nice as TI-WRITER but it will work.

The ASSEMBLER converts the assembly language source from the EDITOR into object code. The object code is then written to disk so that it can later be RUN by the EDITOR/ASSEMBLER, MINI-MEMORY, or EXTENDED BASIC.

The 99/4A EDITOR/ASSEMBLER is an excellent tool for those advanced programmers. It is very powerful, and the running speed is incredible. A program I wrote in Basic to count to 10,000 took 9.8 seconds to RUN. The same program in object code took less than a second.

TI VIDEO CHESS

The manual for VIDEO CHESS does not show the keys to push for help. If you hold the shift key down and press <, the computer will tell you what it thinks a good move would be for you to take.

TI BASIC VS. APPLESOFT BASIC

The TI BASIC interpreter is very similar to the APPLESOFT BASIC interpreter. The APPLESOFT language card has 29 commands that are identical to TI BASIC.

SAVING

It is a good idea to get used to SAVEing your programs after you have typed in about 50 lines. Then if your computer locks up or the power goes off you have not lost your whole program. If you alternate saving to two different cassette tapes then you are also protected against something happening to one of the cassette tapes.

99/4A VOICE RECOGNITION

By the end of this year, you will be able to speak to your 99/4A. A new product produced by Milton Bradley for Texas Instruments called the "EXPANDER" can be "programmed" to respond to voice commands and also can do speech synthesis.

The unit is shaped like the old style peripherals and has a 64-position membrane keypad. The unit will plug into the joystick port and has a headset microphone and a joystick. Milton Bradley will also introduce several games that you will play by giving voice commands. I got to play some, and they are fun. The games also talk to you.

PARSEC TRICKS

If you have played PARSEC you know that your space craft can't go past the right side of the screen (column 32). This little trick will allow you to orbit around the screen. The trick is to hold down the up arrow and the right arrow keys at the same time.

The second trick allows you to fire your laser for an extended period of time without your space craft overheating. The trick is to hold down both fire buttons at the same time. You will also find that by firing your laser by this method that the laser will leave fire trails across your screen. To make it easier, try taping one of the fire buttons down.
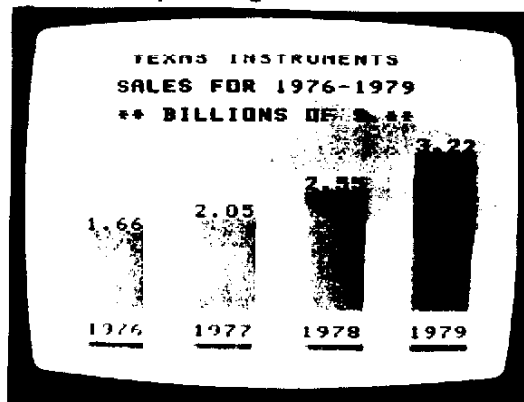
BASIC DEMO CASSETTE PROGRAM

This program demonstrates color graphics and sound capabilities of TI-BASIC. The program displays data from Texas Instruments 1978 annual report. A map of TI sites in Dallas county is included and demonstrates fine-line graphics. Also included are musical passages that demonstrate the range and speed of the sound processor in the 99/4A.

The program is on cassette ,runs with the standard basic built in the 99/4A console, and is an excellent way to learn what the 99/4A can do and how to program the computer to do it.

Also included with the program (on the same tape) is the FISHIN' program from the APRIL-MAY NEWLETTER.

The price for both programs is $3.00 and they can be ordered below. All programs include postage.

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