Addendum
to
AST-3780™ and AST-3780/A™
User's Manual

000667-002 A
June 1988

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ADDENDUM

AST-3780 and AST-3780/A

User's Manual

This addendum corrects information in the *AST-3780 and AST-3780/A User's Manual*. Please replace the original pages with the updated pages from this addendum as follows:

Original Pages	*Updated Pages*
xiii through xvi	xiii through xvi
2-1 through 2-6	2-1 through 2-6
3-5 and 3-6	3-5 and 3-6
3-11 through 3-22	3-11 through 3-22

Local Connections Using the Null Modem

The CC-432 and CC-432A adapters each include a null modem. You can configure the adapter to allow communication to the host computer for short distances (up to 50 feet) without using a modem.

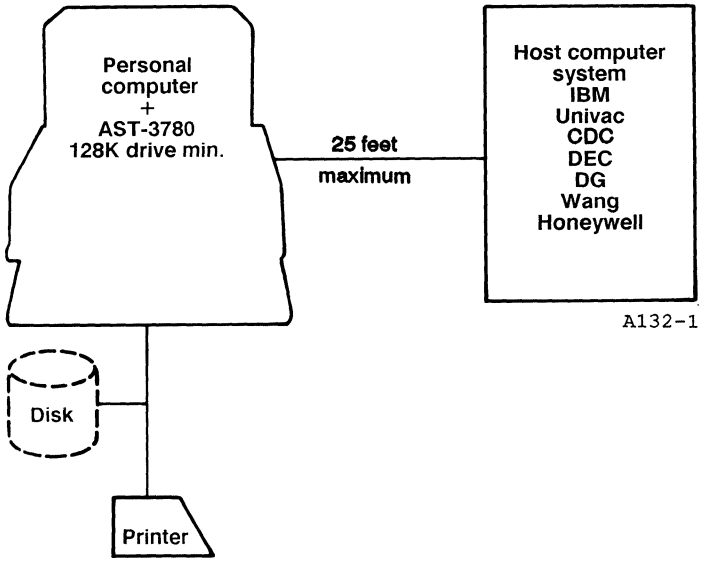

Figure 1. Local Connection Using Null Modem.

Local Connection Using Limited Distance Modem

To connect RS-232 devices over 50 feet, but less than one mile, use a limited distance modem. This connection is over RS-232 cable.

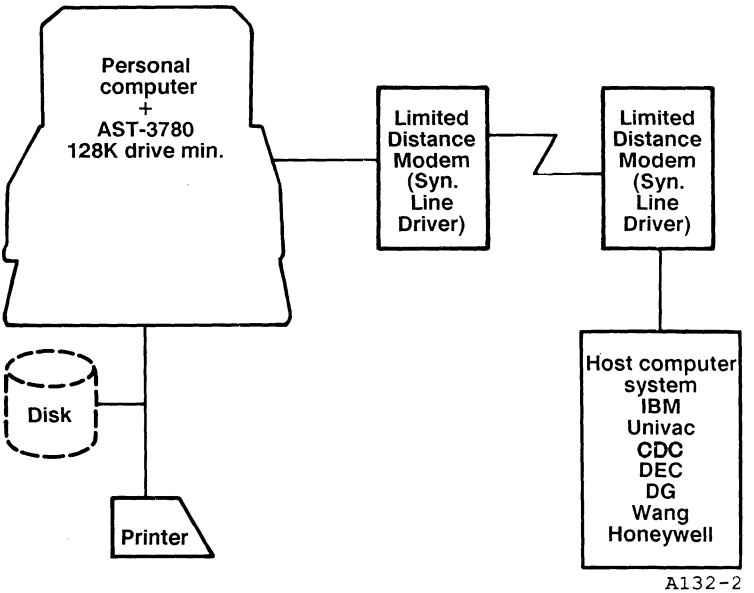

Figure 2. Local Connection Using a Limited Distance Modem.

Remote Connection Using a Modem

If you are planning to use a modem to connect a remote host over standard (voice-grade) telephone lines, you have a choice of many different kinds of modems. They range in speeds, up to 9600 baud. AST-3780 operates with any standard synchronous modem.

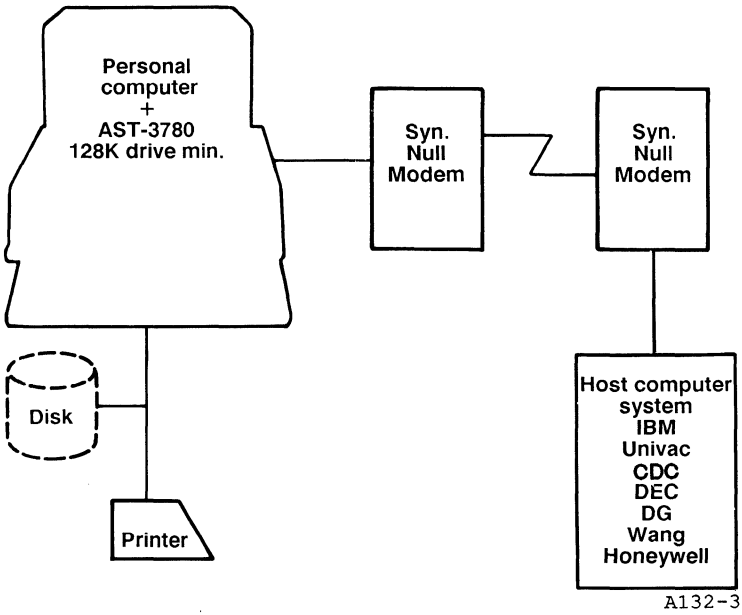

Figure 3. Remote Connection Using a Modem.

NOTES

INSTALLING AST-3780 SOFTWARE 2

Before you can install the CC-432 adapter board, you must first install your AST-3780 software. To do this, you must copy the master diskette to a backup diskette, then install the program from the back-up diskette to the computer.

You can install your AST-3780 software either on a diskette or in a subdirectory of your hard disk. This section describes both methods of installation.

2.1 Floppy Diskette Drive Installation

If you plan to operate your AST-3780 software from a diskette, refer to this section for instructions on creating a backup diskette. Otherwise, skip to Section 2.2 for hard disk installation procedures.

2.1.1 Making a BackUp Diskette

Before you begin using the AST-3780 emulation diskette, make a backup copy of your master diskette and put the original in a safe place. That way, you can always make another copy if the one you are working on is damaged.

This subsection separates the backup procedures for PC and PS/2 systems. Follow the procedures described for your particular system.

PC, XT, AT, and PS/2 Models 25 and 30

Before you begin, make sure you have at least one blank, 5.25-inch formatted diskette (for PCs) or 3.5-inch diskette (for PS/2 models 25 and 30) on which to make the backup. (For information on how to format a diskette, see the FORMAT command in your *DOS Manual*.)

STEP 1
Boot the system with the DOS diskette: This should be a working copy of DOS and not the original master diskette.

STEP 2
Copy the AST-3780 Program Diskette to your backup diskette: Once the DOS prompt appears on your screen, use the COPY command to copy all the files on the AST-3780 program diskette to your backup. (Refer to your *DOS Manual* if you are not sure about the COPY command.) The following files should be copied:

File	Description
CFG3780.EXE	Configurator program
IP.EXE	Interactive emulator program
CMDP.EXE	Batch emulator program
EMDAT.PRM	Configuration parameters file
EMSCRN.FRM	Configuration Screen driver file
CC432TEST.COM	CC-432 diagnostic program

STEP 3
Store your program diskette: Once you have made a backup diskette, store the original AST-3780 program diskette in a safe place and use your backup copy.

You are now ready to install the CC-432 adapter. For instructions on doing this, refer to the *CC-432 User's Manual*.

PS/2 Models 50, 60, and 80

Before you can install your CC-432A, you need to make a working copy of your AST-3780A program diskette. To do so, you need the following:

- PS/2 Model 50, 60, or 80 reference diskette (included with your PS/2 computer).
- One blank, high-density 3.5-inch diskette (which will become your working reference diskette and your Emulation working diskette).

Follow these steps in order:

STEP 1
Write-protect your original program diskette: To protect your AST-3780A program diskette from being accidentally overwritten, slide up the write-protect tab on the back of the diskette, as shown in Figure 2-1.

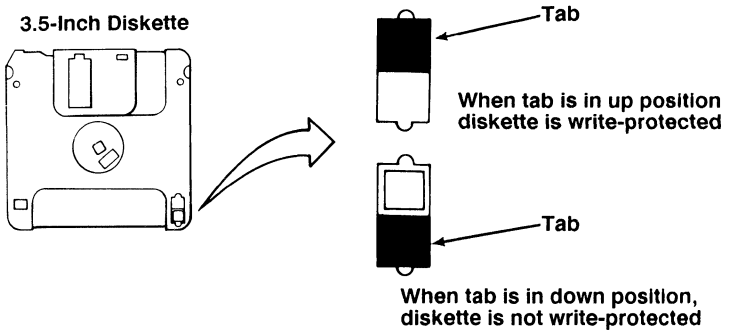

Figure 2-1. Write Protecting a Diskette.

STEP 2
Start up your system: Boot your computer.

STEP 3
Back up the AST-3780A program diskette to a blank diskette (this is the working copy of your reference diskette): At the DOS prompt, type this command:

```
DISKCOPY A: B: <Enter>
```

The following prompt appears:

```
Insert SOURCE diskette in drive A:

Press any key when ready . . .
```

Follow these steps to insert your diskettes:

- *If your computer has two floppy drives*: Insert your program diskette (the source disk) in drive A and your blank diskette (the target) in drive B. Press any key to start copying.

- *If you have one floppy drive:* Insert your program diskette in drive A and press any key to continue. When the computer is ready to write to your blank diskette, this prompt appears:

  Insert TARGET diskette in drive A:

  Press any key when ready . . .

  Remove your original program diskette and insert your blank diskette. Press any key to resume copying. When the computer tells you to insert the source diskette again, remove the target diskette and reinsert the IBM reference diskette.

Use the DIR command to make sure you have successfully copied the following files:

File	Description
CFG3780A.EXE	Configurator program
IP.EXE	Interactive emulator program
CMDP.EXE	Batch emulator program
EMDAT.PRM	Configuration parameters file
EMSCRN.FRM	Screen driver file
432ATEST.COM	CC432A diagnostic program
@7092.ADF	CC-432A configuration file

Copy the @7092.ADF file to your IBM reference diskette to configure the CC-432A board. For information on this procedure, refer to your *CC-432A User's Manual.*

When the computer is finished copying, the following message appears:

> Copy complete.
>
> Copy another (Y/N)?

Press **N.**

You must use a *high-density* 3.5-inch diskette for your backup diskette. If you get this message after you insert your blank diskette:

> Drive types or diskette types
> not compatible.

replace your blank diskette with a high-density diskette.

You are now ready to install the CC-432A in your computer. See your AST Research *CC-432A User's Manual* for installation procedures.

2.2 Hard Disk Installation

If you plan to operate your AST-3780 software from a hard disk, refer to the following section for instructions on creating an AST-3780 directory and installing your files.

2.2.1 Creating Your AST-3780 Directory

STEP 1
Make sure you are in the root directory of your hard disk: For example, if the name of your hard disk drive is C, type the following at your DOS prompt:

> **C:<Enter>**
> **CD\<Enter>**

If you do not want to create or modify a file, type **N** and press <**Enter**>. This returns you to Figure 3-2.

3.3 Selecting Configuration Parameters

After you create or modify the configuration file, the screen in Figure 3-3 appears:

```
Edit AST-3780 Configuration

MODE TRANSMIT RECEIVE XPARENT_SW IRQ EDIT_TABLES QUIT

Define Type of Equipment to Emulate: 2780, 2770 or 3780, 3741

Current Configuration

Emulator Mode:                      3780
Space Compression:                  ON
Records per Block:                  Multiple
Transmission Block Size:            512
Transparent Parameters:             Translate, Deblock
Disk Selection Code:                18
Printer Selection Code:             17
Printer Initialization Characters:  15 0
Interrupt Request Line:             2
Gross Transmit Timeout (second):    100
Gross Receive Timeout (second):     300
Auto. Receive Timeout (second):     45
```

Figure 3-3. Configuration File Edit Menu.

Use this menu to create a new configuration file or modify an existing one.

NOTE

If you are using the AST-3780*A* version, the *IRQ* option does not appear in the previous screen or in the current configuration list. Instead, the configuration file, @7092.ADF, automatically sets the interrupt request line for you.

You may need to change the configuration values listed in Figure 3-3 as your emulation environment dictates. For specific requirements, refer to your system operator's manual.

To change a specific parameter, highlight one of the options at the top of the edit menu (MODE, TRANSMIT, RECEIVE, XPARENT_SW, and so on.) with the <Right Arrow> and <Left Arrow> and press <**Enter**>. You can also press the first letter of the option name (for example, press "T" to enter the Transmit menu). As you move to each option, a brief explanation appears below it.

To return to DOS without storing changes, select QUIT. To return to the previous option, press <**Esc**>.

Each of these options controls one or more of the configuration parameters listed in Figure 3-3. Refer to Table 3-1 for the option and its corresponding parameters.

3.5.4 Gross Transmission Timeout

If you select the T_TIMEOUT option from the Transmission Parameters menu, the following message and prompt appears.

Gross Transmission Timeout

Current Gross Transmit timeout: 100
New value (or Enter Key if you don't want to change): _

This parameter defines the maximum time (in seconds) the line waits once the emulator has been given the command to transmit. The default time is 100 seconds. After this, it displays an error message and ends the program.

Either select a new timeout value, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

NOTE

Only use a gross transmission timeout value when running CMDP, the batch mode version of the emulator.

3.6 Configuring the Receive Parameters

If you select the RECEIVE option from the main menu, the following menu appears.

Receive Parameters Configuration

DEVSEL PRTSTRING R_TIMEOUT AUTO_TIMEOUT QUIT

Below these options is a brief description of the option currently highlighted. Below this appears the current receive parameters:

Current Receive Configuration

Disk Selection Code:	18
Printer Selection Code:	17
Printer Initialization Characters:	15 0
Current Gross Receive Timeout:	300
Current Auto. Receive Timeout:	45

This menu enables you to specify which reception options your computer has while communicating with the host.

Either select a new receive parameter, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

3.6.1 Device Selection Codes

When you select DEVSEL from the Receive Parameters menu, the following message and prompt appears.

Device Selection Codes

Current Values (Punch,Print): 17, 18

New Value (Punch): _

The punch and print parameters are used with the General Receive feature. The punch code defines the diskette (punch) selection, and the print code defines the printer selection. Both values must be entered as decimal EBCDIC, where:

18 = 3780 Punch code (DC2)

17 = 3780 Print code (DC1)

Either select a new device code, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

3.6.2 Printer Initialization Characters

When you select the PRTSTRING option, the following message and prompt appears.

> Printer Init. String
>
> Current Initialization Characters: 15 0
> New Value: _

This parameter is a string of characters used by the emulator to initialize an attached printer device (LPT1:). This can be used to set the printer (using IBM or Epson MX-80 format) to condensed print mode allowing 132 characters on each line. To learn what character string your line printer needs to initialize it, refer to your printer operator's manual.

Specify as many values as you require by first entering a numeric value and pressing <**Enter**>. (All values should be in decimal format, not hexadecimal.) The number you entered disappears and is replaced by a new blank. Continue to enter numbers and press <**Enter**> until you are finished. To end the string, type in "**0**" and press <**Enter**>. The program returns you to the previous menu.

3.6.3 Gross Receive Timeout

When you select the R_TIMEOUT option from the Receive Parameters menu, the following message and prompt appears.

Gross Receive Timeout

Current Gross Receive Timeout: 300

New value (or Enter Key if you don't want to change):

The Gross Receive Timeout parameter defines the maximum time in seconds the system allows for a timeout during receiving. If data is not received within this time, the program displays an error message and terminate. The default value is 300 seconds (5 minutes).

To specify a new timeout duration, enter a number at the cursor position and press <**Enter**>. Either select a new timeout, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

NOTE

Only use a gross receive timeout value when running the emulator in CMDP.

3.6.4 Auto. Receive Timeout

When you select the AUTO_TIMEOUT option from the Receive Parameters menu, the following message and prompt appears.

Auto. Receive Timeout

Current Auto. Receive Timeout: 45

New value (or Enter Key if you don't want to change):

The Auto. Receive Timeout parameter defines the maximum number of seconds the system will wait between the end of one receive file and the beginning of the next. If the next file is not received within this time, the program moves to the next command.

To specify a new timeout duration, enter a number at the cursor position and press <**Enter**>. Either select a new timeout, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

3.7 Setting Transparent Parameters

When you select XPARENT_SW from the main menu, the following menu displays.

Transparent Parameters

0 1 2 3 QUIT

This parameter determines whether data undergoes ASCII/EBCDIC translation in the transparent mode. If it is set for translation, both transmit and receive translation takes place.

At the same time, you can specify whether you want data blocked or deblocked in transparent mode. If you choose *deblock*, the program deblocks received records at 80-character intervals. Use this when receiving transparent punch data from the host. Set this parameter to 1 when transferring files between two personal computers in transparent mode.

Each option number represents a different combination of the two variables:

0 = translate/no deblock
1 = no translate/no deblock
2 = translate/ deblock
3 = no translate/deblock

To change the default setting (Translate/Deblock), select the appropriate setting. The meaning of each option number is explained beneath the option list as it is highlighted. The current transparent parameters are displayed beneath the brief explanation.

Either select a new parameter, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

3.8 Defining the Interrupt Request Line

When you select IRQ from the main menu, the following menu appears.

Interrupt Request Line

2 3 4 5 6 7 QUIT

This parameter determines the hardware interrupt request line the emulator uses during the program's operation. Do not change this value from the default (2) unless a hardware device conflict exists. For more information, refer to the *CC-432 Advanced Communication Board User's Manual.*

Either select a new interrupt request line, press <**Esc**> to return to the previous menu, or select QUIT to return to DOS without saving changes.

NOTE

If you are using the AST-3780*A* emulator program, do not select an interrupt request line. The program automatically selects an interrupt request line for you.

3.9 Editing the Translation Tables

The AST-3780 program provides complete ASCII and EBCDIC translation tables. These translation tables are stored on a separate file named MAPDFT.AST. Normally, you are communicating with a host system that uses conventional character sets and therefore, conventional translation tables; however, sometimes you need to edit your translation tables to communicate successfully with the host.

To edit the translation tables, select the *EDIT_TABLES* option from the main configuration menu. The table shown in Figure 3-5 appears.

EBCDIC to ASCII Translation Table

First Hexadecimal Character of EBCDIC Character Set

	0x	1x	2x	3x	4x	5x	6x	7x	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
x0	00	10	00	00	20	26	2D	00	00	00	00	00	7B	7D	5C	30
x1	01	11	00	00	00	00	2F	00	61	6A	7E	00	41	4A	00	31
x2	02	12	1C	16	00	00	00	00	62	6B	73	00	42	4B	53	32
x3	03	13	00	00	00	00	00	00	63	6C	74	00	43	4C	54	33
x4	00	00	00	00	00	00	00	00	64	6D	75	00	44	4D	55	34
x5	09	0A	0A	1E	00	00	00	00	65	6E	76	00	45	4E	56	35
x6	00	08	17	00	00	00	00	00	66	6F	77	00	46	4F	57	36
x7	7F	00	1B	04	00	00	00	00	67	70	78	00	47	50	58	37
x8	00	18	00	00	00	00	00	00	68	71	79	00	48	51	59	38
x9	00	19	00	00	00	00	00	60	69	72	7A	00	49	52	5A	39
xA	00	00	00	00	5B	21	7C	3A	00	00	00	00	00	00	00	00
xB	0C	00	00	00	2E	24	2C	23	7B	7D	00	00	00	7D	00	00
xC	0C	1C	00	14	3C	2A	25	40	00	00	00	00	00	00	00	00
xD	0D	1D	05	15	28	29	5F	27	00	00	5B	5D	28	29	00	00
xE	0E	1E	06	00	2B	3B	3E	3D	00	00	00	00	2B	00	00	00
xF	0F	1F	07	1A	21	5E	3F	22	00	00	00	5F	2B	00	00	00

Second Hexadecimal Character of EBCDIC Character Set

Enter 2 digit hex 3780 EBCDIC character code to change ==>

Figure 3-5. EBCDIC- to-ASCII Translation Table.

To change the EBCDIC-to-ASCII values for any of the hexadecimal characters shown, enter a new two-digit hexadecimal character code at the cursor position and press **<Enter>**. This alters the EBCDIC character code as it is translated to its ASCII equivalent. Continue to enter new values as needed until you are finished. Press **<Esc>** to exit this table. The table shown in Figure 3-6 appears.

ASCII to EBCDIC Translation Table

First Hexadecimal Character of ASCII Character Set

	0x	1x	2x	3x	4x	5x	6x	7x	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
x0	00	10	40	F0	7C	D7	79	97	00	10	40	F0	7C	D7	79	97
x1	01	11	5A	F1	C1	D8	81	98	01	11	5A	F1	C1	D8	81	98
x2	02	12	7F	F2	C2	D9	82	99	02	12	7F	F2	C2	D9	82	99
x3	03	13	7B	F3	C3	E2	83	A2	03	13	7B	F3	C3	E2	83	A2
x4	37	3C	5B	F4	C4	E3	84	A3	37	3C	5B	F4	C4	E3	84	A3
x5	2D	3D	6C	F5	C5	E4	85	A4	2D	3D	6C	F5	C5	E4	85	A4
x6	2E	32	50	F6	C6	E5	86	A5	2E	32	50	F6	C6	E5	86	A5
x7	2F	26	7D	F7	C7	E6	87	A6	2F	26	7D	F7	C7	E6	87	A6
x8	16	18	4D	F8	C8	E7	88	A7	16	18	4D	F8	C8	E7	88	A7
x9	05	19	5D	F9	C9	E8	89	A8	05	19	5D	F9	C9	E8	89	A8
xA	25	3F	5C	7A	D1	E9	91	A9	25	3F	5C	7A	D1	E9	91	A9
xB	0B	27	4E	5E	D2	4A	92	C0	0B	27	4E	5E	D2	4A	92	8B
xC	0C	1C	6B	4C	D3	E0	93	6A	0C	1C	6B	4C	D3	E0	93	6A
xD	0D	1D	60	7E	D4	BD	94	D0	0D	1D	60	7E	D4	BD	94	D0
xE	0E	1E	4B	6E	D5	5F	95	A1	0E	1E	4B	6E	D5	5F	95	A1
xF	0F	1F	61	6F	D6	6D	96	07	0F	1F	61	6F	D6	6D	96	07

Second Hexadecimal Character of ASCII Character Set

Enter 2 digit hex 3780 ASCII character code to change ==>

Figure 3-6. ASCII-to-EBCDIC Translation Table.

To change the ASCII-to-EBCDIC values for any of the hexadecimal characters shown, enter a new two-digit hexadecimal character code at the cursor and press <**Enter**>. This alters the ASCII character code as it is translated to its EBCDIC character code equivalent. Continue to enter new values as needed until you are finished. Press <**Esc**> to exit this table and return to the main menu.

You have now completed your configuration file. Press <**Esc**> to return to the main menu, save, and quit.

3.10 Starting the AST-3780 Emulator

Once you have created the configuration file (EMDAT.PRM), you are ready to enter the AST-3780 emulator program. The emulator operates in one of two ways:

- Keyboard Controlled (IP).
- Batch File Controlled (CMDP).

3.10.1 Keyboard Controlled

Start the AST-3780 interactive program by entering the following command at the DOS prompt.

IP <Enter>

The keyboard controlled, interactive version of AST-3780 comes up and you can initiate communications between your computer and the host system.

See Section 4 for information on running in the interactive mode. Once you have started the AST-3780 emulator, turn on your modem and connect it to the host. Refer to your modem user's manual for information on how this is done.

3.10.2 Batch File Control

You invoke the emulator in batch mode by entering the following command.

CMDP < file.bat < Enter >

< file.bat represents the name of the batch file you created for this program. The batch file name must be preceded by the "less-than" (<) symbol. If the file is stored on another directory or in another drive, include the full pathname (directory or drive designator, subdirectory designator, and so on). For complete instructions on creating a pathname, see your DOS Manual.

See Section 5 for information on running in the batch mode. Once you have started the AST-3780 emulator, turn on your modem and connect it to the host. Refer to your modem user's manual for information.

3.11 Initializing a Serial Printer

If you have a serial printer connected to your computer, you can use it as an output device by executing the appropriate DOS commands before running the AST-3780 program. The following example illustrates this procedure.

```
A>MODE COM1:1200,N,8,1<Enter>
A>MODE LPT1:=COM1:<Enter>
A>IP<Enter>
```

1200 is a selected baud rate.

N indicates no parity.

8 indicates 8 data bits.

1 indicates 1 stop bit.

LPT1:=COM1: tells the program that you are defining line printer 1 as the port supporting the above communications parameters.

These options differ from printer to printer. Refer to your printer manual for the baud rate, parity, data bit, and stop bit specifications used for your specific printer.

Once you have initialized your printer, you can print out any data produced from your communications with the host through your serial printer.