USER MANUAL

PACT ELECTRONICS LIMITED

80 Column Terminal

INDEX

Section	Contents	Page
1	**GENERAL INFORMATION**	
	Functions Summary	05
	Installation & Precautions	07
2	**SCREEN DISPLAY**	
	General	10
	Apple Basic	11
	Standard Characters	12
	Symbols & Text Graphics	13
3	**SOFTWARE COMPATABILITY**	
	BASIC Screen Commands	14
	Apple][Editing Commands	15
4	**CONTROL FUNCTIONS**	
	Single Byte	16
	Double Byte (Lead-In)	17
5	**OPTIONAL EXTRAS**	
	Changeover Switch Installation	19
6	**WARRANTY**	20

Illustrations

Installation in Apple][	A	07
Component & Connector Locations	B	08
Standard UK Ascii-7 Set	C	12
BASIC Test Program	D	13
Changeover Switch Assembly	E	18

FUNCTIONS & SUMMARY

The **PACT** 80-Column Interface card generates 80 columns of Upper & Lower Case Text on your standard Apple][Video Monitor. No modifications to your Apple computer hardware are required, and wide software compatability is provided. All basic Applesoft (and Integer) text screen functions are duplicated, on its 24-lines by 80-column output, as well as modern terminal functions such as XY Cursor Addressing and Form Drawing Graphics.

Business users will immediately benefit from the built-in Lower-case characters, and extra-wide text area which the **PACT** 80-Column card generates. Programmers will enjoy the improved screen character set and detail, fast display action, and RGB Colour System options which are now available to **PACT** 80-column card users. Both Apple Pascal and CP/M(tm) users will immediately be able to operate the large number of 80-column programs available to them, without the annoying 40-column "wrap-around" of the standard Apple Video display.

To reduce the need for special system commands in your Apple][software, the **PACT** 80-column card emulates most screen function commands of the Videx VIDEOTERM(tm) terminal interface. All commercial programs providing compatability to VIDEOTERM(tm) interfaces may be used unchanged with the **PACT** 80-column card.

If any, only very minor software patches will be needed to upgrade your existing programs to full 80-Column operation. When writing new programs, the additional functions not normally available on the Apple Text Screen may be utilised.

All the characters used are composed with 128 7-by-9 matrices, stored in an industry-standard EPROM on the interface card. The card is supplied with a full United Kingdom general purpose English character set, although alternative characters and EPROM's are available from **PACT ELECTRONICS** on special order, to suit scientific, graphics, and computer/foreign language applications. For very high resolution applications, special **PACT** 80-column cards are available with 7-by-12 matrixes and a correspondingly reduced 18-lines by 80-columns video output.

! !

Please refer to the illustrations both before and after completing each step of the installation !

! !

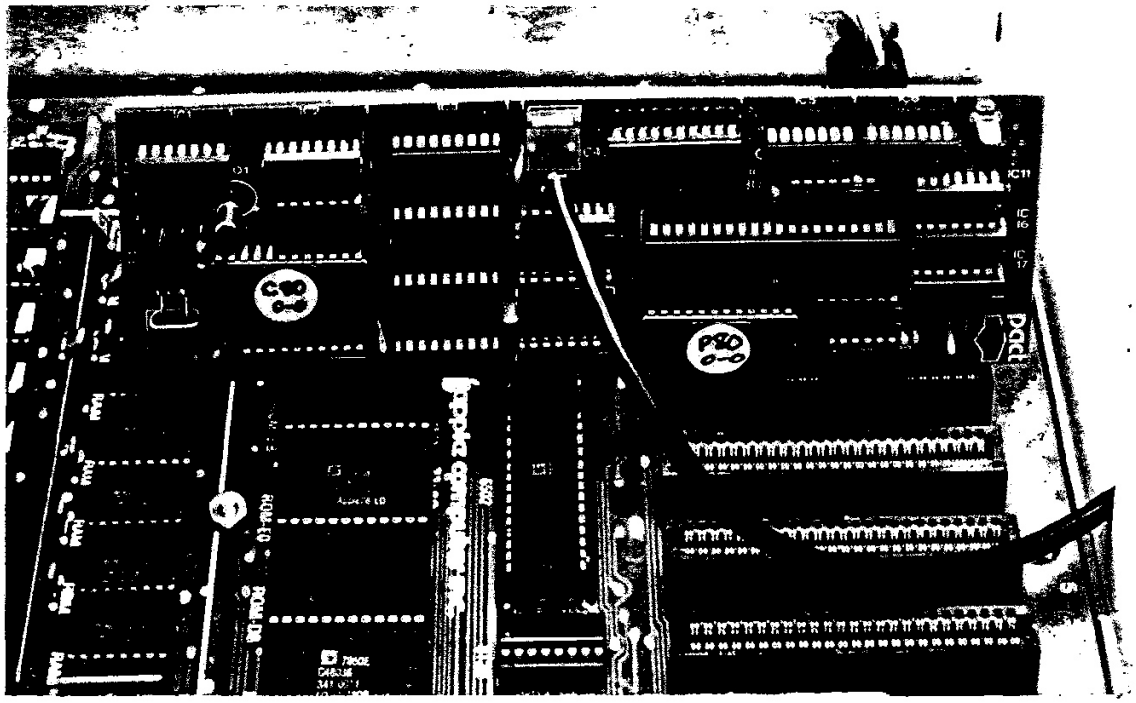


Figure A

INSTALLATION IN APPLE][

The **PACT 80 COLUMN VIDEO TERMINAL INTERFACE CARD** may be used in any Apple][card slot number, from 1 to 7 inclusive. It is recommended that card slot 3 is used for most applications, as commercial software packages generally assume any external console interface to be in this slot. Throughout this manual, all references to the **PACT** 80 Column interface will assume the card to be installed in slot 3.

The interface may be installed by non-technical users, but should you not be familiar with the handling of interface printed circuit boards, and in particular the precautions given in the Apple][instruction manual, we suggest that your dealer carries out the initial installation and testing of the interface in your computer.

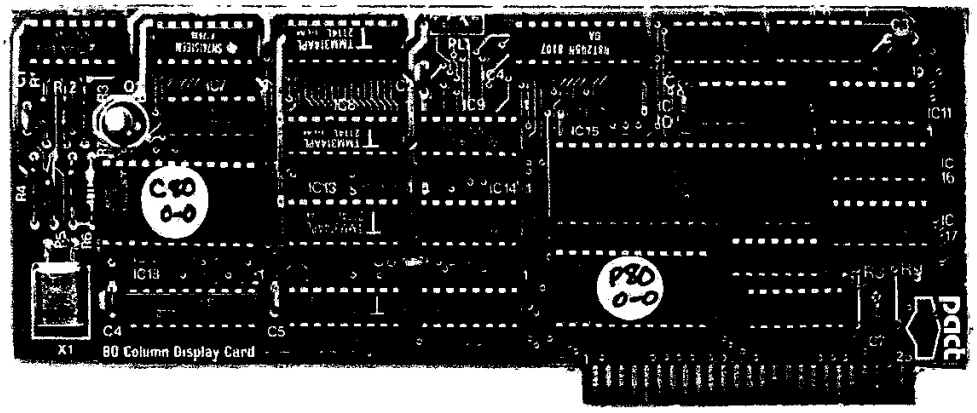


Figure B

Step	Figure	Procedure
1	-	SWITCH OFF and **DISCONNECT MAINS POWER** from your Video Monitor. SWITCH OFF and **DISCONNECT MAINS CABLE** from the Apple][. Only then remove the Lid of the computer.
2	B	Connect the four-way Socket Lead to the **PACT** Interface PCB (Printed Circuit Board) as shown. Check that all the PCB pins have mated correctly with the cable socket, and that the small side openings on the socket connector are facing UP, as shown.
3	A	Insert the Interface into Card Slot 3 (or your desired slot number). Pass the cable through the cabinet, as shown, before replacing the Apple][Lid.

Step	Figure	Procedure
4	A	Connect your Video Monitor cable to the Socket Lead from the **PACT** Interface. (The Apple][Video Output is not used by the **PACT 80-COLUMN** Interface.)
5	-	Check the quality and condition of the connecting pins (or sockets) on your Monitor & video cable. Check the Mains Voltage and the protective earth connections of both your monitor and the Apple][. PLEASE NOTE THAT A FAULT AT ANY ONE OF THESE POINTS MAY PREVENT CORRECT OPERATION OF THE **PACT** INTERFACE, AND POSSIBLY DAMAGE YOUR SYSTEM.
6	-	The **PACT** Interface is designed to be connected to a 75-ohm terminated line; if possible, set the TERMINATE switch on your Monitor to "ON".
7	-	Re-connect the Apple][Mains Supply. Follow any other instructions given with your monitor, or program, before switching the Apple][on. Re-connect the Mains Supply to your Video Monitor.

GENERAL

The **PACT** 80 Column Video Terminal Interface will begin to operate as soon as the Apple][executes an "IN#3", "PR#3", or equivalent command. The Interface defaults to normal Upper Case operation, and should appear very similar to the Apple][Text screen. A few initial commands, such as "LOAD", "LIST", "CATALOG", etc. are reccommended, to establish correct operation of the Interface from the Apple][keyboard.

For the Apple][keyboard to generate Lower Case text, the **PACT** Interface contains a 'software shift-lock', which operates like a modern v.d.u. (terminal) keyboard. Although referred to as a "key", the 'software shift-lock' is actually operated by entering "^A" ("CTRL" & "A" pressed together) on the keyboard. Once this 'shift-lock' "key" is pressed, the display changes all subsequent keyboard characters from Upper to Lower Case, or Lower to Upper Case.

Typists not familiar with v.d.u. keyboards will have to carefully note which keys are affected by the 'software shift-lock'. For example, all the numbered keys are controlled by the existing "SHIFT" key, and <u>not</u> by the ^A "key". However, the punctuation keys above the numbered keys <u>are</u> controlled by the ^A "key". New users are encouraged to experiment, and familiarise themselves with the operation of the **PACT** Interface, before undertaking any major keyboard tasks, etc.

APPLE BASIC

The PACT Interface may be used with either Integer or Applesoft Basic programs, by preceding, or including in, the program a "IN#3", "PR#3", or equivalent command. When first operated, the PACT Interface automatically sets both IN#3 and PR#3 vectors to its 80-column screen area, and no further commands are required.

Should it be required to return control of the Apple][text screen, it is necessary to issue both "IN#0" and "PR#0" commands, or their equivalents, to restore the 40-column screen area. Note that the PACT 80-column display normally remains 'in place' while the Apple][40-column display is being used, and visa versa.

When using Applesoft or Integer Basic, the ^A "key" must be set to Upper Case for all programming instructions, as the Apple][Basic Languages do not understand Lower Case characters! Also, because the ^A "key" is trapped by the PACT Interface, you cannot normally enter that character in response to an INPUT or GET statement. This does not prevent entering other control "keys" in response to INPUT or GET statements, or using control "keys" inside speech quotes when programming.

STANDARD CHARACTERS

The PACT 80 Column Video Terminal Interface displays the full standard ASCII-7 character set, in both Upper and Lower case text. The card is supplied with a full United Kingdom general purpose English character set, as given in **Figure C**, although alternative sets may be fitted (see **Section 1**).

Figure C

```
+-----------------------------------------+
|                                         |
|   STANDARD CHARACTERS                   |
|                                         |
|    ! " £ $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? |
|                                         |
|   @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ |
|                                         |
|   ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ▮ |
|                                         |
+-----------------------------------------+
```

SPECIAL CHARACTERS

For more advanced applications, additional special characters can be displayed for Form Drawing, and creating Text Graphics. Each of these characters requires a 'lead-in' character to be sent to the **PACT** Interface. Without a 'lead-in' character, the ASCII-7 address range which holds these characters cannot normally be used for "printable" information.

The following Applesoft Basic program may be used to display all the characters of your **PACT** Interface, on its 80-column screen, including the Special Characters:

Figure D

```
1000  REM ***** P80 MAN1 *****
1010  REM (C) IGOR THOMAS 1982
1020 F$ =  CHR$ (12):Z$ =  CHR$ (26)
1030  PRINT F$"STANDARD CHARACTERS"
1040  PRINT : FOR A = 1 TO 3
1050  FOR B = A * 32 TO A * 32 + 31
1060  PRINT  CHR$ (B)" ";: NEXT : PRINT
1070  PRINT : NEXT : PRINT : PRINT
1080  PRINT "SPECIAL CHARACTERS": PRINT
1090  FOR A = 0 TO 31: PRINT Z$ CHR$ (A)" ";
1100  NEXT : PRINT : PRINT : PRINT : END
```

APPLE SCREEN COMMANDS SUPPORTED

LIST TRACE NOTRACE PRINT SPEED TAB()

HTAB VTAB CATALOG MON NOMON

APPLE SCREEN COMMANDS SUPPORTED BY CHANGES

CALL -936	Home & Clear Screen	Change to:	PRINT "control-L"
CALL -958	Clear to End of Screen	Change to:	PRINT "control-K"
CALL -868	Clear to End of Line	Change to:	PRINT "control-]"

HOME Change to: PRINT chr$(12) or PRINT "control-Y"

APPLE SCREEN COMMANDS BYPASSED

(Require 40-column connection)

TEXT GR COLOR PLOT HLIN VLIN SCRN()

HGR HGR2 HCOLOR HPLOT DRAW XDRAW

APPLE SCREEN COMMANDS NOT SUPPORTED

NORMAL INVERSE FLASH

Apple][EDITING COMMANDS

ESC	@	Home & Clear Screen	= SUPPORTED
ESC	A	Cursor Right	= SUPPORTED
ESC	B	Cursor Left	= SUPPORTED
ESC	C	Cursor Down	= SUPPORTED
ESC	D	Cursor Up	= SUPPORTED
ESC	E	Clear to End of Line	= SUPPORTED
ESC	F	Clear to End of Screen	= SUPPORTED
ESC	I	Cursor Up Toggle	= Not Supported
ESC	J	Cursor Left Toggle	= Not Supported
ESC	K	Cursor Right Toggle	= Not Supported
ESC	M	Cursor Down Toggle	= Not Supported

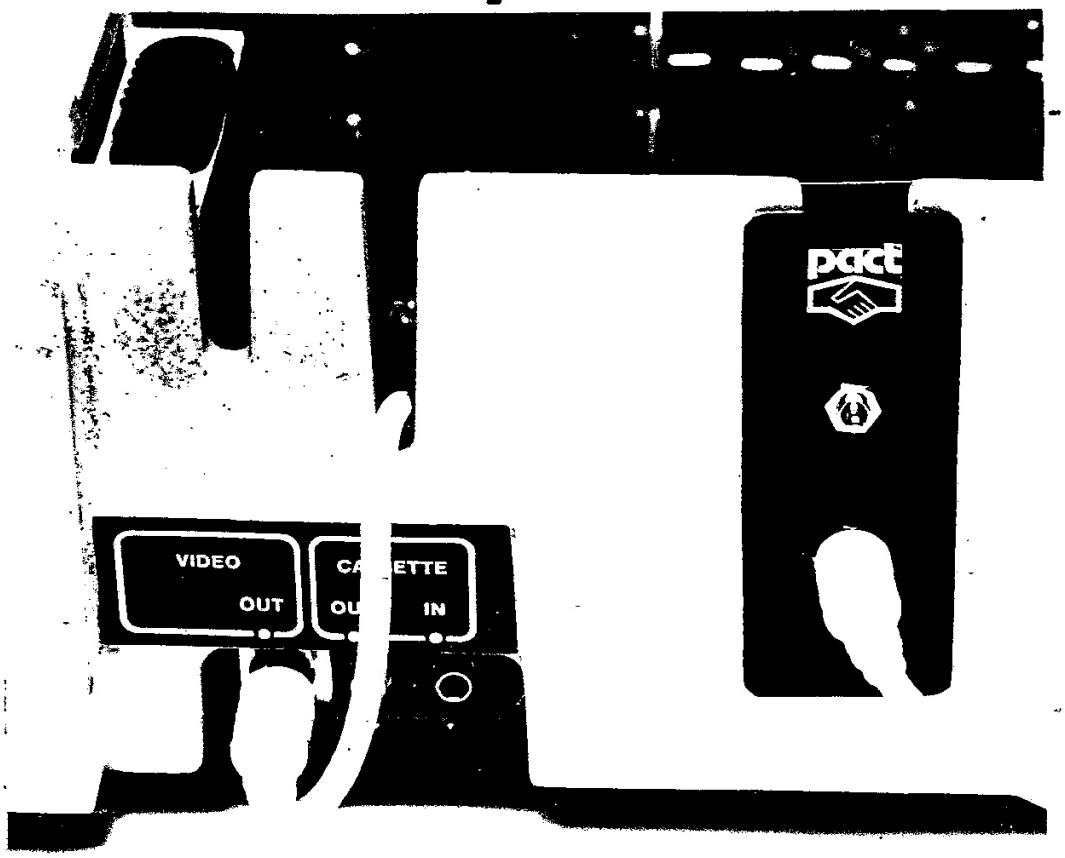
Single Byte Functions

CHR$(7)	^G	Bell
CHR$(8)	^H	Backspace ("⟨---" Key)
CHR$(10)	^J	Line Feed
CHR$(11)	^K	Clear to End of Screen
CHR$(12)	^L	Home & Clear Screen
CHR$(13)	^M	Return (CRLF in Basic)
CHR$(17)	^A	U/L Case Toggle
CHR$(19)	^S	Stop Scroll Toggle
CHR$(21)	^U	Copy ("---⟩" Key)
CHR$(25)	^Y	Home Cursor Only
CHR$(26)	^Z	Display Lead-In Char.
CHR$(27)	ESC	Editing Lead-In Char.
CHR$(28)	^\	Forwardspace
CHR$(29)	^]	Clear to End of Line
CHR$(30)	^^	X/Y Lead-In Character
CHR$(31)	^_	Reverse Line Feed

Double-Byte (Lead-In) Functions

CHR$(26) CHR$(0)	^Z ^@	= Display TEXT GRAPHIC 1
CHR$(26) CHR$(1)	^Z ^A	= Display TEXT GRAPHIC 2
CHR$(26) CHR$(2)	^Z ^B	= Display TEXT GRAPHIC 3
CHR$(26) CHR$(3)	^Z ^C	= Display TEXT GRAPHIC 4
CHR$(26) CHR$(4)	^Z ^D	= Display TEXT GRAPHIC 5
CHR$(26) CHR$(5)	^Z ^E	= Display TEXT GRAPHIC 6
CHR$(26) CHR$(6)	^Z ^F	= Display TEXT GRAPHIC 7
CHR$(26) CHR$(7)	^Z ^G	= Display TEXT GRAPHIC 8
CHR$(26) CHR$(8)	^Z ^H	= Display SYMBOL 1
CHR$(26) CHR$(9)	^Z ^I	= Display SYMBOL 2
CHR$(26) CHR$(10)	^Z ^J	= Display SYMBOL 3
CHR$(26) CHR$(11)	^Z ^K	= Display SYMBOL 4
CHR$(26) CHR$(12)	^Z ^L	= Display SYMBOL 5
CHR$(26) CHR$(13)	^Z ^M	= Display SYMBOL 6
CHR$(26) CHR$(14)	^Z ^N	= Display SYMBOL 7
CHR$(26) CHR$(15)	^Z ^O	= Display SYMBOL 8
CHR$(26) CHR$(16)	^Z ^P	= Display FORM GRAPHIC 1
CHR$(26) CHR$(17)	^Z ^Q	= Display FORM GRAPHIC 2
CHR$(26) CHR$(18)	^Z ^R	= Display FORM GRAPHIC 3
CHR$(26) CHR$(19)	^Z ^S	= Display FORM GRAPHIC 4
CHR$(26) CHR$(20)	^Z ^T	= Display FORM GRAPHIC 5
CHR$(26) CHR$(21)	^Z ^U	= Display FORM GRAPHIC 6
CHR$(26) CHR$(22)	^Z ^V	= Display FORM GRAPHIC 7
CHR$(26) CHR$(23)	^Z ^W	= Display FORM GRAPHIC 8
CHR$(26) CHR$(24)	^Z ^X	= Display FORM GRAPHIC 9
CHR$(26) CHR$(25)	^Z ^Y	= Display FORM GRAPHIC 10
CHR$(26) CHR$(26)	^Z ^Z	= Display FORM GRAPHIC 11
CHR$(26) CHR$(27)	^Z ^[	= Display FORM GRAPHIC 12
CHR$(26) CHR$(28)	^Z ^\	= Display FORM GRAPHIC 13
CHR$(26) CHR$(29)	^Z ^]	= Display FORM GRAPHIC 14
CHR$(26) CHR$(30)	^Z ^^	= Display FORM GRAPHIC 15
CHR$(26) CHR$(31)	^Z ^_	= Display FORM GRAPHIC 16

Figure E



OPTIONAL EXTRAS:

Changeover Switchplate Assembly
RGB Color Link Cable
Standard Video Cable (as supplied)
Tinned Flying Lead Video Cable
USA Ascii Character Set EPROM
French Character Set EPROM
Spanish Character Set EPROM
German Character Set EPROM
Greek (Mathematics) Character Set EPROM
APL (Programming) Character Set EPROM
Medical (Metric) Character Set EPROM
Custom Characters & Symbols To Order

ADDITIONAL INSTRUCTIONS FOR INSTALLING CHANGEOVER SWITCH ASSEMBLY:

(refer to Section 1 of this manual, and Figure E)

Step	Figure	Procedure
4a	E	Remove the Lid, and fit the CHANGEOVER SWITCH ASSEMBLY into one of the three cable entry cutouts on the rear edge of the cabinet, as shown. Check that the placement will not interfere with any wires, cables, or other interface cards.
4b	E	Connect the lead from the CHANGEOVER SWITCH ASSEMBLY to the Apple][Video Output Socket. Then connect the lead of your video monitor to the CHANGEOVER SWITCH VIDEO SOCKET.
4c	B	Connect the four-way PCB (Printed Circuit Board) Socket lead from the CHANGEOVER SWITCH ASSEMBLY to the **PACT** Interface PCB as shown. Check that all the PCB pins have mated correctly with the cable socket, and that the small side openings on the socket connector are facing UP, as shown.

WARRANTY

We warrant each new product to the original end-user purchaser to be free from defects in material and workmanship for a period of twelve (12) months from date of purchase as shown on purchaser's receipt. PACT ELECTRONICS Limited will repair or replace, at its option and free of charge, during the warranty period, any part which proves defective in material and/or workmanship under normal installation, use, and service. DO NOT SEND YOUR INTERFACE DIRECTLY TO PACT ELECTRONICS. Return the faulty item(s) to the dealer from which they were originally purchased, complete with original packaging or physical equivalent, transportation charges prepaid, and proof of purchase date. THIS WARRANTY IS LIMITED TO DEFECTIVE PARTS REPAIR AND/OR REPLACEMENT ONLY AND DOES NOT COVER ANY ACCESSORY ATTACHMENT OR PERIPHERAL USED IN CONNECTION WITH THIS PRODUCT. Labour charges and/or damage incurred in installation, repair, or replacement, as well as incidental and consequential damages connected therewith are excluded. Any damage to this product as a result of misuse, abuse, neglect, accident, incorrect wiring (not our own), improper installation, repair or alteration outside our factory, or any use violative of instructions furnished in writing by us WILL VOID THIS WARRANTY.

Pact Electronics Ltd.
224, Edgware Road, London W2 1DN
Telephone: 01 402 8842/6103 Telex: 22861 METMAK-G