BREJOUX.AE - APPLIED ENGINEERING

29 A rue Montribloud 69009 LYON   Tél. 78.36.52.69   Télex 310111

SERIAL PRO < tm >

MANUEL UTILISATEUR

Applied Engineering garanti votre carte SERIAL PRO contre tous vices de fabrication cinq ans à partir de la date d'acquisition.
Dans le cadre de cette garantie, Applied Engineering assurera selon son propre choix la réparation ou le remplacement de votre carte ou de l'un de ses composants, port à votre charge. Avant tout retour, vous devez obtenir un numéro d'autorisation et les instructions d'envoi.

INSTALLATION

Ce chapitre vous montre comment installer votre carte SERIAL PRO. Un conseil: Prenez votre temps et lisez attentivement les instructions.

STEP 1. INSTALLATION DU CABLE RUBAN

DB-25 Connector

Internal Cable

Battery
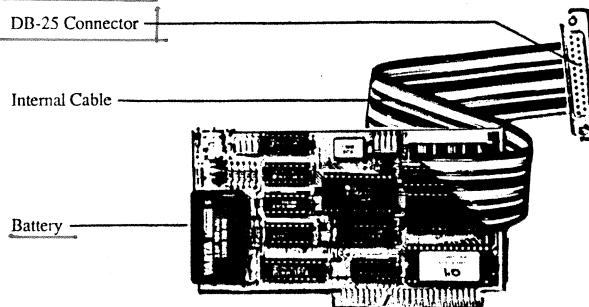
Débrancher le cable ruban de la carte Serial Pro avec précaution tout en tenant la carte par ses extrémités sans toucher les connecteurs dorés.

PRUDENCE: Coupez l'alimentation de votre ordinateur au moyen de l'interrupteur en laissant le cordon d'alimentation branché. Posez vos doigts sur le bloc d'alimentation pour vous décharger de toute électricité statique.

Enlever le capot de votre Apple et présenter le connecteur avec ses écrous de fixations (prise DB-25) par l'intérieur de l'unité centrale face à l'une des ouverture arrière de l'ordinateur. Puis présentez les vis de fixation par l'extérieur du panneau arrière et fixez fermement votre connecteur.

IMPORTANT: Assurez vous que le cable ruban ne soit pas pincé lors de l'installation de la carte elle-meme.

Hex Jack
Screws
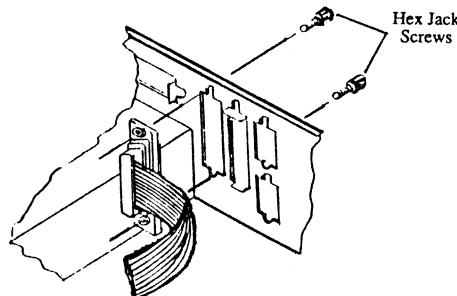
STEP 2. CONFIGURATION DES SWITCHES DE LA CARTE

Placer l'ensemble des switches des deux bancs (4 switches par banc) en position OPEN. Cette configuration est destinée à s'adapter à la plupart des programmes et périphériques. Des informations plus complètes vous sont données en ANNEXE C et D.

Pour mettre un switch en position OPEN, il vous suffit de l'abaisser en direction de la mention "OPEN".

STEP 3. INSTALLATION

> Enficher le cable ruban sur le connecteur approprié de la carte Serial Pro (PRINTER ou MODEM) puis installez votre carte Serial Pro en slot 1 si vous désirez vous connecter à une imprimante, au slot 2 pour un modem.
>
> Pour une utilisation autre qu'avec une imprimante ou un modem, référez vous aux instructions du manuel de votre périphérique.
>
> Replacer le capot supérieur de votre Apple puis connecter votre périphérique sur le connecteur fixé sur le panneau arrière.

Handshaking Switches

Interrupt Switches

Printer
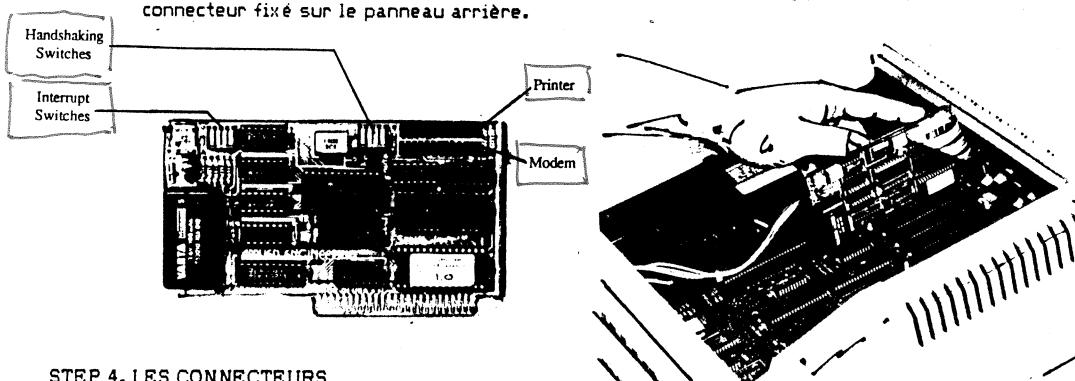
Modem

STEP 4. LES CONNECTEURS

> Le cable "Null Modem" nécessaire pour certaines imprimantes est incorporé dans le connecteur de la carte Serial Pro, éliminant ainsi la nécessité d'un adaptateur.
> rappelez vous qu'il n'existe pas de cable universel. La plupart des périphériques nécessitant une sortie série utilise le connecteur DB-25 (comme votre carte). Apple Computer par exemple utilise souvent des connecteurs mini DIN-8, DIN-5 ou DB-9.
> Si un cable d'interface n'est pas fourni avec votre périphérique, rappelez vous que la carte Serial Pro est entièrement compatible avec la carte Super Série d'Apple qui utilise, elle, un connecteur DB-25.
>
> Tout ce dont vous aurez besoin est donc d'un cable d'interface capable de vous relier à une carte Super série. Vous en trouverez chez la plupart des revendeurs de matériels informatiques ou plus spécialement dans les magasins à l'enseigne TANDY.

STEP 5. "Panel Control" de la carte SERIAL PRO

Le tableau de controle est utilisé pour régler les paramètres de la carte SERIAL PRO en fonction de votre périphérique. Rappelez vous toutefois que de nombreux programmes peuvent temporairement prendre la priorité sur les paramètres de votre SERIAL PRO, mais votre configuration sera conservée en mémoire.

Pour accéder au tableau de controle, mettez l'ordinateur sous tension puis presser CONTROL/RESET.
Au caractère d'appel de l'Applesoft BASIC (§) tapez IN£s ou s est le numéro du slot dans lequel se trouve votre carte Serial Pro.
Le caractère d'appel de l'Applesoft BASIC va réapparaitre et il vous suffit alors de taper CONTROL/I suivi du caractère point d'interrogation (?).

Si CONTROL/I ne fonctionne pas, faites CONTROL/A.

La modification des paramètres sur le menu qui vous est présenté se fait come suit:

    RETURN ou Flèche bas ou M pour descendre.
    Flèche haut ou I pour monter
    Flèche gauche ou J ou flèche droite ou K pour changer le paramètre
    ESCAPE pour sortir du menu et sauver votre configuration.

Les figures 6 et 7 vous montrent un exemple de configuration pour imprimante et modem.

En tout état de cause, sachez que vous n'allez rien détruire si vous sélectionnez de mauvais parametres.

ATTENTION: Ne choisissez pas le mode P8 ou P8A EMULATION au menu à moins que vos programmes ne soient réalisés pour fonctionner avec l'ancienne carte interface Serie Apple. (ne confondez pas Carte Interface Serie avec Carte Super Serie). Les modes P8 et P8A émulation n'autorisent pas l'accès direct au tableau de controle. Si vous étiez bloqué dans l'un de ces modes, consultez l'Appendix A: Accessing the Control Panel.

REGLAGE DE L'HORLOGE.

L'horloge peut également etre réglé à partir du tableau de controle.
Pour régler à la seconde près votre horloge, le plus simple consiste à positionner la barre luminescente sur les secondes et au moyen des flèches droite et gauche de les régler à la seconde près. L'horloge s'arretera automatiquement tant que la barre luminescente sera maintenue sur la sélection. Le simple fait de la déplacer (RETURN) ou de sortir du tableau de controle (ESCAPE) la réactivera instantanément.

LA SORTIE DU TABLEAU DE CONTROLE.

Il suffit de presser la touche ESCAPE.

L'UTILITAIRE HORLOGE CLOCKWORKS

Ce chapitre vous indique comment utiliser le programme ClockWorks Time pour tirer profit de votre carte Serial Pro.

Implantation sur vos disquettes de démarrage ProDOS.

Lorsque vous démarrez sous ProDOS, le système recherche si une horloge compatible ProDOS est intallé dans un slot. Du fait que l'horloge de la carte Serial Pro est incluse dans une carte que ProDOS ne reconnait pas comme une carte horloge vous devez en informer le système.

Pour cela vous devez utiliser l'utilitaire ClockWorks Time Utilities qui va installer un fichier dénommé AECLK.SYSTEM comme premier fichier .SYSTEM de vos disquettes de démarrage ProDOS. Il représente environ 2K de espace.

Installation du fichier proprement dit.

_ Faire une copie des   disquettes de démarrage ProDOS que vous voulez modifier.
- Charger l'utilitaire ClockWorks Time Utilities.
- Mettre en lecteur:la disquette de démarrage proDOS (non protégée contre l'écriture) dans n'importe quel lecteur une foi le menu principal apparu à l'écran.
- Prendre l'option Install Clock Driver File.
- Désigner le volume à modifier à partir de la liste *des lecteurs présents* qui vous ets proposé à l'écran. (Vous pouvez revenir au menu en pressant ESCAPE)
- C'est tout.
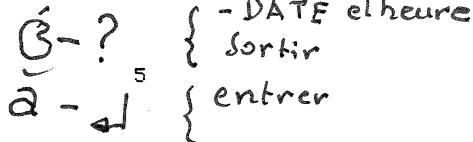
Developpement sur AppleWorks.

N'ALLEZ PAS PLUS LOIN si vous avez le bonheur d'etre propriétaire d'une carte mémoire et des utilitaires Applied Engineering "Super AppleWorks Desktop Enhancements" ou encore "AppleWorks 2 Expander.

L'option du menu concernant AppleWorks vous permet de remplacer l'affichage écran Pomme ouverte-? par la date et l'heure courante, sans perdre bien sur la fonction d'appel d'aide qui subsiste.
Vous pourrez également entrer la date ou l'heure en base de données si le nom de la catégorie est DATE ou HEURE en tapant simplement le caractère petit a accent (à) suivi d'un RETURN.

Attention: Vous devez en premier lieu installer le fichier AECLK.SYSTEM puis réaliser après seulement le développement affichage date et heure d'AppleWorks.

L'installation proprement dite.

- Faites une copie de votre disquette AppleWorks d'origine, toutes autres modification (PinPoint, MacroWorks etc... doivent être réalisées après l'installation.
- Charger la disquette utilitaire ClockWorks Time Utility.
- Prendre l'option Patch AppleWorks for time/date.
- Après une révision d'anglais enlever votre disquette utilitaire et mettre en lecteur votre disquette AppleWorks DEMARRAGE. Presser la barre Espace pour continuer.
- Une fois votre disquette DEMARRAGE patchée, remplacer la par la face PROGRAMME. Presser la barre Espace pour continuer.
- C'est tout.

REGLAGE DE L'HORLOGE

- Charger l'utilitaire ClockWorks Time Utility. En haut de l'écran doivent apparaitre la date et l'heure.
- Prendre l'option Set Time and Date du menu.
- Répondre aux intertogations suivantes:

        Day of Week (Jour de la semaine) 0 à 6
        Year (Année) .... 0 à 99
        Month (Mois) .... 1 à 12
        Day (Jour) .... 1 à 31
        Hour (Heure) .... 8 à 23
        Minute .... 0 à 59
        Second (Seconde) .... 0 à 59

o Le Jour de la semaine est représenté par un nombre compris entre O à 6. Sunday (Dimanche = 0, Monday (Lundi) =1, Tuesday (Mardi) = 3 etc...
o L'heure apparait en format militaire ou 24 Heures. Pour entrer l'heure en format PM, ajouter 12 heures à l'heure correspondante AM.
o Si vous pressez RETURN sans entrer de valeur, la valeur par défaut sera 0
o La touche ESCAPE vous renvoit au menu principal.

Une fois toutes les entrées effectuées, pressez la barre ESPACE ou toute autre touche pour lancer l'horloge.

PATCH POUR CATALYST tm 3.0

Une fois le fichier AECLK.SYSTEM implanté sur le programme CATALYST, pour lui permettre de prendre les secondes en considération vous devez lancer le programme qui se trouve sur l'utilitaire ClockWorks Time Utility qui s'appelle CAT.3.0.MOD.

Pour ce faire charger l'utilitaire horloge et prenez l'option Exit to BASIC.
Au caractère d'appel Applesoft BASIC (§°) entrez la commande

<u>RUN CAT.3.0.MOD</u>

puis suivez les instructions à l'écran.

CATALYST //e

Le fichier CAT.CLOCK sur l'utilitaire horloge installe le fichier horloge nécessaire pour que CATALYST //e reconnaisse votre Serial Pro. Ce programme est seulement nécessaire pour la verion 2.1 ou antérieure de Catalyst. Vous trouverez les instructions d'installation du programme CAT.CLOCK sur le manuel utilisateur de Catalyst //e.
Le fichier AECLK.SYSTEM doit aussi etre implan,té sur la disquette de démarrage Catalyst.

QUOI DE PLUS?

A moins d'etre un programmeur averti, vous pouvez arréter votre apprentissage içi.

SUPPORT TECHNIQUE

APPLIED ENGINEERING USA   (214) 241.6069 Lundi à Vendredi 9am à 5pm

BREJOUX Cards & Peripherals
         Tel: 78.36.52.69
         Tlx: 310111 F (1ère ligne texte) LY0009-BREJOUXBRESA

Figure 6 - Serial Pro Control Panel menu ...Printer example

```
APPLIED ENGINEERING SERIAL PRO...SLOT 1

        DEVICE TYPE:  PRINTER
          BAUD RATE:  9600
          DATA BITS:  8
          STOP BITS:  1
             PARITY:  NONE
           CR DELAY:  NO DELAY
        GENERATE LF:  NO
        LINE LENGTH:  80
   PRINTER GRAPHICS:  IMAGEWRITER

               YEAR:  87
              MONTH:  01
                DAY:  23
            WEEKDAY:  FRIDAY
               HOUR:  09
             MINUTE:  54
             SECOND:  32

USE ARROWS OR <RETURN> TO SELECT/MODIFY
USE <ESCAPE> TO EXIT CONFIGURATION MENU
```

Figure 7 - Serial Pro Control Panel menu...Modem example

```
APPLIED ENGINEERING SERIAL PRO...SLOT 2

        DEVICE TYPE:  COMMUNICATION
          BAUD RATE:  1200
          DATA BITS:  8
          STOP BITS:  1
             PARITY:  NONE
           CR DELAY:  32 MSEC
        GENERATE LF:  YES
   XON/OFF HANDSHAKE:  ENABLED
         LOCAL ECHO:  ENABLED

               YEAR:  87
              MONTH:  01
                DAY:  23
            WEEKDAY:  FRIDAY
               HOUR:  09
             MINUTE:  54
             SECOND:  32

USE ARROWS OR <RETURN> TO SELECT/MODIFY
USE <ESCAPE> TO EXIT CONFIGURATION MENU
```

Serial Pro

Here's a brief description of each of the control-panel options:

Device Type: See the warning message on page 7 about P8/P8A emulation. This option allows you to select which of the four specialized command sets is to be used to support the device connected to the Serial Pro. If you are connecting a modem, use the Communication option.

Baud Rate: The data-transmission speed, in bits-per-second. For example, 9,600 bits-per-second is expressed as 9600 Baud. The Baud rate settings of the Serial Pro and your serial device must be the same, unless your application software can override the Serial Pro setting.

Data Bits: Each character, number, and symbol is coded into a group of bits called a data word. This option allows you to select a data-word length of 5, 6, 7, or 8 bits. The data-bit settings of the Serial Pro and your serial device must match, unless your application software can override the Serial Pro setting.

Stop Bits: Either 1 or 2 bits at the end of a data word which signify the end of the word. The stop-bit settings of the Serial Pro and your serial device must be the same, unless your application software can override the Serial Pro setting.

Parity: An error-checking feature in which one bit is added to a data word to make the sum of the bits always even or always odd. The parity settings of the Serial Pro and your serial device must be the same, unless your application software can override the Serial Pro setting.

CR Delay: The time delay following the transmission of a carriage return character, which usually marks the end of a line. Some serial devices do not support handshaking and require the CR delay to allow one line to be transmitted before beginning another.

Generate LF: If this feature is enabled (YES), a line-feed character will be inserted after each carriage return character sent. Line-feed-after-carriage-returns can also be generated by application software and serial devices, resulting in double- or even triple-spacing between lines.

Line Length: (Printer device type only) The number of characters to be sent to the serial device before a carriage return character is automatically inserted.

Printer Graphics: (Printer device type only) Provides graphics-printing support for most popular serial dot-matrix printers capable of printing graphics. (Some printers do not support graphics.) This option has no effect on text output.

XON/XOFF Handshake: (Communication device type only) An abbreviation of Transmit ON/Transmit OFF. With this option enabled, a control-S (XOFF) received from the serial device will cause the Serial Pro to stop transmitting data until it receives a control-Q (XON) from the device.

Local Echo: (Communication device type only) If enabled, characters entered from the keyboard will be displayed on the screen as they are transmitted. If disabled, the characters transmitted will not be displayed. Some remote devices can echo the characters (remote echo or echoplex) back to the sender, resulting in double characters being displayed if local echo is enabled.

What's Next

The next chapter, ClockWorks, tells you how to use the ClockWorks Utilities Disk to enhance AppleWorks and how to modify your ProDOS program disks to recognize the Serial Pro clock.

Programmer's Reference

*For programmers only...*The information provided in this chapter is intended for programmers who wish to access and control the Serial Pro from within their own programs. The topics covered are:

- ○ The printer device-type command set
- ○ The communications device-type command set
- ○ Accessing the Serial Pro clock from BASIC
- ○ Accessing the Serial Pro firmware from assembly language

Serial Pro Command Sets Serial Pro's two command sets (selectable from the control panel's DEVICE TYPE option) enable programmers to temporarily control the interface characteristics of the Serial Pro from the keyboard or from within a BASIC or Pascal program. Although similar, the printer set and the communications set provide speciallized commands for use with either a printer or communication (modem) device. The commands can be used to override the Serial Pro's control-panel settings and change its interface characteristics. The commands will remain in effect until the default settings are restored by a Reset command.

Printer Command Set Whether issued from the keyboard (immediate mode) or from within a program (deferred mode), each printer command must be preceded by a command character. The default printer command character is a Control-I (the TAB character), indicated by ^I in the following examples. Spaces shown in the following command descriptions are part of the command expression.

^I?

Enter Serial Pro Control Panel

If the printer command set has been previously selected from the DEVICE TYPE option of the control panel, this command will access the control panel. The current command-default states and the PR# and IN# pointers will be reset upon exiting the control panel.

^I^t

Change Command Character

Changes the printer command character from Control-I to the control character indicated by *t*. To change back to ^I, issue a ^t^I command. Serial Pro default: ^I

Serial Pro

The printer command code and entire printer command string are stripped from the output string. To include the command character in the output string, enter the current command character twice.

^I*n*D   **Set Data Format**

Sets the number of data bits and stop bits per character. Valid values for n are:

n		n	
0	8 Data, 1 Stop	4	8 Data, 2 Stop
1	7 Data, 1 Stop	5	7 Data, 2 Stop
2	6 Data, 1 Stop	6	6 Data, 2 Stop
3	5 Data, 1 Stop	7	5 Data, 2 Stop

^I*n*B   **Set Baud Rate**

Overrides the control-panel Baud rate option. Valid values for n are:

n	
0	Restore control panel setting
1	50 Baud
2	75 Baud
3	110 Baud
4	135 Baud
5	150 Baud
6	300 Baud
7	600 Baud
8	1200 Baud
9	1800 Baud
10	2400 Baud
11	3600 Baud
12	4800 Baud
13	7200 Baud
14	9600 Baud
15	19200 Baud

^I*n*C   **Set Delay after Return**

Sets amount of time delay after each carriage return (^M) character sent. Default is the control-panel setting. Valid values for n are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

^I*n*F

Set Delay after Form Feed

Sets amount of time delay after each form feed (^L) character sent.
Valid values for *n* are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

^I*n*L

Set Delay after Line Feed

Sets amount of time delay after each line feed (^J) character sent.
Valid values for *n* are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

^I*n*P

Set Parity

Selects the type of parity supported by the Serial Pro. Valid values for
n are:

n		*n*	
0	No Parity (Default)	4	No Parity
1	Odd Parity	5	Mark (Parity always=1)
2	No Parity	6	No Parity
3	Even Parity	7	Space(Parity always=0)

^I*n*T

Translate LowerCase Characters (Apple II and Apple II Plus)

Translates all incoming lowercase characters in accordance with the
translation option specified by *n*. Valid values for *n*:

n	
0	Translate lowercase to uppercase (Default)
1	Pass lowercase characters without change
2	Translate lowercase to inverse uppercase
3	Translate uppercase to uppercase inverse; lowercase to uppercase normal

Serial Pro

Sets line length to the value specified by *nn* and turns the video display off. Default line length on Reset is 40 (40 columns). Note: You must also use the Column Overflow (^IC) command to set automatic insertion of carriage returns. *nn* can be any value between 0 and 255.

^IC   <u>Insert Carriage Return on Column Overflow</u>

Automatically inserts carriage return (^M) after the number of characters specified in LINE LENGTH menu option or specified by the ^I*nn*N command. Once the ^IC command is issued, it remains in effect until a Reset command is sent.

^IR   <u>Reset Serial Pro</u>

Resets the Serial Pro to its control-panel settings and printer-command default states. Also resets the PR# and IN# pointers.

^IZ   <u>Ignore Control Characters</u>

All subsequent control characters sent through the Serial Pro will be ignored by the firmware. This command can only be cleared by a system Reset.

^IK E
^IK D   <u>Keyboard Enable/Disable</u>

Subsequent input from the keyboard can be disabled with the ^IK D command. A system Reset or a ^IK E command from within a program will enable keyboard input. The default is keyboard-enabled.

^IL E
^IL D   <u>Line Feed Enable/Disable</u>

Enabled, this feature inserts a line-feed character (^J) after each carriage return. Default is control-panel setting.

^IM E
^IM D   <u>Suppress Line Feed Enable/Disable</u>

Enabled, this feature strips incoming line-feed characters which are immediately preceded by a carriage return. Default state is disabled.

^IT E
^IT D   <u>BASIC Tab Character Enable/Disable</u>

Enabled, the BASIC horizontal position counter is left equal to the column count. All tabs work, including back-tabs. BASIC tabs work differently on different computers. Refer to the owners guide for your

computer and your BASIC programmer's reference manual. This
command is normally disabled and it is not supported by Pascal.

^IX E
^IX D

XON/XOFF Enable/Disable

Enabled, the firmware stops sending characters whenever a ^S
(XOFF) is received from the serial device. Transmission resumes
when the serial device sends a ^Q (XON) character. Default state is
enabled.

Graphics Command Subset

All graphics output require a graphics-capable dot-matrix printer and
the GRAPHICS option of the Serial Pro control-panel must be set to
the compatible printer type.

^IG

Print High Resolution Graphics Page 1

This is the basic command to output the contents of page 1 of the
high-resolution graphics screen.

^IG2

Print High Resolution Graphics Page 2

This is the basic command to output the contents of page 2 of the
high-resolution graphics screen.

^IGS

Print High Resolution Graphics Pages 1 and 2

Outputs the contents of both high-resolution graphics screen pages,
side-by-side.

^IGR

Print High Resolution Graphics Page 1 Rotated 90°

Outputs the contents of high-resolution graphics page 1 rotated
clockwise 90°. (^IG2R will output the contents of page 2.)

^IGI

Print Inverted High Resolution Graphics Page 1

Outputs the contents of high-resolution graphics page 1 inverted (dark
background). Default (normal) is light background.

^IGISR

Example Graphics Combination

This example graphics commands will print the contents of both high-
resolution pages side-by-side, rotated 90° and inverted.

Serial Pro

**Communications
Command Set**

Whether issued from the keyboard (immediate mode) or the from within a program (deferred mode), each communications command must be preceded by a command character. The default communications command character is a Control-A, indicated by ^A in the following examples. Spaces shown in the following command descriptions are part of the command expression.

^A?

Enter Serial Pro Control Panel

If the communications command set has been previously selected from the DEVICE TYPE option of the control panel, this command will access the control panel. The current command-default states and the PR# and IN# pointers will be reset upon exiting the control panel.

^A^t

Change Command Character

Changes the communications command character from Control-A to the control character indicated by t. To change back to ^A, issue a ^t^A command. Serial Pro default: ^A

^A^A

Output the Command Character

The communications command character and entire command string are stripped from the output string. To include the command character in the output string, enter the current command character twice.

^AnD

Set Data Format

Sets the number of data bits and stop bits per character. Valid values for n are:

n		n	
0	8 Data, 1 Stop	4	8 Data, 2 Stop
1	7 Data, 1 Stop	5	7 Data, 2 Stop
2	6 Data, 1 Stop	6	6 Data, 2 Stop
3	5 Data, 1 Stop	7	5 Data, 2 Stop

^A*n*B   **Set Baud Rate**

Overrides the control-panel Baud rate option. Valid values for *n* are:

n	
0	Restore control panel setting
1	50 Baud
2	75 Baud
3	110 Baud
4	135 Baud
5	150 Baud
6	300 Baud
7	600 Baud
8	1200 Baud
9	1800 Baud
10	2400 Baud
11	3600 Baud
12	4800 Baud
13	7200 Baud
14	9600 Baud
15	19200 Baud

^A*n*C   **Set Delay after Return**

Sets amount of time delay after each carriage return (^M) character sent. Default is the control-panel setting. Valid values for *n* are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

^A*n*F   **Set Delay after Form Feed**

Sets amount of time delay after each form feed (^L) character sent. The default is "no delay." Valid values for *n* are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

Serial Pro

^A*n*L

Set Delay after Line Feed

Sets amount of time delay after each line feed (^J) character sent. The default is "no delay." Valid values for *n* are:

n	
0	No delay
1	32 Milliseconds
2	250 Milliseconds
3	2 Seconds

^A*n*P

Set Parity

Selects the type of parity supported by the Serial Pro. Overrides the default value selected in the control panel. Valid values for *n* are:

n		*n*	
0	No Parity	4	No Parity
1	Odd Parity	5	Mark (Parity always=1)
2	No Parity	6	No Parity
3	Even Parity	7	Space(Parity always=0)

^AE E
^AE D

Screen Echo

When this feature is enabled, characters entered from the keyboard will be displayed on the screen and transmitted to the serial device. When disabled, the characters are only transmitted to the serial device.

^A*n*T

Translate LowerCase Characters (Apple II and Apple II Plus)

Translates all incoming lowercase characters in accordance with the translation option specified by *n*. Valid values for *n*:

n	
0	Translate lowercase to uppercase (Default)
1	Pass lowercase characters without change
2	Translate lowercase to inverse uppercase
3	Translate uppercase to uppercase inverse; lowercase to uppercase normal

^A*n*S

Redirect Output

Redirects output to the slot specified by *n*, where *n* is a value between 0 and 7. Note: ^A3S will redirect the output to the auxiliary slot of an Apple //e, enabling 80 column display.

^AB

Transmit Break

Transmits a 233 millisecond break signal.

Programmer's Reference

^AR   <u>Reset Serial Pro</u>

Resets the Serial Pro to its control-panel settings and communications-command default states. Also resets the PR# and IN# pointers.

^AZ   <u>Ignore Control Characters</u>

All subsequent control characters sent through the Serial Pro will be ignored by the firmware. This command can only be cleared by a system Reset.

^AK E
^AK D   <u>Keyboard Enable/Disable</u>

Subsequent input from the keyboard can be disabled with the ^AK D command. A system Reset or a ^AK E command from within a program will enable keyboard input. The default is keyboard-enabled.

^AL E
^AL D   <u>Line Feed Enable/Disable</u>

Enabled, this feature inserts a line-feed character (^J) after each carriage return. Default is control-panel setting.

^AM E
^AM D   <u>Suppress Line Feed Enable/Disable</u>

Enabled, this feature strips line-feed characters which are immediately preceded by a carriage return. Default state is disabled.

^AX E
^AX D   <u>XON/XOFF Enable/Disable</u>

Enabled, the firmware stops sending characters whenever a ^S (XOFF) is received from the serial device. Transmission resumes when the serial device sends a ^Q (XON) character. Default state is enabled.

^AT

Enter Terminal Mode

In terminal mode, the Serial Pro emulates an simple computer terminal in full-duplex (echo off) mode. The Escape code sequences described on the next page and the full communications command set can be used while in terminal mode. A flashing underline cursor indicates that terminal mode is active.

^AQ

Exit Terminal Mode

This command exits terminal mode.

Escape Codes

This feature is only available in terminal mode. These codes enable the older Apple II and Apple II Plus computers to support lowercase letters and generate characters not available on the older keyboards.

Pressing the Escape key once will invoke lowercase mode; all subsequent letters input from the keyboard will be output from the Serial Pro as lowercase letters.

Two consecutive Escape characters while in lowercase mode will revert to uppercase (or normal) letter output.

While in lowercase mode, pressing the Escape key once will capitalize only the next letter and will remain in lowercase mode.

ESC*n*

Special Characters

The Escape key can be used in combination with the number keys to generate the following characters:

n	
1	ASCII file-separator (FS) code
2	ASCII unit-separator (US) code
3	[character
4	\ character
5	_ character
6	{ character
7	| character
8	} character
9	~ character
0	ASCII escape (ESC) code
:	ASCII delete (DEL) code

Accessing the Clock from BASIC

A special feature in the Serial Pro firmware enables programmers to read or set the Serial Pro directly from Applesoft BASIC.

Reading the Clock

The command to read the clock into a BASIC string variable is:

```
]CALL 49399 + s * 256,FM$,TM$
```

where:
s is the Serial Pro slot number.
FM$ is the format-select character.
TM$ is the time character string.

The possible formats and their corresponding format-selection characters are given in Table 1. Table 2 provides the valid ranges for each of the values in the clock-output character string.

Table 1 - Clock output formats

Select character		Output-string format
FM$ = " "	(space)	MO/DD HH:MI:SS:WYY
FM$ = ":"	(colon)	W MO/DD/YY HH:MM:SS
FM$ = "%"	(percent)	WWW MMM DD HH:MM:SS PM
FM$ = "&"	(ampersand)	WWW MMM DD HH:MM:SS
FM$ = "#"	(octothorpe)	MM,0W,DD,HH,MM,SS

Table 2 - Clock read and set format value ranges

Year	YY	(00 - 99)
Month	MO	(01 - 12)
Date	DD	(01 - 28, 29,30, 31 – Leap years are calculated)
Weekday	W	(0 - 6 – Sunday = 0, Monday = 1, etc.)
Hour	HH	(00 - 23)
Minute	MM	(00 - 59)
Second	SS	(00 - 59)

Serial Pro

Setting the Clock   The command to set the Serial Pro clock from BASIC:

```
]CALL 49399 + s * 256,FM$,TM$
```

> *where:*
> *s* is the Serial Pro slot number.
> FM$ = "!" The exclamation point is the time-set character.
> TM$ is the time character string in this format:.

```
YY/MM/DD W HH:MM:SS
```

The slashes, spaces, and colons in the clock-set character string are
for programmer's convenience; all non-numeric characters are ignored
by the Serial Pro firmware.

Assembly Language   The following information is provided for hard-core assembly
Programming Information language programmers only.

BASIC Entry Points

$Cs00   Initialization Routine. The entry point used by PR# or IN# call from
        BASIC. The X and Y registers are unaffected; the A register is
        changed.

$Cs05   Input routine. The entry point used when reading from the card under
        BASIC. X and Y registers are unaffected; the A register contains the
        input character upon exit. If the IN# switch (KSW) has not been set,
        this will read from the keyboard instead of the serial port.

$Cs07   Output routine. The entry point used when writing to the card from
        BASIC. X and Y registers are unaffected. Upon entry, the A register
        contains the output character and it is returned changed. If the PR#
        switch (CSW) has not been set, this will output to the screen instead
        of the serial port.

$Cs11   Control-Panel access routine. Calling this point will activate the Serial
        Pro control panel.

Pascal 1.0 Entry Points

$C800 Initialization routine On entry the X register contains $Cs and Y contains $s0. Registers are unchanged upon exit. Remember that the $C800 space must be activated.

$C84D Read routine. The entry point used when reading from the card. On entry the X register contains $Cs and Y contains $s0. X is unchanged, Y is $Cs, and A contains the input character. The input can come either from the keyboard or the serial port.

$C9AA Write routine. The entry point used when writing to the card. On entry the X register contains $Cs, Y contains $s0, and the accumulator contains the character to be written. X is returned with an error code, Y is $Cs, and A is changed.

$Cs05, $Cs07 These locations are used by Pascal 1.0 as device identification bytes. They are $38 and $18 respectively.

Pascal 1.1 Entry Points

Pascal 1.1 does not use direct entry calls. Instead, in the following locations are offsets from the $Cs00 address. Calls should be made indirectly.

$Cs0D Initialization offset. On entry the X register contains $Cs and Y contains $s0. Upon exit Y is unchanged, X contains $00, and A is changed. The $C800 space is activated by this call.

$Cs0E Read offset. The entry point used when reading from the card. On entry the X register contains $Cs and Y contains $s0. X contains the error code, Y is $Cs, and A contains the input character. Input can come either from the keyboard or the serial port.

$Cs0F Write offset. The entry point used when writing to the card. On entry the X register contains $Cs, Y contains $s0, and the accumulator contains the character to be written. X is returned with an error code, Y is $Cs, and A is changed.

$Cs10 Status offset. The entry point used to check the status of the serial port. On entry the X register contains $Cs, Y contains $s0, and A contains the request code. When the request code is $01 then the status call will return the receive-character-available status. When the request code is $00, the status call will return the transmit-buffer-empty status. On exit, X and A are returned with the error code and Y is unchanged.

$Cs0B, $Cs0C   These locations are used by Pascal 1.1 as device signature bytes. They are $01 and $31 respectively. These bytes indicate a serial card which is compatible with Pascal 1.1.

$Cs11   This location is non-zero to indicate that control and interrupt calls from Pascal 1.1 are not supported in the firmware.

$CsFF   Firmware revision level. This location contains the current firmware revision level in BCD format.

Register Map   The locations given in Table 3 can be used to access the hardware directly and without using the firmware.

Table 3 - Hardware Register Addresses

$C084 + $s0	6818 Clock/Ram Data Register
$C085 + $s0	6818 Clock/Ram Address Register (Write Only)
$C086 + $s0	Eprom Bank Register Clear (Write Only)
$C087 + $s0	Eprom Bank Register (Write Only)
$C088 + $s0	6551 Serial Controller Data Register
$C089 + $s0	6551 Serial Controller Status/Reset Register
$C08A + $s0	6551 Serial Controller Command Register
$C08B + $s0	6551 Serial Controller Control Register

Glossary

Applesoft BASIC The version of the BASIC programming language built into the Apple II Plus, //e, and IIGS computers. Applesoft BASIC programming mode is indicated by the right-square-bracket ( ]) screen prompt.

AppleWorks A ProDOS-based application program which combines a word processor, a data base, and a spreadsheet program into one integrated package.

Application program Often referred to as "off-the-shelf software," it is a computer program written for a particular purpose. AppleWriter, Access //, and AppleWorks are application programs.

ASCII An acronym for American Standard Code for Information Interchange. It is a standard 8-bit information code used by most computers and data terminals. Each of the 128 ASCII letters, numbers, special characters, and control characters is assigned a unique value from 0 to 127.

Auxiliary slot Similar in appearance to an expansion slot and often referred to as the AUX Connector, it is a separate, single connector inside the Apple //e for cards that add more auxiliary memory or enhance the computer's video display. Applied Engineering's RamWorks III is such a card. Serial Pro does not fit in the auxiliary slot.

BASIC Beginner's All-purpose Symbolic Instruction Code. It is one of the easiest computer programming languages to learn. See also Applesoft BASIC and Integer BASIC.

Baud Rate Data transmission speed, in bits-per-second. For example, 9600 bits-per-second is expressed as 9600 Baud.

BIT A BInary digiT; the element of computer information.

Board Computer jargon for printed circuit board. Synonymous with *card* (printed-circuit card).

Card Computer jargon for printed circuit card. Synonymous with *board* (printed circuit board).

Catalyst™ An application-program manager program produced by Quark.

Chip. Computer jargon for integrated circuit. Also referred to as and I.C. A tiny wafer (chip) of silicon containing thousands of micro-electronic circuits encapsulated in a hard plastic case. See DIP Chip.

Clock driver A special operating system routine for interfacing the disk operating system and the clock-card circuitry.

Command character An ASCII control-code character which sets the Serial Pro firmware into command mode. The standard command character for the printer-device type is a Control-I. For the communications-device type, the command character is a Control-A.

Communications Device Type A special Serial Pro interface-command set specifically designed to support a modem. The Communications-Device Type is selected from the Serial Pro control panel DEVICE TYPE option.

Control code Any of the non-printing ASCII characters used to start, stop, or modify various data transmission functions or control the operation of a serial device. e.g. A line-feed character causes a printer to advance one line or a video display to scroll one line.

Control panel A permanent program built into the Serial Pro which displays a menu of options on the video screen and allows you to change the option settings with keyboard commands.

CP/AM The version of the CP/M operating system provided with Applied Engineering Z-80 based co-processor cards. CP/AM allows your Z-80 Plus-equipped computer to run CP/M programs (Apple disk format only).

CP/M An acronym for Control Program / Monitor. A disk operating system which supports the Z-80 microprocessor. To run CP/M (or CP/AM) on an Apple computer, you must have a Z-80 co-processor card installed. See also Z-80 Plus and CP/AM.

CR Delay The time delay following the transmission of an ASCII Carriage-Return character. Some older printers do not support handshaking and cannot print as fast as the data are transmitted. A Carriage Return delay allows time for the printer to complete a line. CR Delays of 32 MSEC, 250 MSEC, 2 SEC, or NO DELAY can be selected from the Serial Pro control panel. MSEC stands for millisecond; one MSEC equals 1/1000 of a second.

Data Bits Each ASCII character is coded into a series of bits called a data word. The DATA BITS control-panel option allows you to select a data word length of 5, 6, 7, or 8 bits.

DCE An acronym for Data Communications Equipment. As it relates to RS-232-C, a DCE device is one which carries data from a DTE to another DTE. Usually, this is a modem, but can be a simple null-modem cable.

Device Type This control panel option allows you to select one of the Serial Pro's four specialized interface-command sets. The DEVICE TYPES are: Printer, Communication, P8, and P8A. See Printer Device, Communications Device, and P8/P8A Emulation.

DIP Chip *DIP* is an acronym for Dual-Inline-Package and refers to the two-row pin arrangement of the plastic integrated-circuit case. See Chip.

DOS 3.3 Version 3.3 of the Apple Disk Operating System. See operating system.

DTE An acronym for Data Terminal Equipment. As it relates to RS-232-C, a DTE is a device which originates or terminates data. A DTE device can only communicate with another DTE device by means of a DCE device.

Edge connector The tab of gold-plated finger-like contacts along the lower edge of an accessory printed circuit board. The card's edge connector is inserted into one of the computer's slots.

Expansion slot One of seven narrow connectors (an Apple II has eight) on the main circuit board near the back of the computer.

Firmware Computer jargon for a computer program (software) permanently stored in a ROM chip (hardware) in the computer, accessory card, or peripheral device.

Full Duplex A serial communications link in which both DTE devices can transmit to each other at the same time.

Graphics This control-panel option provides graphics-printing support for most popular serial printers capable of printing graphics.

Half Duplex A serial communications link in which only one DTE device can transmit at a time.

Handshaking A predetermined sequence of signals used to start and stop the flow of data between the interface and the serial device. Software handshaking uses special control characters imbedded in the transmitted data to control the flow of data. Hardware handshaking controls the flow by switching electrical currents between the interface and device ON or OFF.

Hexadecimal Notation of numbers in base-16. (Decimal numbers are base-10.) Numbers written in hexadecimal notation are are preceded by a dollar sign. (e.g. $AA)

Integer BASIC A version of the BASIC programming language used by same of the earlier Apple II computers. See also BASIC. Integer BASIC programming mode is indicated by the right-caret (>) screen prompt.

Interface A combination of software and hardware devices that enable the computer to be connected to a peripheral device. Sometimes called a peripheral interface or peripheral card.

Interrupt A special signal, usually generated by a peripheral interface or device, which causes the computer to jump from the main program to a specific interrupt-handler subroutine.

Line Length This control-panel option determines the number of characters to be sent to the serial device before a carriage return is automatically inserted. Setting the line length from the control panel does not turn the Apple video display off. Video display lines longer than the number of columns on the screen will wrap around to the next line.

Modem An acronym for MOdulator DEModulator unit. It is a device which converts computer (digital) data into a form (analog signals) which can be transmitted over telephone lines, and vice versa.

Modem eliminator See Rollover cable.

Null Modem See Rollover cable.

Operating System A set of specialized programs which are loaded into a reserved portion of the computer's memory whenever a system disk is booted. These programs contain the instructions called upon by the application program (software) to manage and coordinate the routine input and output activities of the computer system (hardware).

P8 & P8A ROM Emulation By choosing one of these device types, the Serial Pro will emulate the ROM used on the early Apple II Serial Interface Card.

Parallel A form of data transmission in which each bit of a character is sent simultaneously along separate wires. Contrast: Serial.

Parity An error-checking feature in which a bit appended to an array of bits to make the sum of the bits always even or always odd.

Pascal A popular programming language which emphasizes a structured approach to computer programming.

Peripheral A device which is connected to and operated by the computer but is not part of the computer. Printers, disk drives, and game paddles are peripheral devices.

Printer Device Type A special Serial Pro interface-command set specifically designed to support a printer. The Printer Device Type is one of the four selectable from the Serial Pro control-panel DEVICE TYPE option.

ProDOS Apple Computer's PROfessional Disk Operating System.

Rollover cable A serial communications cable in which certain wires have been purposely crossed to emulate the function of a DCE device. Often called a modem-eliminator or null-modem cable.

ROM An acronym for Read Only Memory. A set of computer programs permanently stored in a ROM chip is often referred to as firmware.

RS-232-C A set of technical specifications and standards established by the Electronic Industries Association to provide compatibility between serial devices. The least confusing part of the of the entire document is its title–
"EIA Recommended Standard 232-C: Interface between data terminal equipment and data communications equipment employing serial binary data interchange."

Serial A form of data transmission in which each character is sent one bit at a time along a single wire. Contrast: Parallel.

Stop Bits One or two bits that signify the end of an individual ASCII character.

Terminal Mode An operating state of the Communications command set which allows the computer to emulate a simple (dumb) computer terminal.

XON/XOFF An abbreviation of Transmit ON/Transmit OFF. When the XOFF character (Control-S) is received by the Serial Pro, the transmission of characters is stopped until and XON character (Control-Q) is received.

Z-80 A type of microprocessor which supports the CP/M operating system.

Z-80 Plus Applied Engineering's Z-80 co-processor card for the Apple II, II Plus, IIe, and IIGS computers. See CP/AM.

Z-Ram Ultra Applied Engineering's memory expansion, clock, and Z-80 co-processor accessory card for the Apple //c computer.

Appendix A

Accessing the Control Panel

Normally, the Serial Pro's control panel is accessed by activating the Serial Pro from BASIC with an IN#*s* command (*s* is the number of the slot containing the Serial Pro), entering the appropriate command character (Control-I or Control-A, depending on the active command set), and then entering a question-mark. The PR#*s* command can also be used to activate the card, but the AE.PRO: prompt will not appear in response to the command character.

In the event that you cannot enter the control panel in the manner described above, you are probably stuck in P8 or P8A emulation and must access the control panel via its firmware entry point.

• To access the control panel from BASIC (indicated by the] or > prompts):

  ]CALL 49169 + 256 * s *(where s is the Serial Pro slot number)*

• To access the control panel from the Monitor ROM (indicated by the asterisk * prompt):

  *Cs11G *(where s is the Serial Pro slot number)*

# Appendix B

## The Serial Connection

Serial Connector Pin Assignments

Figure B1 lists the DB-25 connector pins supported by the Serial Pro when the internal cable is attached to the MODEM connector (port). These pin assignments comply with RS-232-C specifications for a DTE device. When the internal cable is attached to the PRINTER port, the Serial Pro becomes a DCE device as a result of the built-in null-modem adapter. Figure B2 on the following page illustrates the effect of the null-modem feature on the signals of the PRINTER port DB-25 connector. The hardware handshaking switches are described in Appendix C.

Figure B1 - DB-25 Pin-out for MODEM connector
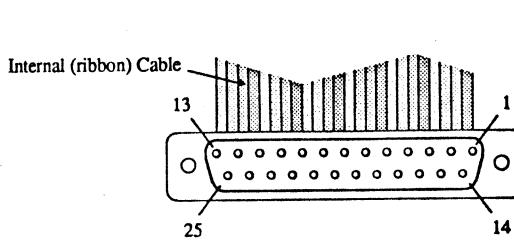
Pin	Signal
1	Frame Ground (FGND)
2	Transmit Data (TXD)
3	Receive Data (RXD)
4	Request to Send (RTS)
5	Clear to Send (CTS)
6	Data Set Ready (DSR)
7	Signal Ground (SGND)
8	Data Carrier Detect (DCD)
20	Data Terminal Ready (DTR)

Internal (ribbon) Cable
13   1
25   14

Figure B2 - Diagram of Serial Pro's Null-Modem Feature

Built-in Null Modem

DTE Port — DCE Port

DTE Port		DCE Port
Frame GND	1	1
TXD	2	2
RXD	3	3
RTS	4	4
CTS	5	5
DSR	6	6
Signal GND	7	7
DCD	8	8
DTR	20	Undefined 11
		SCTS 19
		20

DB-25
from
MODEM
Connector

1 2 3 4

DB-25
from
PRINTER
Connector

Handshaking
Switches
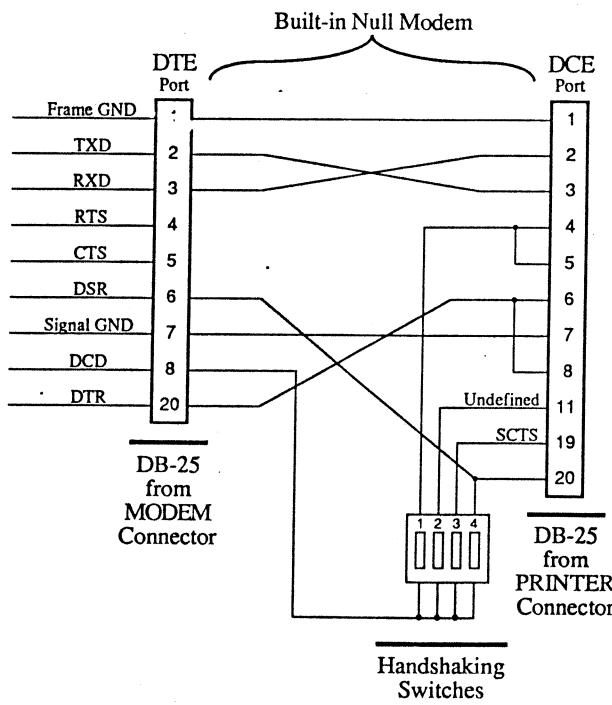
Appendix C

The Hardware Handshaking Switches

Serial devices exchange special signals to tell each other that they are present and ready to start sending or receiving data. Some signals may also be exchanged to control the flow of data between the two devices. These signals are called hardware-handshaking signals and are sent along interface-cable wires other than the ones which carry the data between the Serial Pro and the serial device.

Don't confuse hardware handshaking with software handshaking, which uses special characters (XON/XOFF) inserted along with the data to control the flow of data.

> *Don't worry!* You can't damage anything with the handshaking switches. If the current switch setting doesn't work, you can experiment with other switch settings. If that doesn't work, read the instructions that came with your serial device.

When the internal cable is attached to the PRINTER connector and all handshaking switches are OPEN, Data Terminal Ready (DB-25 pin 20) is the only line monitored as the hardware handshaking line from your printer. While this does support most of the more popular serial printers, some printers may send their handshaking signals on different pins. The handshaking switches enable the Serial Pro to monitor alternate pins for of flow-control hardware handshaking. The handshaking switches are part of the built-in null-modem adapter and only affect the PRINTER connector. See Figure B2.

Setting the Switches The hardware handshaking switch block is located next to the PRINTER connector on the Serial Pro. Press in at the top of the switch to CLOSE the switch. Use a small pointed object, like a wooden toothpick or bent-out paperclip to change a switch setting; never use a pencil or pen. To set a switch back to to the OPEN position, press in at the bottom of the switch, nearest the word "OPEN" on the switch block.

Switch 1 When closed, selects pin 4 (Request To Send) as the flow-control handshaking line. Some of the printers which use this line are: Data General TP2; Heath H-25; Olympia ESW102/103; QUME Sprint 5; and Smith-Corona TP1.

Switch 2 When closed, selects pin 11 which is, according to RS-232-C specifications, undefined and is used by some serial printers as a printer-ready signal. Some Centronics, Texas Instruments, and Epson serial printers may use this pin.

Switch 3 When closed, selects pin 19 (Secondary Request To Send) as the handshaking line. Some of the printers that use this pin are the Anadex DP8000/9000, Bell TP-1000, Lear Seigler 310, NEC 3500/7700, and Digital Equipment (DEC) LA-series serial printers.

Switch 4 When closed, selects pin 20 (Data Terminal Ready) as not only the device-available handshaking line but also as the data-flow-control line. Some Diablo, C.Itoh, Okidata, Qume, Tektronics, or Xerox printers may use this handshaking signal.

Appendix D

The Interrupt-Request Switches

The Serial Pro is capable of sending Maskable (IRQ) and Non Maskable (NMI) interrupts to the CPU from the 6551 Asynchronous Communications Interface Adaptor (ACIA) chip and the 6818 clock chip. The interrupt switches, shown in Figure D1, select the source and type of the interrupt request. Normally all switches are in the OPEN position, which disables all interrupt requests from the Serial Pro.

> *The use of interrupts applies only to the Apple IIe and Apple IIGS. The Apple II and Apple II Plus do not support interrupts.*

Figure D1 - Serial Pro Interrupt-Request Switches

IRQ from 6551 ——————┘   └———— NMI from 6818
NMI from 6551 ——————————┘ └———————— IRQ from 6818
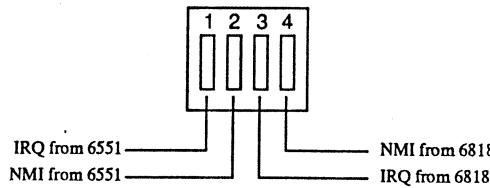
Appendix E

Where to Get More Information

About the Serial Pro

For most user applications, this manual provides all of the information required to install and set up your Serial Pro card.

About Your Serial Device

For specific information about your printer, modem, or other serial device, you should refer to the instruction manual that came with the device. If the manual doesn't have the information you need or you don't have the manual, contact the manufacturer of the device or the dealer from whom you purchased the device.

About Interface Cables

By attaching the internal cable to either the PRINTER or MODEM connector, virtually all serial devices will work using a "straight-through" cable or a ready-made cable designed to connect your device to an Apple Super Serial Card. These cables are sold most computer dealers. With the information provided in Appendix B of this manual, the dealer will be able to pick the right cable for your device.

Building your own serial cable is not recommended unless you are an experienced technician with the proper tools and knowledge of data communications. Although, most of the larger bookstores have books on RS-232-C data communications which will tell you what you need and how to build your own serial cables.

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