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80 COLUMN & RGB CARD FOR THE APPLE-IIe

MODEL IIe-80



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1. PRODUCT FEATURES

Thank you for purchasing TAXAN's IIe-80 80-COLUMN & RGB Card for the APPLE-IIe. TAXAN's IIe-80 Card not only gives you an 80 column text capability for word processing, but also gives you new video modes, and allows you to interface your APPLE-IIe to a composite or RGB monitor, or both.

With TAXAN's IIe-80 Card, a 40 column text can be changed to an 80 column text in the APPLE-IIe, and the following functions are also added to the previous mode:

1. 40 column text.
2. 80 column text.
3. 16 color LO-RES with option of mixing 40 column text.
4. 16 color LO-RES with option of mixing 80 column text.
5. 6 color HI-RES with option of mixing 40 column text.
6. 6 color HI-RES with option of mixing 80 column text.

In addition, the following new video modes can be used with an RGB monitor. (If your APPLE-IIe is a Rev A you can not obtain ME-RES):

7. 40 column text with choice of 16 colors for foreground and 16 colors for background.
8. 16 color LO-RES with option of mixing 40 column foreground/background text.
9. 16 color ME-RES with option of mixing 80 column text.
10. 16 color foreground/background HI-RES with option of mixing 40 column foreground/background text.

With the combination of colors 1 thru 6, up to 10 colors are available for the text colors. Colors can be selected by turning the rotary SW on the IIe-80 Card. TAXAN's IIe-80 Card is 100% compatible with APPLE's 80 column card. This allows complete software compatibility with all existing (APPLE WRITER IIe, QUICK FILE IIe, etc) and future APPLE-IIe software. [We strongly recommend that you use TAXAN's RGBVISION color monitor in order to make the most of the functions of the IIe-80 Card.]

2. CONFIGURATION

After unpacking, make sure the following standard supplies are included:

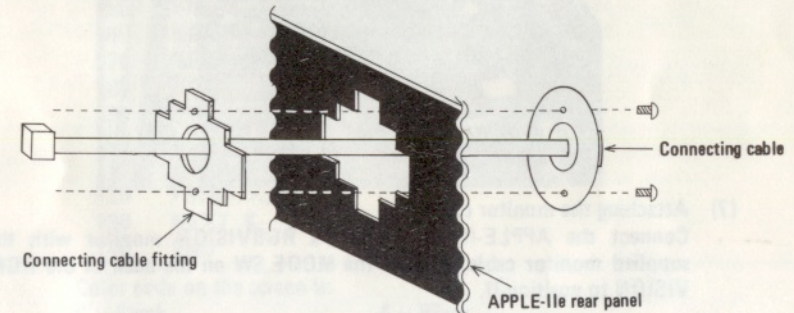
- | | |
|---|---|
| (1) TAXAN's IIe-80 80 COLUMN & RGB CARD | 1 |
| (2) Monitor cable | 1 |
| (3) Connecting cable | 1 |
| (4) Connecting cable fitting | 1 |
| (5) Connecting screws | 2 |
| (6) Instruction manual | 1 |

If any of the above items are missing, please contact your dealer.

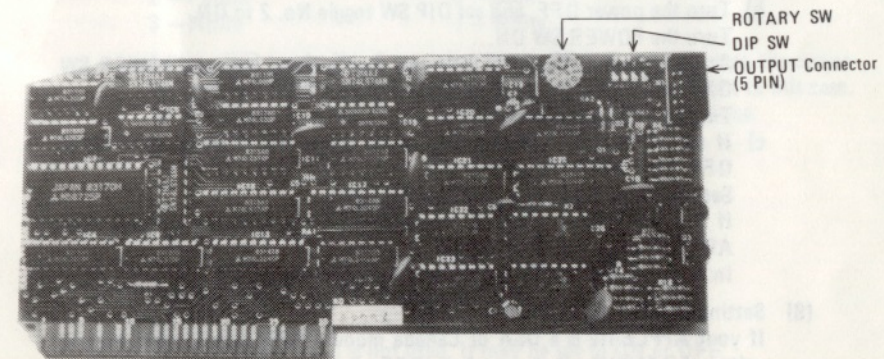
3. INSTALLATION

Install the IIe-80 Card in the APPLE-IIe according to the following procedure.

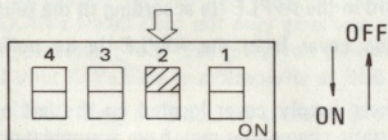
- (1) Remove the top cover from the APPLE-IIe by pulling up by the rear edges.
- (2) Touch the power supply cover located on the left of the AUX slot to discharge any static charge you may have accumulated on your clothes or body.
- (3) Make sure your APPLE-IIe is off by checking to see that the red light at the left rear corner of the slot is off.
- (4) Attaching the connecting cable
Using the connecting cable fitting attach the connecting cable to any blank space (No. 5, 6, 8, 9) on the rear panel of the APPLE-IIe and secure with the connecting screws.



- (5) Setting DIP SW toggle No. 2



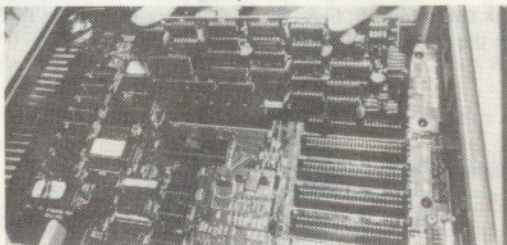
Set toggle No. 2 of the DIP SW to off



(6) Mounting the card

Align pin No. of the card and pin No. of the APPLE-IIe AUX slot (60 pin), and insert it into the slot. Next attach the connecting cable to the outlet connector (5 pin) of the card.

See photo.



(7) Attaching the monitor cable

Connect the APPLE-IIe to TAXAN's RGBVISION monitor with the supplied monitor cable, and set the MODE SW on the back of the RGBVISION to position-II.

(8) Checking the APPLE-IIe's REV No.

a) Recheck procedures in step (5) again, and turn the POWER SW ON.

b) Turn the power OFF, and set DIP SW toggle No. 2 to ON.

Turn the POWER SW ON.

At this time, if the APPLE-IIe will not operate, turn the POWER SW OFF, and set toggle No. 2 of the DIP SW to OFF.

Turn the POWER SW ON again.

c) If the APPLE-IIe operates only when toggle No. 2 of the DIP SW is OFF, your APPLE-IIe is a Rev A

Set the SW to OFF, and continue operation.

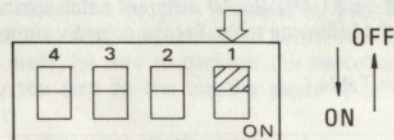
If the APPLE-IIe operates irregardless of the DIP SW setting, your APPLE-IIe is a Rev B or higher.

In this case, set the SW to ON, continue operation.

(9) Setting DIP SW toggle No. 1

If your APPLE-IIe is a USA or Canada model (NTSC video signal, supply voltage AC 110 V), set the toggle to OFF.

If your APPLE-IIe is a different type (PAL video signal, supply voltage 220 V - 240 V), set the toggle to ON.



(10) Setting DIP SW toggle No. 4 and checking color

Employ the following procedures to check the color:

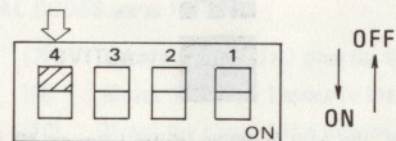
```

10 HGR
20 FOR I=0 TO 7
30 HCOLOR = I
40 FOR J = (I + 1) * 21 TO (I + 2) * 21
50 Hplot J, 0 TO J, 191
60 NEXT J
70 NEXT I
80 HOME
90 VTAB 21
100 FOR K = 0 TO 7
110 HTAB K * 3 + 5
120 PRINT K;
130 NEXT K
140 END
    
```

Color code on the screen is:

- | | |
|------------|------------|
| 0 - Black | 4 - Black |
| 1 - Green | 5 - Orange |
| 2 - Purple | 6 - Blue |
| 3 - White | 7 - White |

Setting DIP toggle No. 4 to either ON or OFF, the color bar on the screen will gradually become red. Orange color (color No. 5) is bright in this case. Set the toggle to either ON or OFF according to your preference.



(11) DIP SW toggle No. 3 is not used. It may be set to ON or OFF.

- (12) Setting the ROTARY SW
Turning this ROTARY SW changes the color of the text area on the screen at the TEXT MODE. 10 different color combinations are available as shown in the following table. Set the color by choice.

Color Combination Table

	Text	Screen	Cursor		Text	Screen	Cursor
0	White	Black	Orange	5	Yellow	Dark red	White
1	Green	Black	White	6	Black	Gray	Black
2	Orange	Black	White	7	Black	Green	Black
3	White	Dark blue	Yellow	8	Black	Orange	Black
4	White	Gray	Orange	9	Black	Light blue	Black

- (13) Replace the cover of your APPLE-IIe by inserting the front tip of the cover and pushing down firmly on its back corners until you feel it snap into place.

4. COMMANDS

4-1 STARTING (ACTIVE)/STOPPING (INACTIVE) OF THE CARD

- (1) Press the **[CAPS LOCK]** for capital letters.
- (2) Type "PR #3" or "IN #3"

The card is set to active status by this operation. Active status of the card can be confirmed by checking the cursor.



INACTIVE



ACTIVE

When the card is active, shifts between 40 COL. and 80 COL. are made by pressing the **[ESC]** key.

Pressing the **[ESC]** key changes the cursor to a plus mark **[+]**

[ESC] - **[4]** ----- From 80 COL. to 40 COL.

[ESC] - **[8]** ----- From 40 COL. to 80 COL.

To set the card to the inactive mode, press the **[ESC]** key first, and then the **[CTRL]** - **[Q]**.

For example, if a program prepared by your APPLE-IIe or II-PLUS is to be executed, or you need to switch over to a peripheral device is to be made, be sure to perform this operation. Another method of setting the card to the inactive mode is to press the **[CTRL]** - **[RESET]**

4-2 ESCAPE COMMANDS

- [ESC]** - **[@]** Clears the whole screen and sets the cursor to the HOME position.
- [ESC]** - **[A]** Moves the cursor 1 space to the right.
- [ESC]** - **[B]** Moves the cursor 1 space to the left.
- [ESC]** - **[C]** Moves the cursor 1 line downwards.
- [ESC]** - **[D]** Moves the cursor 1 line upwards.
- [ESC]** - **[E]** Clears the display from the cursor position to the end of the line.
- [ESC]** - **[F]** Clears the display from the cursor position to the end of the screen.
- [ESC]** - **[I]** Moves the cursor 1 line upwards.
- [ESC]** - **[J]** Moves the cursor 1 space to the left.
- [ESC]** - **[K]** Moves the cursor 1 space to the right.
- [ESC]** - **[M]** Moves the cursor 1 line downwards.
- [ESC]** - **[4]** Shifts from 80 COL. mode to 40 COL. mode.
- [ESC]** - **[8]** Shifts from 40 COL. mode to 80 COL. mode.
- [ESC]** - **[CTRL]** - **[Q]** Deactivates the card.

4-3 CONTROL COMMANDS

ASCII DECIMAL CODES are as follows:

- [CTRL]** - **[G]** (7) Generates a 1000 Hz tone for 0.1 sec.
- [CTRL]** - **[H]** (8) Moves the cursor 1 space to the left.
- [CTRL]** - **[J]** (10) Moves the cursor 1 line downwards.
- [CTRL]** - **[K]** (11) Clears the display from the cursor position to the end of the screen.
- [CTRL]** - **[L]** (12) Clears the whole screen and sets the cursor to the HOME position.

- CTRL** - **M** (13) Moves the cursor to the leftmost position of the next line.
- * **CTRL** - **N** (14) Sets the screen to the NORMAL MODE.
- * **CTRL** - **O** (15) Sets the screen to the INVERSE MODE.
- * **CTRL** - **Q** (17) Sets 40 COL. mode.
- * **CTRL** - **R** (18) Sets 80 COL. mode.
- CTRL** - **S** (19) Stops sending characters to the display until another key is pressed.
- * **CONT** - **U** (21) Deactivates 80 column firmware, homes cursor, and clears the screen.
- CTRL** - **V** (22) Scrolls the display down without changing the cursor position.
- CTRL** - **W** (23) Scrolls the display up without changing the cursor position.
- CTRL** - **Y** (25) Moves the cursor to the HOME position only.
- CTRL** - **Z** (26) Clears the display in the line where the cursor is located.
- CTRL** - **[** (28) Moves the cursor 1 space to the right.
- CTRL** - **]** (29) Clears the display from the cursor position to the right end of the line.

Note) Control commands marked with * cannot be operated by the keyboard.

4-4 SCREEN OPERATION COMMANDS

The following points should be noted when the card is active:

- 1 INVERSE ----- Capital and small letters can be used.
 FLASH ----- They cannot be used.
 INVERSE HOME ---- The whole screen is cleared.
- 2 HTAB
 40 COL. MODE ---- Usable
 80 COL. MODE ---- Use with POKE 36, (1 - 255).
- 3 COMMA TABBING
 When the 80 COL. MODE is set, TABBING by comma is impossible in a PRINT statement.

5. EXPLANATION OF NEW FUNCTIONS

The following new functions are available by combining TAXAN's Ile-80 card with the RGB monitor:

- 5-1 40 COL. F/B TEXT
 When the 40 COL. TEXT MODE is set, 16 different colors can be specified with respect to each foreground and background color.
- 5-2 LO-RES MIX 40 COL. F/B TEXT
 When the LO-RES (GR) MODE is set, the TEXT MODE will be the 40 COL. F/B TEXT MODE.
- 5-3 ME-RES MIX 80 COL. TEXT
 (Note: This operation is not possible with the APPLE-IIe Rev A)
 When the LO-RES (GR) MODE is set, the GRAPHICS area is divided into 80 x 40 blocks and 16 different colors can be specified for each of them. The TEXT MODE will be the 80 COL. TEXT MODE.
- 5-4 F/B HI-RES MIX 40 COL. F/B TEXT
 When the HI-RES (HGR) MODE is set, GRAPHICS information will be utilized as dot information. In addition, the GRAPHICS area is divided into 40 x 20 blocks, and 16 different colors can be specified for the dot information of each block with respect to foreground and background color.
 The TEXT MODE will be the 40 COL. F/B TEXT MODE.

6. SOFTWARE SWITCHES

Different functions can be set by controlling the software SW for the RAM in the APPLE-IIe and the RAM on the card.

Address space of the APPLE-IIe RAM and card RAM is the same (addresses \$400 to \$7FF).

Allocation on the CRT screen is:

Even column -----	Card RAM	\$400 to \$7FF
Odd column -----	APPLE-IIe RAM	\$400 to \$7FF

- 6-1 THE 80 COLUMN SW
 Setting this switch sets the 80 COL. mode.
 Resetting the switch sets the 40 COL. mode.
- 6-2 THE 80 STORE SW
 Setting this switch sets the card RAM to READ or WRITE enable mode.
 Resetting the switch sets the card RAM to READ or WRITE disable mode.

6-3 THE PG2 SW (RAM SELECT SW)

Setting this switch selects the card RAM.

Resetting this switch selects the APPLE-IIe RAM.

TEXT ----- \$400 to \$3FF

HGR ----- \$2000 to \$3FFF

6-4 THE AN3 SW

Setting this switch sets normal mode.

Resetting this switch activates the foreground/background function.

6-5 SOFTWARE SW ADDRESS TABLE

	SET		RESET		STATUS	
	Address	Mode	Address	Mode	Address	Mode
80 COL. SW	\$C00D (-16371)	W	\$C00C (-16372)	W	\$C01F (-16353)	R
80 ST. SW	\$C001 (-16383)	W	\$C000 (-16384)	W	\$C018 (-16360)	R
RG2 SW	\$C055 (-16299)	R/W	\$C054 (-16300)	R/W	\$C01C (-16356)	R
AN3 SW	\$C05F (-16289)	R/W	\$C05E (-16290)	R/W		

- Note) 1. W signifies a write enable mode
2. R signifies a read enable mode

7. USAGE OF NEW FUNCTIONS

7-1 40 COL. F/B TEXT

In this mode, the card RAM contains color information, and the APPLE-IIe RAM contains video information.

The upper nibble of the color information in the card RAM is foreground 16-color information, and the lower nibble is background 16-color information.

Also, the address space of each card RAM and APPLE-IIe RAM is \$400 to \$7FF, and they correspond with each other.

The card RAM/APPLE-IIe RAM can be selected with the PG2 SW. Be sure to set the APPLE-IIe mode to the TEXT MODE.

The software SW status is as follows:

AN3 SW	-----	RESET	POKE - 16290, 0
80 COL. SW	-----	RESET	POKE - 16372, 0
80 WR SW	-----	SET	POKE - 16383, 0
	-----	RESET	POKE - 16300, 0
PG2 SW	-----	TEXT information	
	-----	SET	POKE - 16299, 0
		F/B color information	

As an example, run the following program.

```

10 TEXT : GOSUB 1000: HOME
20 HTAB 1: VTAB 24: INPUT "COLOR:";C
30 HOME : POKE - 16290,0
40 GOSUB 1100
50 COLOR= C
60 FOR I = 0 TO 47
70 HLIN 0,39 AT I
80 NEXT I
100 FOR I = 0 TO 15
110 HTAB 8: VTAB I + 4: GOSUB 1000
120 IF I > 9 THEN 160
130 PRINT "color ";I;
140 HTAB 24: PRINT "COLOR ";I;
150 GOTO 200
160 PRINT "color ";I;
170 HTAB 24: PRINT "COLOR ";I;
200 GOSUB 1100: COLOR= I
210 HLIN 7,14 AT (I + 3) * 2 + 1
220 HLIN 23,30 AT (I + 3) * 2 + 1
230 COLOR= I + 1
240 HLIN 23,30 AT (I + 3) * 2
250 NEXT I
300 FOR K = 0 TO 5000

```

```

310 NEXT K
320 FOR J = 0 TO 23
330 FOR K = 0 TO 200
340 NEXT K
350 GOSUB 1000: CALL - 912
360 GOSUB 1100: CALL - 912
370 NEXT J
400 IF PEEK (- 16384) = 155 THEN 500
410 POKE - 16368,0: GOTO 10
500 POKE - 16368,0: GOSUB 1000
510 PRINT : PRINT "RUN IIe-80"
520 END
1000 POKE - 16300,0
1010 POKE - 16384,0
1020 RETURN
1100 POKE - 16383,0
1110 POKE - 16299,0
1120 RETURN

```

7-2 LO-RES MIX 40 COL. F/B TEXT

When the LO-RES MIX 40 COL. TEXT MODE is set, the lower 4 lines of the screen will be in the 40 F/B TEXT MODE.

Be sure to set the APPLE-IIe to the LO-RES MIX 40 COL. TEXT MODE. The bottom four lines of text follow the rules of section 7-1.

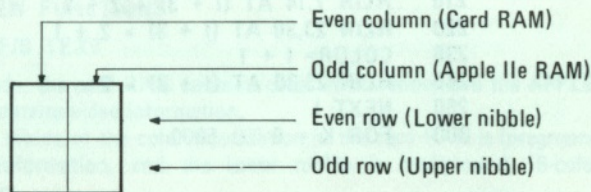
7-3 ME-RES MIX 80 COL. TEXT

(Not usable in the APPLE-IIe, Rev A)

In this mode the screen is divided into 80 x 40 blocks.

The card RAM corresponds to the even columns, and the APPLE-IIe RAM corresponds to the odd columns.

In addition, the lower nibble of the color information determines 16 colors in the even rows, and the upper nibble determines 16 colors in the odd rows:



Be sure to set the APPLE-IIe mode to the LO-RES MIX. 40 COL. TEXT mode. The SOFTWARE SW status is as follows:

AN3 SW	-----	RESET	POKE - 16290,0
80 COL. SW	-----	SET	POKE - 16371,0
80 WP SW	-----	SET	POKE - 16383,0
PG2 SW	-----	RESET	POKE - 16300,0
		Odd column (APPLE-IIe RAM)	
		SET	POKE - 16299,0
		Even column (Card RAM)	

7-4 F/B HI-RES MIX 40 COL. F/B TEXT

In this mode, the HI-RES GRAPHICS information is handled as "1" or "0" dot information, and F/B 16 colors are specified for each block (40 x 20 blocks) of the screen.

The APPLE-IIe RAM contains dot information of \$2000 to \$3FFF, and the card RAM contains color information of \$400 to \$7FF. Also, the upper nibble of the color information determines 16 colors for dot "1", and the lower nibble determines 16 colors for dot "0".

In addition, when the MIX MODE is set, the lower 4 lines will be in the 40 COL. F/B TEXT mode.

Be sure to set the APPLE-IIe to the HI-RES MIX TEXT MODE.

The SOFTWARE SW status is as follows:

AN3 SW	-----	RESET	POKE - 16290,0
80 COL. SW	-----	RESET	POKE - 16372,0
80 STORE SW	-----	SET	POKE - 16383,0
PG2 SW	-----	RESET	POKE - 16300,0
		HI-RES dot information	
		SET	POKE - 16299,0
		Color information	

7-5 TABLE OF VIDEO MODE SOFTWARE SW SETTING

(40 column set)

AN-3	TEXT	HI-RES	VIDEO MODE
1	1	x	40 column text
1	0	0	LO-RES MIX 40 column TEXT
1	0	1	HI-RES MIX 40 column TEXT
0	1	x	40 column F/B TEXT
0	0	0	LO-RES MIX 40 column F/B TEXT
0	0	1	F/B HI-RES MIX 40 column F/B TEXT

(80 column set)

AN-3	TEXT	HI-RES	VIDEO MODE
1	1	x	80 column TEXT
1	0	0	LO-RES MIX 80 column TEXT
1	0	1	HI-RES MIX 80 column TEXT
0	1	x	80 column text
0	0	0	ME-RES MIX 80 column TEXT
0	0	1	NO FUNCTION

- Notes)
1. X signifies either setting can be used.
 2. Text is set (1) by microprocessor read or write to location \$C051, it is cleared (0) by microprocessor read or write to location \$C050.
 3. HI-RES is set (1) by microprocessor read or write to location \$C057, it is cleared (0) by microprocessor read or write to location \$C056.

7-6 PRECAUTIONS ON F/B COLOR SETTING

- (1) If the (TEXT/GR/HGR) statement has been used, be sure to reset the SOFTWARE SW.
- (2) If a home statement has been used after setting colors on the F/B MODE, the foreground color is set to gray, and the background color is set to black.

8. SAMPLE PROGRAM *not working on KAGA.*

You may be troubled by some of the color fringes which are characteristic of the APPLE-IIe whenever you use a color monitor. The following program will change the color screen to monochrome for a better resolution and facilitate specifying 16 colors of the foreground/background in the HI-RES mode if you use TAXAN RGBVISION. Please try to run the following program before you run your HI-RES program if you don't need color information in the HI-RES MODE.

```

10 GOSUB 1100 : HOME
20 GOSUB 1000 : HOME
30 INPUT "FOREGROUND COLOR=" ; C1
40 INPUT "BACKGROUND COLOR=" ; C2
50 GOSUB 1100
60 FOR I = 0 TO 47 STEP 2
70 COLOR = C1 : HLIN 0,39 AT I+1
80 COLOR = C2 : HLIN 0,39 AT I
90 NEXT I
100 GOSUB 1000
110 INPUT "COLOR SET OK ? Y/N" ; E$
120 IF E$ = "N" THEN 10
130 IF E$ = "Y" THEN 150
140 GOTO 1100
150 INPUT "SET PROGRAM DISCKET. DISK SLOT NO.=" ; N
160 IF N = 0 THEN 10
170 IF N = 7 THEN 10
180 PR#N
190 END
1000 POKE - 16300,0 : GOTO 10
1010 POKE - 16384,0 : GOSUB 1000
1020 RETURN
1100 POKE - 16383,0
1110 POKE - 16299,0
1120 RETURN
    
```