INSTRUCTION
MANUAL

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DIGICARD

80 COLUMN CARD

for APPLE computer

DIGICARD 80 INSTRUCTION MANUAL

Contents

Installation

Installing card

CAUTION — Power to the APPLE must be turned off for installation.

1.

Remove the cover from the APPLE by pressing the rear corners upward until they pop free. Slide the cover toward the rear of the APPLE and remove.

2.

At the rear of the APPLE's main board there are eight slots numbered 0 to 7, the DIGICARD 80 will only function in slot 3.

3.

Touch the power supply cover to remove any static charge you may be carrying. (This is a good time to check that the power to the APPLE is definitely OFF.)

4.

Hold the card in your left hand with the main connector strip pointed downward and the clip lead coming out toward your right hand.

5.

Using a rocking motion carefully insert the DIGICARD 80 into slot 3 and check it is firmly seated.

6.

Leaning forward over the top of the APPLE you will see the 25-pin connector that joins the key-encoder board to the actual keyboard. Take the clip probe attached to the card and clip it on to the second pin from the right (Pin 24). This lead allows the firmware on the DIGICARD 80 to sense when the shift key has been pressed.

7.

Locate the video lead supplied with the DIGICARD 80. This is a four-wire lead with a total of three connectors on it. At the end of the card closest to the front of the APPLE you will find four pins grouped together marked J1; connect the 4-pin connector on the video lead to these pins with the label on the connector facing upward. On the other end of the video lead are two connectors; one is a standard RCA mounted on a small circuit board, and the other a two-pin unit to be connected to the APPLE video output. (See diagram.)

Remove any lead (colour card, etc.) connected to the four pins at the rear of the Apple main board and connect it on to the two pins further forward.

Neither of these two front pins can damage the colour card so if no result is obtained on one pin, try the other.

If trouble is encountered with the colour card after doing this, adjust the Apple video trim pot fully clockwise to maximum output.

Install the 2-pin connector from the 80 column card to the 4 pins at the rear of the Apple board with the small slots in the connector towards the back. TAKE CARE: the lead MUST go to the two pins on the right, or closer to the side of the Apple board.

Fix the RCA connector to the back of the APPLE in the cutout second from the right, using the hardware supplied.

REAR RIGHT HAND SIDE
OF APPLE MAIN BOARD

Video lead from
80 column card

Fix connector to
two outside pins
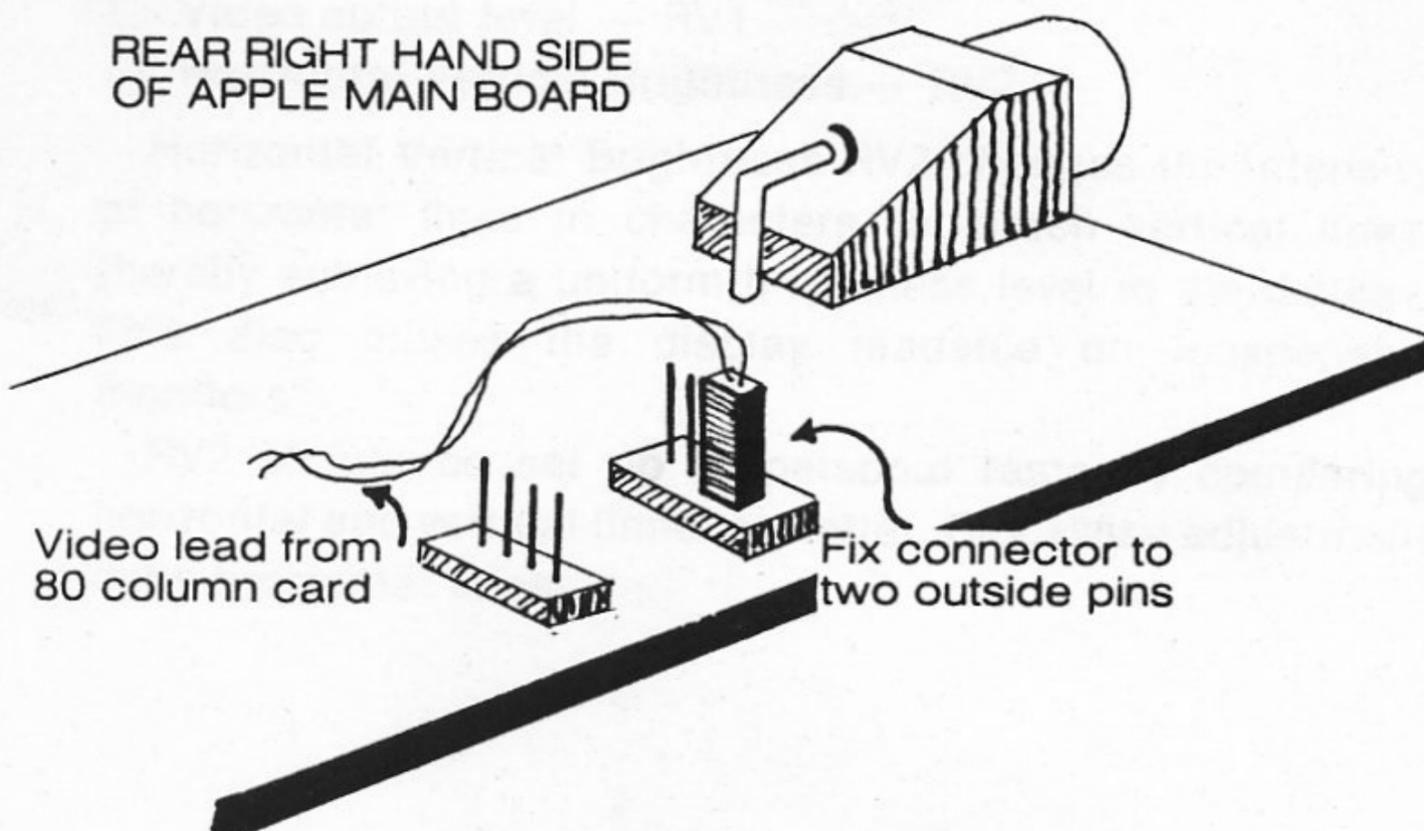
Hardware Graphics toggle

It is necessary to install this lead only if auto graphics toggle is required in any language other than APPLESOFT BASIC.

1.

Locate the second clip lead supplied with the DIGICARD 80; this lead has a clip probe on one end, as used with the shift key lead and a 2-pin connector on the other.

2.

Next to the wire for the shift key, on the DIGICARD 80, there are 2 pins marked J2. Connect the graphics sense lead to these. It does not matter which way the connector is installed as the two pins are joined.

3.

Looking at the left hand side of the APPLE board there are a set of letters identifying each row of ICs. These are labled A to K. Locate row F. In between the two ICs on the right hand end of row F (F13 & F14) there is a 4.7K resistor. Clip the graphics lead onto the end of the resistor closest to the keyboard.

The video will now change back to the APPLE graphics screen when any graphics mode is accessed, in any language.

Adjustments

There are only two adjustments on the DIGICARD 80, these are:

☐ Video output level — RV1
☐ Horizontal Vertical Brightness — RV2

Horizontal Vertical Brightness RV2 changes the intensity of horizontal lines in characters to match vertical lines, thereby achieving a uniform brightness level in the display. This also makes the display readable on inexpensive monitors.

RV2 should be set up to personal taste by comparing horizontal and vertical lines in a letter. Clockwise adjustment dulls horizontal lines.

Operation

Booting 80 columns

After the DIGICARD 80 has been installed and DOS has been booted, the DIGICARD 80 is then booted by typing PR#3 or, from a machine language program, JSR $C300. CP/M, Pascal etc. automatically locate and boot the card.

Reset

After execution of a hard RESET the DIGICARD 80 still has software "hooks" in APPLESOFT BASIC. To safeguard against loss of program or "crashing", either the card must be re-booted immediately or the "hooks" removed with the FP command.

Note that the command FP destroys the current program in memory. In CP/M Pascal etc. after a hard RESET it may be necessary to re-boot the system to cause the video to toggle back to the 80 column card. In CP/M BASIC the command PRINT CHR$(26)"8" will cause the video to toggle back to the 80 column card without loss of program.

Shift key operation

Changing from upper to lower case or back is accomplished by pushing the shift key. On release of the shift key, provided no other key has been pressed, a short beep will sound, a high tone for lower to upper case and a low tone for upper to lower. A shift lock or unlock is accompanied by a change in the cursor, provided AUTO CURSOR is still operating. The cursor is displayed as a slow flashing block while in upper case, changing to a slow flashing underscore when lower case is selected. (See also AUTO CURSOR.)

When in lower case and only one or two upper case characters are required, use the shift key as you would a typewriter. A shift lock/unlock will occur only if the shift key is pressed and released without pressing any other key.

Using the shift key while in upper case returns the extra ASCII characters not normally available from the APPLE keyboard. See the following table.

Lower case characters are available to the 40 column print system if a lower case adapter is fitted.

EXTRA KEYBOARD CHARACTERS

{SHIFT K}.......... [
{SHIFT L}.......... \
{SHIFT O}.......... _
{SHIFT Q}.......... {
{SHIFT R}.......... |
{SHIFT S}.......... }
{SHIFT T}.......... ~
{SHIFT U}.......... DEL
{SHIFT V}.......... ●

Auto cursor

The DIGICARD 80 defaults to Auto Cursor on booting. Auto Cursor allows a visual indication of shift lock status by causing the cursor to be a slow flashing block while in upper case, changing to a slow flashing underscore when lower case is selected. ESCape modes change the cursor to a fast flashing block.

Auto Cursor is disabled when any particular cursor is manually defined. (See CURSORS)

CURSORS (Spells and incantations)

To lock the cursor into a particular flash rate or size, the command {CTRL Z} X is given, where X is a key taken from the table following.

{CTRL Z} commands are covered fully in "CARD CONTROL CODES".

CURSOR TABLE

"S"..........Slow flash rate.
"F"..........Fast flash rate.
"N"..........Disable cursor flashing.
"B"..........Block cursor.
"U"..........Underscore cursor.
"A"..........Enable AUTO CURSOR (Default mode).

80 column LIST

In APPLESOFT BASIC, 80 column listing is totally automatic. When using INTEGER BASIC the command {CTRL Z} L should be given to LIST 80 columns. (See CARD CONTROL CODES)

Single key APPLESOFT

When using APPLESOFT BASIC there are 17 single key words made available by the DIGICARD 80. To use single key simply type ESC then the key, as taken from the "SINGLE KEY TABLE" which follows.

Note that this extra facility does not interfere with the normal ESCape functions.

SINGLE KEY TABLE

Key	Function
{G}	GOTO
{H}	HTAB
{L}	LOAD
{N}	NEXT
{O}	INPUT
{P}	POKE
{Q}	LIST
{R}	RUN
{S}	SAVE
{T}	TAB(
{U}	CALL
{V}	VTAB
{W}	HOME
{X}	CHR$
{Y}	GOSUB
{Z}	RETURN
{SPACE BAR}	CATALOG

ESCape codes and Stoplist

ESCape: use of the ESC mode is the same for the DIGICARD 80 as for the 40 column display, except for single key. (See SINGLE KEY APPLESOFT)

STOPLIST: this function is the same for the DIGICARD 80 as for the 40 column display, that is {CTRL S}.

HOME, Graphics and APPLESOFT Commands

As the DIGICARD 80 does not affect operation of any of the commands covered in the following section while in the 40 column display, it is assumed that commands are being dealt with in the 80 column mode. Generally it will be found that the commands HOME, TEXT, GR, HGR, HGR2 and PR# behave in the same way as for 40 columns.

HOME

Clears the screen and returns the cursor to the top left-hand side of the text window. ESC shift P is also valid. Any programs where CALL – 936 is used should be replaced with HOME, or PRINT CHR$(12) for INTEGER BASIC.

To simplify clearing the screen, an embedded {CTRL L} may be used at the start of print statements, {CTRL L} being the same as CHR$(12).

TEXT

Returns to 80 column display (if a graphics mode was active at the time) and sets the text window to full.

GR

Swaps text printing to 40 columns, bottom 4 lines, and toggles video back to APPLE system. Thereafter behaves as normal GR command; ie, selects low Resolution graphics display with 4 lines of text at bottom.

HGR

Same as GR command except high resolution screen is selected.

HGR2

Swaps to APPLE video system and selects full high resolution screen. *If HGR2 is used and, later, the 40 column text screen is selected, it is necessary to type TEXT again to return to APPLE text screen primary page.*

NOTE: In all cases where graphics commands are issued, the TEXT command will return to the TEXT system being used at the time when command was issued.

PR#0

When a PR# command has been used to access a printer etc, the command PR#0 can be used to return print output to the 80 column system. When it is required to execute this command while in a Basic program, PR#0 must be sent to DOS in the form PRINT D$"PR#0" where D$ has been assigned the value CHR$(4).

Printers

To access any other slot while using the DIGICARD 80 in the deferred mode, the command must be passed to DOS in the form PRINT D$"PR#X" where D$ = CHR$(4) and X is the slot required.

In the immediate mode this is not necessary as DOS intercepts instructions from the keyboard. An alternative is to execute PR# commands normally and return to the DIGICARD 80 by re-booting it with PR#3. This has the minor disadvantage of clearing the screen.

Parallel printers

Any echo of printing to the APPLE screen while using the DIGICARD 80 would result in disaster (Text window set for 80 etc.). Echo must be disabled immediately following printer access. Echo disable is normally accomplished with the command PRINT CHR$(9)"80N" from a line in Basic, the "80N" part of the command is to ensure that the printer width is set to 80.

A normal sequence to turn a parallel printer on and off from a program is shown in the following example:

```
70 D$ = CHR$(4)
80 PRINT D$"PR#1":REM—PRINTER ON SENT TO DOS
90 PRINT CHR$(9)"80N":REM—TURN ECHO OFF AND
ENSURE 80 COLUMNS
100 PRINT"THIS WILL GO TO THE PRINTER"
110 PRINT D$"PR#0":REM—SEND PR#0 TO DOS
120 PRINT"NOW BACK ON THE 80 COLUMN SCREEN"
```

The text window
INVERSE

Causes all characters printed to be black on white. May also be affected by printing CHR$(15) from CP/M, PASCAL etc. (See Screen control codes.)
NORMAL

Resets INVERSE flag, causing display to revert to normal. Also affected by printing CHR$(14) from CP/M, PASCAL etc. (See Screen control codes.)

WINDOW POKES

The locations used for the text window are the same for the DIGICARD 80 as for the 40 column APPLE screen. These are outlined below with maximum and minimum values allowable when in the 80 column display.

Normal precautions as laid out in the APPLE manual also apply to text window pokes, such as the sum of left edge and width should not exceed 80.

PURPOSE	Decimal location	Min.	Max.	Normal
Left edge	32	0	79	0
Width	33	0	80	80
Top edge	34	0	23	0
Bottom edge	35	0	24	24

HTAB and VTAB

HTAB

The DIGICARD 80 supports HTAB up to 40. Values higher than 40 should be replaced with POKE 36,XX where XX is the required horizontal cursor position minus one. HTAB is disabled when the manual overide {CTRL Z} L is on.

VTAB

Use of VTAB is exactly the same as normal APPLE 40 column display.

Screen Control Codes

The DIGICARD 80 responds to several control codes used by CP/M PASCAL etc. These codes may also be used by APPLESOFT BASIC for greater versatility in screen formatting.

To use control codes from CP/M, Integer or APPLESOFT BASIC, issue the command PRINT CHR$(XX) where XX is the decimal value given in the "SCREEN CONTROL CODES TABLE" following. From PASCAL the normal technique to print control characters should be used, ie: WRITE (CHR(XX)).

SCREEN CONTROL CODES TABLE

ASCII Name	Decimal Value	Function
BEL	7	Sound system bell
BS	8	Non-destructive backspace
LF	10	Linefeed
VT	11	Clear to end of window
FF	12	Formfeed (HOME)
CR	13	Carriage return
SI	14	Set "NORMAL" display mode
SO	15	Set "INVERSE" display mode
EM	25	Home cursor, no screen clear
FS	28	Non-destructive forward space
GS	29	Clear to end of line
RS	30	GOTO X,Y lead in
US	31	Reverse linefeed

GOTO X,Y

The DIGICARD 80 fully supports GOTO X,Y as used by CP/M. The form this command takes is to send the lead-in character CHR$(30) followed by two characters having a decimal value greater than 32. GOTO X,Y can be used by any language or software system using the DIGICARD 80 print routine.

An example program is shown below.
```
310 PRINT CHR$(30);CHR$(82);CHR$(42);
320 REM—SET X AT 50 AND Y AT 10
330 PRINT"THIS IS X = 50 Y = 10"
```

Reverse linefeed and SCROLL

The DIGICARD 80 not only supports reverse linefeed (moving the cursor upward) but when the cursor has reached the top of the screen, the entire display is scrolled downward. Reverse linefeed is effected by printing CHR$(31). To achieve the proper effect the carriage return should be suppressed at the end of the print statement. Note that until the cursor reaches the top of the screen reverse linefeed will not occur; an easy way to achieve this is to execute a HOME with no screen clear: PRINT CHR$(25) or VTAB (1). See example next page.

Example:
```
10 HOME
20 PRINT"THIS IS TO TEST REVERSE LINEFEED"
30 VTAB(1):REM—CURSOR TO TOP OF WINDOW
40 FOR S = 1 TO 24:PRINT CHR$(31);:REM—24 REVERSE
SCROLLS
50 NEXT S
60 VTAB(24):REM—CURSOR TO BOTTOM OF WINDOW
70 FOR S = 1 TO 20:PRINT:NEXT S:REM—20 NORMAL
SCROLLS
```

Limited graphics and Underline

As well as the entire ASCII character set the DIGICARD 80 has 6 characters that are usable for "limited graphics" applications. These characters are given below with a sample APPLESOFT program using the underline. (Actually a true OVERLINE character.)

Note that the underline character will take up the next line under the section underlined; also, to use characters with decimal values under 32, DEBUG must be on.

Decimal value	Shape	Use
0	▆	Graphics
27	←	Word processing/graphics
28	⏎	Word processing/graphics
29	→	Word processing/graphics
30	▪	Graphics
31	▮	Graphics
127	—	Underline

Underline example:
```
10 HOME:VTAB (10)
20 HTAB (20):PRINT"THIS IS THE DIGICARD 80 UNDERLINE
TEST"
30 HTAB(20):FOR U = 1 TO 38
40 PRINT CHR$(127);:NEXT U
```

CALLS to APPLE Monitor

Calls to the APPLE monitor are often used in programs to clear to end of line, clear to end of screen and, in INTEGER BASIC, to clear the screen. As these Calls refer to the 40 column text window, when they are found in a program that is to be used with the DIGICARD 80 they should be replaced with PRINT CHR$(X) where X is given in the table following. Program destruction will result if a program containing any of the following Calls is run while in the 80 column text system.

Call to monitor	Replacement	Function
CALL – 936	CHR$(12)	HOME, Clear screen
CALL – 958	CHR$(11)	Clear to end of screen
CALL – 868	CHR$(29)	Clear to end of line

CARD and CURSOR CONTROL CODES and TABLE

Control over the various functions the DIGICARD 80 has installed is obtained by means of control Z codes. These are given in the form "{CTRL Z} X". Where {CTRL Z} is the character typed by holding down the control key while typing Z, and X is a single key taken from the "CARD AND CURSOR CONTROL TABLE" following.

These functions may also be utilised in the deferred mode (on a line during a program) with the command PRINT CHR$(26)"X" where X is, once again, taken from the table.

Example: To change to 40 column screen during a program.
200 PRINT"NOW OVER TO 40 COLUMNS"
210 PRINT CHR$(26)"4"
220 PRINT"NOW THE DISPLAY IS 40 COLUMN"

A detailed description of card controls follows the table.

CARD AND CURSOR CONTROL CODES TABLE

"4"	Switch to 40 × 24 display
"8"	Switch to 80 × 24 display
"A"	Turn Auto Cursor on
"B"	Select Block cursor
"C"	Enter communications mode
"D"	Activate DEBUG
"F"	Fast cursor flash rate
"L"	LIST 80 columns (for INTEGER BASIC)
"N"	Non flashing cursor
"O"	DEBUG off
"S"	Slow cursor flash rate
"T"	Toggle video between 80 column and APPLE screen
"U"	Select Underscore cursor

{CTRL Z} 4

Toggles the video to the standard APPLE video system, sets the text window to full with the cursor at the bottom left of the screen then transfers print output to the APPLE monitor print routine. If a secondary graphics page has been used while in 80 columns (eg. HGR2), it will be necessary to give the command TEXT to return to the primary 40 column text page.

{CTRL Z} 8

Toggles the video to the 80 column display and transfers output to the DIGICARD 80 screen driver routine. Then sets the text window to full and puts the cursor at the bottom left of the screen.

NB: If the hardware graphics toggle lead is installed and the APPLE is in a graphics mode, the print routine will transfer to 80 columns but the video will stay switched to the APPLE video system until the TEXT command is given.

{CTRL Z} A

Actuates the "Auto Cursor" mode. The cursor is displayed as a slow flashing block while keyboard is in upper case, changing to a slow flash underscore when lower case is selected. During ESCape mode the cursor is shown as a fast flashing block.

"Auto Cursor" is the default mode and is disabled when any particular cursor or flash rate is manually selected.

{CTRL Z} B

Disables "Auto Cursor" and locks cursor into a block shape. Does not affect flash rate.

{CTRL Z} C

Enters communications mode. See communications section.

{CTRL Z} D

Turns DEBUG on. Debug causes most control character functions to be inhibited and shown as inverse alphabetic characters. Exceptions are {CTRL Z}, carriage return and linefeed which are handled as normal to allow normal print and scroll. {CTRL Z} commands are still acted on as well as being displayed.

The purpose of DEBUG is to detect screen control or hidden control characters.

{CTRL Z} F

Disables "Auto Cursor" and selects fast cursor flash rate.

{CTRL Z} L

Manual overide for HTAB. Enables the card to list 80 columns in INTEGER BASIC. Another {CTRL Z} L re-enables HTAB. This command is not necessary in APPLESOFT BASIC where 80-column list is automatic.

{CTRL Z} N

Disables "Auto Cursor" and stops cursor from flashing.

{CTRL Z} O

Turns DEBUG mode off.

{CTRL Z} S

Disables "Auto Cursor" and sets slow cursor flash rate.

{CTRL Z} T

Causes video output to toggle backwards and forwards between APPLE video and the 80 column display. Used to change to the graphics screen when a language other than APPLESOFT BASIC is being used and the Hardware graphics lead is not installed.

{CTRL Z} U

Disables "Auto Cursor" and selects underscore cursor.

Using two monitors

To use two monitors — one for the 80 column display and one for a graphics display — the following procedure may be used:

1.

Plug the graphics monitor into the Colour card or APPLE output and the monitor to be used with the 80 column display into the DIGICARD 80.

2.

Remove the Hardware graphics lead if installed

3.

Boot the DIGICARD 80

4.

Enter the required graphics mode, for instance HGR

5.

Type {CTRL Z} 8 to return to the 80 column display (PRINT CHR$(26)"8" in deferred mode)

CP/M and other languages

All the screen control and card control codes functions are available to any language or system using the DIGICARD 80 print routine. The DIGICARD 80 control codes comply with DATAMEDIA codes.

CP/M and other language Graphics

Provided the hardware graphics clip has been installed properly, the DIGICARD 80 will change over to the graphics screen when any graphics mode is selected, regardless of the language in use. However, if it is required to use two monitors, one for graphics and one for 80 column text, this lead must be removed. The graphics monitor is then plugged directly into the standard APPLE video output and the text monitor into the DIGICARD 80 output.

If the hardware graphics toggle is not installed, changing to and from the graphics screen may be effected by sending a {CTRL Z} T for toggle, to the print routine. (See CARD AND CURSOR CONTROL CODES)

Assembly language information

Control locations

The DIGICARD 80 uses the following locations for control over bank selection of RAM, ROM and other hardware functions:

$C0B0...Shift key read (Bit 7). Also CRT controller address register.

$C0B1...CRT controller control register.

$C0B2...Bank select Video RAM into $C800 to $CFFF.

$C0B3...Bank selects ROM into $C800 to $CFFF.

$C0B4...Select 40 column video system.

$C0B5...Select 80 column video system.

$C0B6...Bank select bottom section of 4K ROM. (Communications section.)

$C0B7...Bank select top section of 4K ROM.

$C0B8...Initiate synchronization sequence.

$C0B9 to $C0BF...Same as $C0B8.

$C300 to $C3FF...Single page ROM.

$CFFF...Disable card ROM and RAM addressing from $C800 to $CFFF.

RAM locations used

The following zero page locations are used or referenced by the DIGICARD 80.

HEX location	Apple Label	Purpose
$20	WNDLFT	Text window left edge
$21	WNDWTH	Text window width
$22	WNDTOP	Text window top
$23	WNDBTM	Text window bottom
$24	CH	Horizontal cursor position
$25	CV	Vertical cursor position
$28/29	BASL/H	Low/high byte of baseline

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HEX location	Apple Label	Purpose
$2A/2B	BASL2/H2	Low/high byte of baseline 2
$32	INVFLG	INVERSE flag
$35	YSAV1	Temporary storage for card routines
$36/37	CSWL/H	Low/high byte of Output vector
$38/39	KSWL/H	Low/high byte of Input vector

Slot dependent RAM locations:

HEX location	Label	Purpose
$47B	FLG1	Main flag
$4FB	CPCH	CP/M etc. horizontal cursor pos.
$57B	CPCV	CP/M etc. vertical cursor pos.
$5FB	CSR	Cursor shape in use
$67B	CHTEM	CP/M etc. character pass location
$6FB	XYCOUN	Single key and GOTO X,Y flag
$77B	CPINV	CP/M etc. inverse flag
$7FB	FLG2	Secondary flag

Useful card routines

$C300...Boots card, setting in/out hooks then outputs character in ACC.

$C305...Print output routine. Enter with character in ACC, X and Y are preserved.

$C307...Input a character from the keyboard. Character is returned in ACC and CHTEM. X and Y are preserved. Lower case characters are returned with Bit 7 low.

$C39F...Stores ACC to the video RAM at Baseline indexed to CH.

$C394...Loads ACC from the video RAM at Baseline indexed to CH.

$C3A9...Clears memory pointed at by Baseline from contents of Y register to WNDWTH. ACC is returned with $A0, Y is scrambled.

$C386...Transfers memory contents pointed at by Baseline to the line pointed at by Baseline 2. Transfer begins from the contents of Y to WNDWTH. Used in linefeed routines.

Communications terminal

The terminal mode of the DIGICARD 80 will support baud rates up to 4800 baud (using the APPLE S.S.C. card) without loss of characters during line feeds, reverse line feeds and screen clears. Default mode is 300 baud and full duplex.

Requirements

To use the terminal mode of the DIGICARD 80 you will need:

1.

An APPLE C.C.S. or equivalent card, or an APPLE S.S.C. card. The S.S.C. card has the advantage of being able to alter baud rate directly from the keyboard.

2.

A direct connect or acoustic modem, if required to use the terminal over a telephone line.

3.

Knowledge of baud rate and data expected by the mainframe of communicating computer. (For full duplex over telephone lines the default 300 baud rate is usual.)

Entering terminal mode

After the DIGICARD 80 has been booted the terminal is entered with the command {CTRL Z} C. {CTRL Z} commands are covered fully in "CARD and CURSOR CONTROLS".

Upon entry to the terminal a message will be displayed asking the slot that the C.C.S. or S.S.C. card is in. Answer with a single key 1, 2, 4, 5, 6 or 7.

The next message will request the data and parity to be used; most systems will accept option seven (7) with no trouble.

As soon as the second question has been answered (with a legal key) the DIGICARD 80 checks the specified slot for an S.S.C. card and if not found assumes that a C.C.S. or equivalent card is being used; the card is conditioned accordingly.

If no communications type card is found in the specified slot the screen will go a bit "silly", in which case it is a good idea to "QUIT" the terminal and re-enter it, specifying the correct slot.

If there is a usable card in the slot specified you are now in the terminal mode, with full duplex and 300 baud as default.

The commands available during terminal mode are shown in the table with a detailed description following. These commands are executed by typing (SHIFT {CTRL} X) all at once (sounds hairy, doesn't it), where X is taken from the table. To type (SHIFT {CTRL} X) simultaneously depress the SHIFT and CONTROL keys; while holding both down, type the key required. This somewhat complicated procedure is used to prevent local commands from being transmitted, ie. any control key typed, while the shift key is down will not be sent.

(SHIFT {CTRL})

Key	Function
A	Alternative transmit of file from disk
B	Turn memory on/off
C	Cancels transmit or macro
D	DOS. Send following line up to carriage return to DOS
E	Examine memory
H	HALT. Send Break
L	Load text file from disk into memory
M	Macro — executes current file in memory as log-on
Q	Quit — legal exit from terminal
R	Reset memory, current contents are lost
S	Save contents of memory onto disk as a text file
T	Transmit contents of memory via serial card
W	Turn prompter on/off
X	Set/reset half or full duplex
Y	Lead-in for S.S.C. baud rate change. (A single character from A to O should follow)
Z	Send {CTRL Z} to DIGICARD 80, then following key

(SHIFT {CTRL}) A

Alternative transmit. Allows transmission of a file while still recording incoming data.

(SHIFT {CTRL}) B

Turns memory on or off, does not destroy current contents.

(SHIFT {CTRL}) C

Manually terminates Macro or Transmit. Terminates macro without resetting memory. Also terminates transmission of file. This command may be sent from a remote computer, i.e: {CTRL R} {CTRL C} to terminate a transmission or Macro.

(SHIFT {CTRL}) D

Sends next sequence of characters up to carriage return to DOS. (CATALOG, DELETE etc.) Any incoming information will be lost during command and execution.

(SHIFT {CTRL}) E

Prints the contents of memory during which incoming information is lost. Can be paused with {CTRL S} or terminated with {CTRL C}.

(SHIFT {CTRL}) H

HALT or HOPELESS. Sends a 233 millisecond break to the receiving device then resumes terminal mode with the format entered originally. This command causes the baud rate to revert to 300 if a Super Serial Card is being used.

(SHIFT {CTRL}) L

Loads text file from disk into memory. Current contents of memory are lost.

(SHIFT {CTRL}) M

Executes Macro. Waits for first character in text file, upon receipt sends remainder of line up to and including Carriage Return. Upon completion of Macro resets memory. Memory may be left on during Macro but information will be stored only after Macro has completed execution. Macro is intended to be used as a LOG-ON facility, removing the need for special control characters in the file.

(SHIFT {CTRL}) Q

Exits terminal mode via DOS. If no DOS is loaded a jump will still occur to $03D0.

(SHIFT {CTRL}) R

Reset memory system to full capacity, current contents are lost to the terminal.

(SHIFT {CTRL}) S

Saves contents of memory on disk as a text file. Can be terminated with {CTRL C}.

(SHIFT {CTRL}) T

Transmits contents of memory via serial card. Can be paused with {CTRL S} or terminated with {CTRL C}.

(SHIFT {CTRL}) W

Turns prompt system on or off. Prompt shows whether memory is on or off, status of duplex flag, remaining memory in bytes and functions as a general status indicator.

(SHIFT {CTRL}) X

Change duplex flag, from half or full duplex to alternate.

(SHIFT {CTRL}) Y

Lead-in character for change in baud rate. Should be followed with a key taken from the baud rate table, typed without the control or shift key down. This command is only acted on if an S.S.C. card is being used.

(SHIFT {CTRL}) Z

Sends a {CTRL Z} character to the DIGICARD 80 print routine, then waits for a key and sends the entered key to the print routine. (Allows DEBUG to be actuated etc.) During the time from the {CTRL Z} command to the next key typed, all incoming information is lost.

BAUD RATE TABLE (S.S.C. CARD ONLY)

Key	Baud Rate	Key	Baud Rate
A	50	G	600
B	75	H	1200
C	110	I	1800
D	135	J	2400
E	150	K	3600
F	300	M	4800

Although there are three higher rates which could be specified, speeds over 4800 baud are not guaranteed.

DEL

The delete character can be sent to a mainframe system with {SHIFT U} typed while in upper case. This is used by many systems as a backspace, which causes the mainframe to respond accordingly and send a backspace character.

DEL

The delete character can be sent to a mainframe system with {CTRL U}. This is used by many systems as a backspace, which causes the mainframe to respond accordingly and send a backspace character.

PROGRAM TO CREATE MACRO FILE

```
10 HOME :D$ = CHR$ (4):N = 1: INPUT "FILE NAME FOR
MACRO LOG-ON? ";N$
20 INPUT "DO YOU WANT CURRENT FILE OF THAT NAME
DELETED? (Y/N)";Y$
30 IF Y$ = "Y" THEN PRINT : PRINT D$"DELETE"N$
40 REM — ALTERNATIVE TO 20 AND 30 IS TO POSITION
FILE AT ZERO
50 PRINT "WHAT IS PROMPT NO. "N"? (CTRL C TO EXIT) ";:
GET P$: IF P$ = CHR$ (3) THEN END
60 PRINT P$: PRINT "WHAT IS RESPONSE NO. "N"? ";
70 GET R$: PRINT R$;
80 IF R$ = CHR$ (8) AND LEN (I$) > 0 THEN I$ = LEFT$ (I$,
LEN (I$) - 1): GOTO 70
90 I$ = I$ + R$: IF R$ >< CHR$ (13) THEN 70
100 PRINT  D$"OPEN"N$:  PRINT  D$"APPEND"N$:  PRINT
D$"WRITE"N$
110 PRINT P$;I$;: PRINT D$"CLOSE":I$ = "":N = N + 1:
GOTO 50
```

Note:- An extra command has been added to the DIGICARD communications terminal.

CTRL (SHIFT) I

Insert linefeed characters after all transmitted carriage returns. Toggles the INSERT flag on or off. Default condition is no linefeeds.
This command is used to talk to WANG computers etc.

PROGRAM TO RETRIEVE MEMORY IF COMM'S IS ACCIDENTALLY EXITED

(NB: You may have to type FP then PR#3 before loading program.)

The memory buffer runs from $0900 to $9500.

(If memory was reset delete PEEKS in line 4 and substitute approximate length of file + 2304 as value assigned to B).

```
1  HIMEM: 2303
2  HOME : INPUT "FILE NAME ";N$:D$ = CHR$ (4):Z = 2304
3  PRINT D$"OPEN"N$: PRINT D$"WRITE"N$
4  B = PEEK (250) + PEEK (251) * 256: POKE B,0
5  A = PEEK (Z): IF A >< 0 THEN PRINT CHR$ (A);:Z = Z + 1:
GOTO 5
```

MISCELLANEOUS

The DIGICARD 80 fully supports the type ahead buffer in PASCAL 1.1.

ESC 1 returns CALL-151 and Carriage Return entering the user directly into the APPLE Monitor.

WARNING — EXTRA PRECAUTIONS WHEN USING DIGICARD 80

Do not initialise disks while in the 80 column display unless they will only be used with the DIGICARD 80. PR#0 is the only command affected.

At any time when the command FP is issued it must be followed with PR#3 to re-boot the DIGICARD 80.

Remote control

If a {CTRL R} character is received by the DIGICARD 80 while in terminal mode, the terminal assumes a "remote" mode in which the following character(s) are acted upon as if they were local controls executed with **(SHIFT {CTRL})** commands.

For instance, to catalog a disk on a remote APPLE equipped with a DIGICARD 80 in terminal mode, the command {CTRL R} {CTRL D} CATALOG is given; if the catalog is longer than one full screen, any key from the sending terminal will continue it. By sending commands preceded by {CTRL R}'s a file can be loaded, saved, transmitted, renamed etc. at the receiving APPLE.

Remote Basic

An APPLE fitted with DIGICARD 80 in communications may be controlled remotely to the extent of being able to enter it into BASIC by either running or loading a BASIC program from the disk with a remote DOS command. Remote commands may be sent by any communications device. ie. You do not have to use a DIGICARD 80 or an APPLE to control an APPLE fitted with a V1.4 DIGICARD 80.

The receiving APPLE is returned to communications mode with any DOS error.

While in remote BASIC, programs may be loaded off disk, listed, etc. and saved to disk. Also programs using TEXT files etc. may be used. Commands that may take control of input ie. IN, PR should be avoided.

To LIST a program for storage to a TEXT file the normal APPLE technique of POKE 33,30, to prevent carriage returns at the 33rd character, should be used.

Printers in communications

The command PR# may be issued to a printer slot and the file in memory examined to print it. PR#0 returns output to the screen.

Provided the printer is fast enough to print at the incoming baud rate, this command can be used to direct output to the printer during normal communications.

]RUN TEST80
DIGICARD 80 COLUMN CARD IN SLOT 3 OF APPLE II PLUS

Test of 80 column character display

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890-=][;/.,()?:}(+_X
%1~%$#@!`~
ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890-=][;/.,()?:}(+_X
%1~%$#@!`~

]
]

]" WOW !!! "

apple II

THIS SLOT ONLY FOR EURO COLOR
PAL/SECAM CARD
DO NOT USE
ANY OTHER CARD