

# OPERATOR'S MANUAL

## 1000E Modem

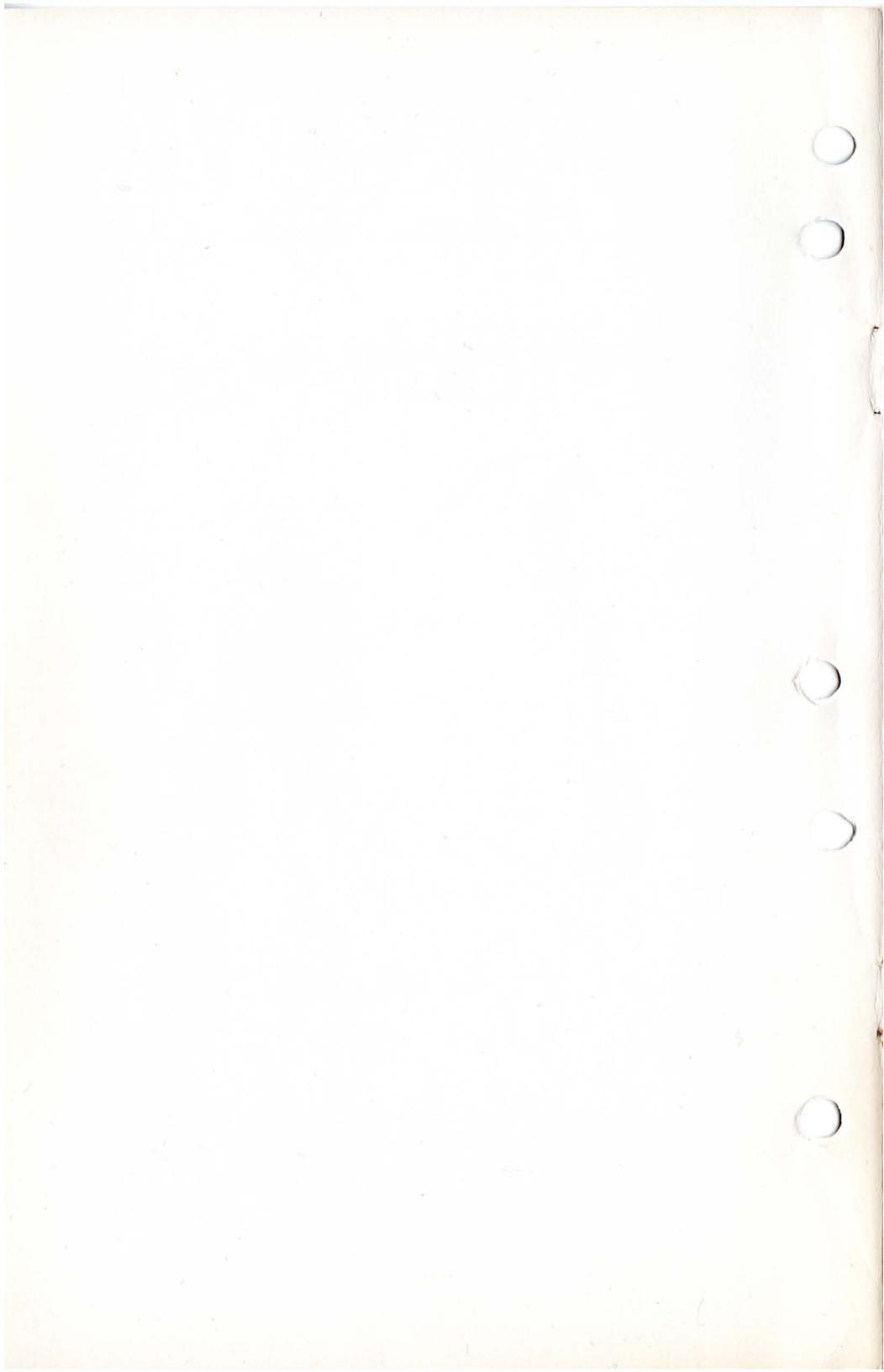
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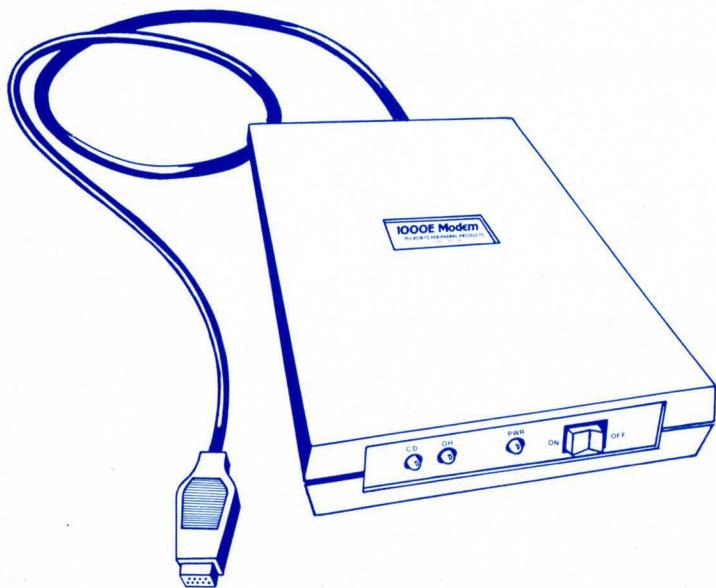
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01-0283-0



# 1000E Modem<sup>TM</sup>



**MICROBITS PERIPHERAL PRODUCTS**

Microbits is happy to announce their Technical Support BBS at (503) 926-1980. This is a password controlled version of the MPP FOReM Bulletin Board with 900K of on-line disk storage. The purpose of the system is to provide access to the latest MPP technical information as well as industry rumors and new product announcements.

We also have plenty of room available for uploading and downloading of public domain software. We also will provide help with any problems with our products and we enjoy hearing feedback from our users. The board operates 24 hours a day for those of you who are night owls.

## **MPP FOReM BBS (503) 926-1980**

Carriage Return  
Then give information

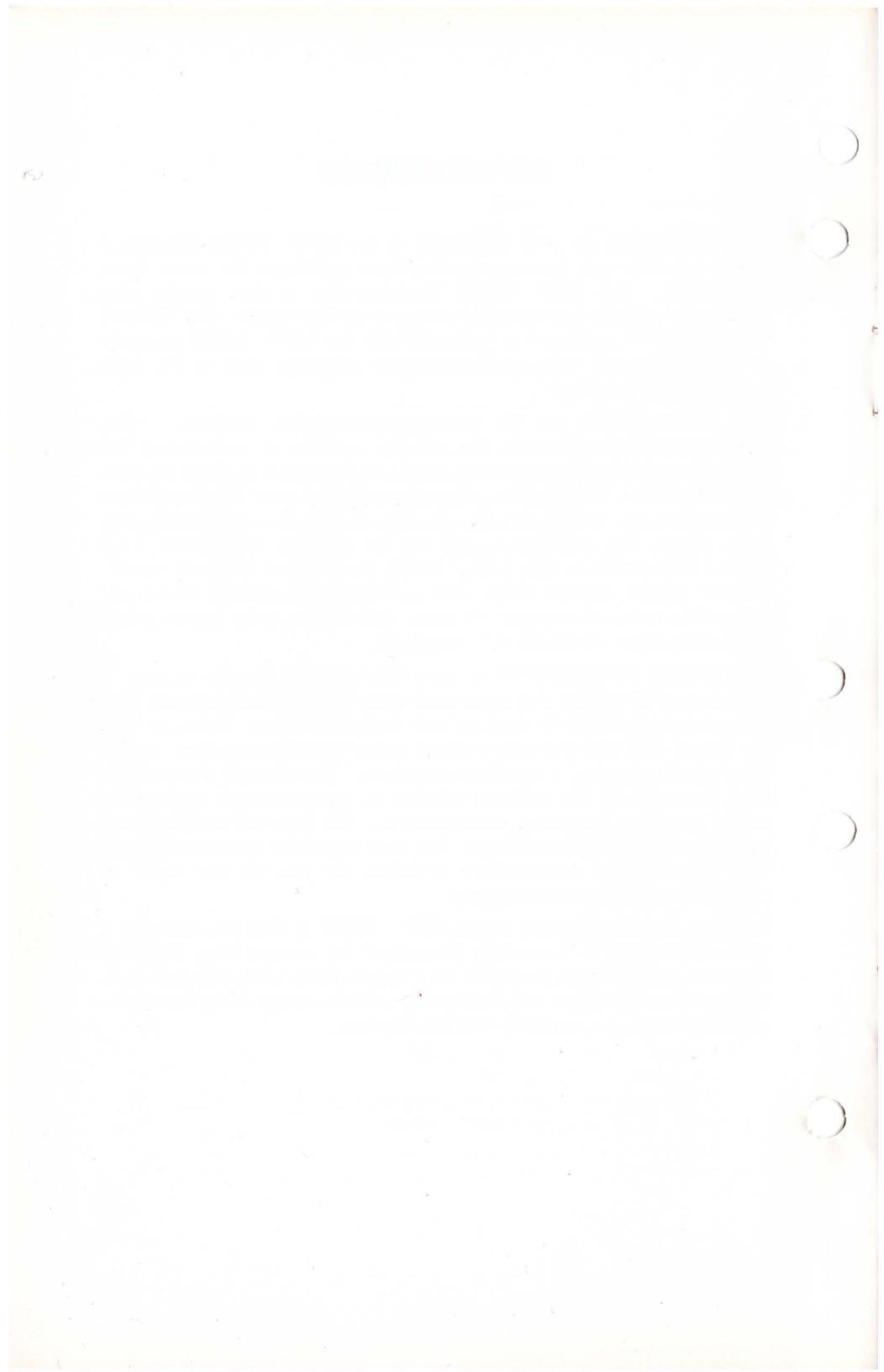
## INTRODUCTION

Congratulations on your purchase of the MPP-1000E Modem, a state-of-the-art telecommunications package for your Atari Computer. The MPP-1000E incorporates a new single chip design for efficient and reliable modem performance. Our SMART TERMINAL<sup>(tm)</sup> software is included with the MPP-1000E to make it a full featured telecommunications package that is the best available for the Atari.

The MPP-1000E is an autoanswer/autodial modem. The autoanswer function has the unique feature of answering the phone line without computer control which allows quicker modem response time. The modem plugs directly into your Atari and does not require any interface. The modem also connects directly into your phone line and has a jack for an optional telephone. LED status indicators on the MPP-1000E front panel indicate POWER, CARRIER DETECT, and OFF HOOK. And we have packaged all this in our attractive new STACKABLE<sup>(tm)</sup> case that saves desk space when used with other STACKABLE<sup>(tm)</sup> products.

The SMART TERMINAL<sup>(tm)</sup> is very flexible, yet simple to use. It allows you to upload and download with X-MODEM protocol and then save your files to tape or disk and print them. You can also do direct disk file transfers which allow transferring files larger than your computer's available memory. The SMART TERMINAL also features all the options needed to communicate with most other systems including CompuServe, The Source, mainframes, and other personal computers. The user interface features menus, sub-menus, and explanatory prompts so you do not need to remember complex commands.

Another exciting feature of the MPP-1000E is that you can use it with Atari Corp.'s "Learning Cartridge" to access over 200,000 hours of educational material on Control Data's PLATO network. We are sure that you will enjoy this and the many other uses you will find for your new MPP-1000E Modem.



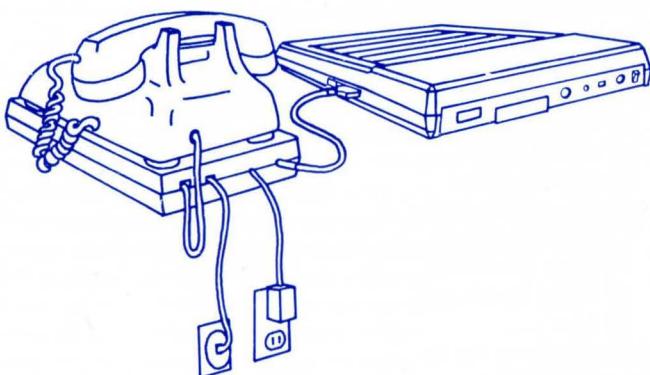
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## INSTALLATION OF MPP-1000E

Connect the MPP-1000E data cable to joystick port #2 on your Atari Computer. Plug the included power supply into the power jack on the modem and into a 110V power outlet. Connect the modem to phone line with the included modular cord. Note that there are two phone jacks on the back of the modem and that you can plug the phone cord into either one. The remaining jack is for using an optional voice telephone in conjunction with your MPP-1000E. You can use this phone for normal voice communications when the modem is not in operation.

*installation diagram*



Turn on the power switch and the MPP-1000E is ready to use.

The MPP-1000E has three function lights on the front panel. These lights indicate various conditions of the modem.

PWR (Power)	—Indicates the modem is turned on.
OH (Off Hook)	—Shows the modem has answered the telephone line. This light will flicker as the modem pulse dials.
CD (Carrier Detect)	—This indicates that the MPP-1000E has successfully linked with another modem and that you are ready to communicate.

## LOADING THE SMART TERMINAL

Turn off your computer. Insert the Smart Terminal disk into the disk drive. Now turn on your computer and the Smart Terminal will boot. After it loads the menu should appear on the screen. If you have an XL unit, you need to hold down **OPTION** while turning on the computer to deactivate basic and increase the buffer size.

**\*NOTE:** It is recommended that you make a backup copy of the Smart Terminal disk using the DOS supplied with your drive. If you wish, the DOS supplied with Smart Terminal may be replaced with one of your choice. Smart Terminal will support double density drives, if used with the proper DOS.

## GETTING ONLINE

The best way to learn to use your modem and Smart Terminal software is to actually connect up with another computer. It would be best to try a local bulletin board or a friend with a modem so you don't run up a large long-distance phone bill while experimenting. The first step is to set the communications options from the Smart Terminal menu that you will need. Now you need to decide if you want to manually dial the phone number, or let the computer do it for you. The reason you may want to manually dial the phone is to use an alternate long-distance carrier that requires a touch-tone phone for access codes. The steps for dialing both ways are as follows:

### MANUALLY DIALING TELEPHONE

- 1) Make sure your SMART TERMINAL MENU is showing the main menu.
- 2) Turn the MODEM power switch ON.
- 3) Dial telephone.
- 4) Listen for the carrier.
- 5) When you hear the carrier, press **T** on your keyboard.
- 6) Place the telephone receiver back on the hook. This will not disconnect your call.

## USING AUTODIAL

- 1) Turn the MODEM power switch to ON position.
- 2) Select the menu option M) DIAL/ANSWER FUNCTIONS.
- 3) Follow the directions for autodialing a number.

You should now be communicating with the other computer. Often times you will need to hit **RETURN** once or twice after getting a connection to signal the host computer that you have connected. Experiment with as many of the features as you can so you will be proficient using your MPP-1000E. When you're finished, turn off the modem or use G) HANG UP PHONE from the M) DIAL/ANSWER FUNCTIONS selection, to end communications.

## THE SMART TERMINAL MENU

The SMART TERMINAL menu should appear like this:

MICROBITS PERIPHERAL PRODUCTS, INC.  
SMART TERMINAL REV 6.1 (c) 1985

- A) DISK FUNCTIONS
- B) MODEM ↔ DISK DIRECT
- C) COPY BUFFER TO DEVICE
- D) DELETE ALL BUFFERS
- E) CREATE NEW BUFFER
- F) FULL/HALF DUPLEX
- H) ASCII/ATASCII
- I) NO / XMODEM PROTOCOL
- J) 38/40/64 COLUMN
- K) MODEM → PRINTER DIRECT
- L) LOAD BUFFER FROM DEVICE
- M) DIAL/ANSWER FUNCTIONS
- P) NO/ODD/EVEN PARITY
- T) TERMINAL MODE
- V) VARIABLE BAUD RATE

xxxx BYTES USED    xxxx BYTES LEFT  
xxxx FREE BLOCKS    x BUFFERS USED

CHOICE?

TR: ASCII	XM: OFF	DUP: FULL	ONLINE	BD: 300
SL: SNAP	OP: BRCV	BF: 1	PG: 1	

On options F,H,I,J, and P the currently selected mode is highlighted in inverse characters. To select an option, simply type the character of the menu option you want. You may return to the S.T. menu at anytime by pressing **START**.

The SMART TERMINAL can store information, it receives and sends, in your Atari's RAM memory. The area, this information is stored in, is called a buffer and the size of your buffer depends on the amount of RAM memory there is in the computer. You can tell how much buffer space you have used and how much is left from the **BYTES USED** and **BYTES LEFT** message on the screen.

One character takes one byte of storage; therefore, if you have 1000 BYTES LEFT you can store 1000 more characters in the buffer. See option E) CREATE NEW BUFFERS for more information on the SMART TERMINAL buffers.

#### A) DISK FUNCTIONS

When this is selected the computer shows seven other options. These functions may be used by following the on-screen prompts. With this version of Smart Terminal DOS you can connect 4 drives.

- A) DISK DIRECTORY
- B) FORMAT DISK
- C) RENAME FILE
- D) DELETE FILE
- E) LOCK FILE
- F) UNLOCK FILE
- G) EXIT

#### B) MODEM ↔ DISK DIRECT

This option allows you to transfer files, directly between your disk drive and the modem, without using a memory buffer. This option is useful for transferring files larger than your computer's memory and for transferring many files in one terminal session.

**When this is selected, the computer displays two more options:**

- 1) MODEM → DISK DIRECT
- 2) DISK → MODEM DIRECT

**Option 1 allows the storing of incoming data directly to the disk. Option 2 allows you to directly send a disk file over the modem without using your RAM buffer. Both options will prompt you for FILENAME?. Enter D:filename.ext for the appropriate disk file to send or receive. The SMART TERMINAL now goes to TERMINAL MODE and **OPTION** will start your file transfer. If, at this time, you are returned to the main menu it is because your computer couldn't open a channel to the drive. (wrong file name, disk full, etc.) Check your disk and try again. To abort sending a file before it is finished, or to quit saving data to your disk, simply hit **OPTION** again. You can toggle **OPTION** again to transfer more data. The background screen color will change to green when transferring file data and return to black when finished. Press the **START** key to return to the menu.**

### **C) COPY BUFFER TO DEVICE**

**This option copies the contents of a memory buffer to a device.**

**Legal devices are:**

<u>Filename</u>	<u>Device</u>
C:( <i>SHORT</i> )	—CASSETTE
D:filename	—DISK
M:	—MODEM
S:	—SCREEN
P:	—PRINTER

**The program will prompt for FILENAME?. Enter the filename of the device to which you want to copy. The SMART TERMINAL now asks you which buffer you wish to copy. Enter the buffer number you want to copy from (it automatically copies buffer #1 if there is only one buffer created).**

**The copy will be performed immediately to all devices except the modem. If you specify M: to copy to the modem, the SMART TERMINAL will go into TERMINAL MODE and the copy (uploading) can be started by pressing **OPTION**. The screen color will change to green until the buffer is copied. If you want to abort the copy before it is finished, hit the **OPTION** key again.**

**Specifying C:SHORT tells the computer to use short inter-record gaps (IRGs) when saving to the tape. Refer to Appendix A for examples of this option.**

#### **D) DELETE ALL BUFFERS**

**This option will delete the contents of all your buffers. The computer will ask you to verify that you really want to do this. Type Y to delete the buffers, any other key will return you to the menu without deleting the buffers. After deleting all buffers, the SMART TERMINAL will have one buffer with a length of 0 BYTES**

#### **E) CREATE NEW BUFFER**

**The SMART TERMINAL will automatically append saved data to the end of your last buffer. To separate programs or data in memory you should create a new buffer before saving the new data. When you want to recall that data, you will simply type the buffer number to which it was saved. You are allowed up to nine buffers, and once you create a new buffer you cannot save data to an old buffer. All data that is saved to a buffer is appended to the end of the last buffer opened. This is known as the current buffer.**

#### **F) FULL/HALF DUPLEX**

**This option lets you select between full and half duplex. The duplex you need to use is determined by the computer with which you are communicating. In full duplex mode each character you type is sent to the other computer, echoed back to your computer, then displayed on the monitor. In half duplex mode, your computer sends and displays each character as you type. You can tell if you are in the wrong duplex mode if:**

- You type a character and nothing appears on your screen.**
- You type a character and two of the same characters are displayed.**

**You should be able to solve either of these by simply changing duplex modes.**

## H) ASCII/ATASCII

This option tells the SMART TERMINAL how to translate the characters it sends and receives. In ASCII mode, the SMART TERMINAL translates everything it sends from ATASCII (Atari ASCII) to standard ASCII and everything it receives from ASCII to ATASCII. You should be in this mode when communicating with any computer other than an Atari. The following codes are converted in this mode:

ASCII	ATASCII	FUNCTION
13	155	Carriage Return
12	125	Screen Clear
7	253	Bell
8	126	Backspace

Any other ASCII code that does not have a direct Atari translation will not be printed.

In ATASCII mode no translation takes place. This mode is useful when communicating with another Atari that also is not translating. The SMART TERMINAL will print any character that is received in this mode. Sometimes when you first go to TERMINAL MODE, hearts will be printed on the screen. This is because the modem sends the SMART TERMINAL '0's when it hasn't yet detected the other computer's carrier (an ATASCII '0' is a heart).

## I) NO/X-MODEM PROTOCOL

X-MODEM protocol allows transferring files with no transmission errors. X-MODEM is the standard file protocol in the Atari world. You can also use it with many other computers and bulletin boards.

X-MODEM automatically corrects any transmission errors that occur because of a bad connection, random phone noise, etc. This is the way it works: The computer that is sending the file sends a 128 byte (character) block of data. As it sends each character, it adds that character's value to a one byte checksum. After the computer has sent all 128 bytes, it sends the checksum value. The receiving computer also checksums the incoming data and then compares its value to what the other computer sent it. If both checksums are the same, the receiving computer sends a code saying the transmission was okay and to proceed. If the checksums were not the same, the computer sends back a code telling the other computer to retransmit the last block. It will keep retransmitting the block until it gets one with no errors. The computer transmitting the file also sends a code to tell the receiving computer when the entire file has been transmitted.

To download (receive) a file using X-MODEM, you should select this option, create a new buffer if necessary, and then go to terminal mode. When the other computer is ready to send the file, hit **OPTION**. The file will automatically be sent. To upload (send) a file, you must chose the X-MODEM protocol and then choose C) COPY BUFFER TO DEVICE or B) MODEM ↔ DISK DIRECT. If you chose C) COPY BUFFER TO DEVICE you now should respond to the prompt with **M**: to copy to the modem. You tell it which buffer to send and the SMART TERMINAL goes directly into TERMINAL MODE. You can also use X-MODEM with the direct disk option. When the other computer is ready to send the file, you hit **OPTION** to start sending the file. X-MODEM will send the complete file and indicate when the transfer is finished. You can abort an upload or download by pressing **OPTION** again. If you abort a download, the SMART TERMINAL *will not save* any of the data it received.

**NOTE:** When transmitting a file in X-MODEM, the data being sent is NOT echoed to your screen. Slash marks will appear, on your monitor, to indicate each block that has been sent.

You must be careful to have X-MODEM selected only when downloading X-MODEM files. If you try to save other text while in this mode, the SMART TERMINAL will not save anything because the data was not transmitted using X-MODEM.

#### J) 38/40/64 COLUMN

This option changes the number of characters displayed on the screen. The default setting is 38 columns because many televisions have overscan and do not display the full screen. If you have a monitor, or your television doesn't overscan, you should use the 40 or 64 column mode because many documents are formatted for this screen width. There is an 80 column driver on the Smart Terminal disk. To use it rename **M64.MPP**, to an unused name, then rename **M80.MPP** to **M64.MPP**.

#### K) MODEM - PRINTER DIRECT

This option allows you to have a copy of the data printed at the same time it is displayed on the screen. When you choose this option, the SMART TERMINAL goes immediately into TERMINAL MODE. To start printing what you are receiving, press **OPTION**. To stop printing, you simply press **OPTION** again. You can use this feature as many times as you want in a terminal session, but if you go back to the SMART TERMINAL MENU, you must reselect this option. The SMART TERMINAL cannot save data to a buffer while in direct printer mode. If you also want to save the data on tape or disk, you should save it to a buffer first and print it later.

To use the direct print option, your printer *must* have an average throughput of at least 30 characters per second. If your printer will not print this fast, the SMART TERMINAL's 255 byte input buffer will overflow and data will be lost. Another problem that is inherent with some versions of the Atari operating system (OS) is that the computer will sometimes freeze up while printing and you need to press **BREAK** to continue. Do not have X-MODEM protocol selected when using direct printer.

## L) LOAD BUFFER FROM DEVICE

This option allows you to load information from a device into a memory buffer. When you chose this option, the SMART TERMINAL will ask you which device to load from. Legal devices are:

C:(SHORT)      -CASSETTE  
D: *filename*      -DISK  
E:                -SCREEN EDITOR

If you specify the filename C:SHORT the SMART TERMINAL will use short inter-record gaps (IRGs) when loading from the tape. Refer to Appendix A for more information on this option.

The editor built into the SMART TERMINAL is very limited but will allow you to prepare messages and text while off-line to send later. To use the editor type E: when prompted for filename. The screen will be cleared and you can start typing. You can type up to 3 lines of text (120 characters) into the editor's buffer at a time and you can edit this text using the normal Atari editing features. Before you type in more, you must press **RETURN** to save the text from the edit buffer to the SMART TERMINAL's buffers. Once you type (RETURN), you *cannot* go back and edit what you typed. The SMART TERMINAL will print a line across the screen to remind you that you cannot edit those lines. The editor is now ready to accept more text. Pressing **START** and **BREAK** will return you to the SMART TERMINAL MENU. Be sure that you have entered the last line before you do this or it will not be saved to the buffer. This editor is very limited because of memory restraints. If you need to edit larger files, you can use any normal Atari text editor (Text Wizard, Bank Street Writer, AtariWriter, etc.).

## M) DIAL/ANSWER FUNCTIONS

When you select this mode, the SMART TERMINAL will display another menu of functions and a list of telephone numbers (that you define).

**The screen should look like this:**

0)  
1)  
2)  
3)  
4)  
5)  
6)  
7)  
8)  
9)

- A) AUTOANSWER (OFF) OR (ON)
- B) QUICK DIAL (OFF) OR (ON)
- C) AUTO DIAL NUMBER
- D) CHANGE NUMBER
- E) LOAD NUMBERS
- F) SAVE NUMBERS
- G) HANG UP PHONE
- H) EXIT

CHOICE?

**You may now choose options A-H by typing that character**

**A) AUTOANSWER**

It is important to note here that the MPP-1000E is a true AUTOANSWER MODEM. When the MODEM is turned on, it *will* answer the telephone, whether the computer is turned on or not. The modem answers so fast that your telephone *will* not even ring before the modem has seized the line. For this reason you should always make sure that the modem is turned off when not in use. If you do not receive any telephone calls for an unusually long period of time, check your MODEM to be sure that it is turned off.

Typing A will toggle the autoanswer flag on and off. If the autoanswer flag is on when you go to TERMINAL MODE, the computer will wait for the phone to ring and then automatically answer it. You can select any of the upload/download functions and have them automatically executed when the phone rings. This is useful for sending and receiving files when you are not home or at night when telephone charges are lower.

To automatically send a file to someone calling, you should first set AUTOANSWER ON. Now you can load the file into one of your memory buffers and select C) COPY BUFFER to MODEM or you may select the direct disk option to send the file. Both of these options will put you directly into TERMINAL MODE. Press **OPTION** and the computer will say SAVE ON. This means that the SMART TERMINAL is now ready to accept calls. When another computer calls the MPP-1000E and sends any character, the SMART TERMINAL will begin sending the file. When another computer calls, the same file will automatically be sent again. You can return to the menu by pressing **START**. To automatically receive a file, you can choose the DIRECT DISK, DIRECT PRINTER, or buffer save options. For saving the data directly to the disk or printer, select that option and when it goes to TERMINAL MODE press **OPTION**. To save to your memory buffer, go directly to TERMINAL MODE and press **OPTION**. The computer will print SAVE ON and is ready to accept calls. When a computer calls, the SMART TERMINAL will automatically answer and any data that is sent will be printed or saved. The SMART TERMINAL can accept more than one call and will append that data to the end of previous calls. You exit this mode by pressing **START**.

#### B) QUICK DIAL

This mode allows your modem to dial almost as fast as a tone dial system. Typing B will toggle the quick dial flag on and off. Some telephone systems will not accept a fast pulse.

#### C) AUTO DIAL NUMBER

This option dials a telephone number continuously, placing a hash mark on the screen each time it redials. When the modem detects a carrier it automatically sets itself to TERMINAL MODE and the speaker sounds. You can exit the Auto Redial, between dialings, by pressing **START**.

When you select C) AUTODIAL NUMBER, the computer will ask you for the number to dial. Type 0-9 to dial that predefined number. If the number isn't stored on this page then press E) LOAD NUMBERS to display the next screen of ten numbers. Be sure your phone is on the hook during AUTO DIAL. If you aren't getting a connection, you can listen to what's happening after the number has been dialed.

#### D) CHANGE NUMBER

This option lets you change the telephone numbers that are defined on the screen. To change a number, select this option and when it asks for NUMBER?, type a 0 to 9. The computer will then ask for the new number. You can now type in up to 24 characters for the phone number and a description of what that number is. **DO NOT** include any numbers in the description. Type **RETURN** when you are done and it will be displayed on the screen. The following are examples of correct entries:

0 1(503)967-9075 MICROBITS  
1 ACE BBS 1-503-343-4352  
2 123-4567 FRED'S HOUSE

You can store up to 30 numbers in 3 pages of 10 numbers each. To store information on the second and third page press **E) LOAD NUMBERS** and the phone number area of the screen will change to allow more entries. Note, the last status box at the bottom will read PG:1, 2, or 3 depending on which page you have selected.

It might be necessary to create a disk file for pages 2 and 3. To do this select **L) LOAD BUFFER FROM DEVICE** At the prompt type **D:MPP1.DAT<cr>**. This will load the file, which records the phone numbers, into the computer's memory. Next press **C) COPY BUFFER TO DEVICE** and name the output file as **D:MPP2.DAT**. Next press **C) COPY BUFFER TO DEVICE** again, only this time naming the file **D:MPP3.DAT**. After following this procedure you'll have three disk files for recording up to thirty different numbers.

#### E) LOAD NUMBERS

This option allows you to load your telephone numbers from disk. You must load files that were created with the **F) SAVE NUMBERS** option.

When you select this option, the SMART TERMINAL will load the file **D:MPP1.DAT** into your telephone number directory. If the listing you want isn't on the first page then press **E**. If you have a page 2 it will display it's stored numbers. Select this option once more and page 3 will appear on your screen. To return to page 1 press **E**.

The SMART TERMINAL automatically loads the phone numbers on page 1, from disk, every time you boot it or press **SYSTEM RESET**. If you don't have telephone number file 2 or 3 on your disk, the computer will not load anything but also will not give an error message.

#### F) SAVE NUMBERS

This option saves the telephone numbers you have defined and stores them in *MPP:DAT* disk files 1, 2, or 3 depending upon which page number is shown on the bottom status line.

#### G) HANG UP PHONE

This option tells the modem to hang up the phone if you are connected with another computer. You can use this to hang up in the manual dial, autodial, and autoanswer modes.

#### H) EXIT

This option returns you to the SMART TERMINAL MENU.

#### P) NO/ODD/EVEN PARITY

This option allows you to select the parity that the SMART TERMINAL uses when communicating with the other computer. The parity you need will depend on the computer you are talking to. Most computers require NO PARITY but if you get a message from the other computer saying PARITY ERROR you will need to change the parity.

#### T) TERMINAL MODE

TERMINAL MODE is used to actually communicate with the other computer. The SMART TERMINAL will print \*\*\*\* ONLINE to show that you are in TERMINAL MODE and now any characters you type on the keyboard are sent over the modem, assuming you have a connection. You can return to the SMART TERMINAL MENU by pressing **START**.

If you chose B) MODEM ↔ DISK DIRECT, C) COPY BUFFER TO MODEM, or K) DIRECT PRINTER you can start those functions by pressing **OPTION**. If none of these options were selected, pressing **OPTION** will start saving incoming data to your buffer. You stop saving data by pressing **OPTION** again. You can use the buffer save as many times as you want, but to separate programs or data you should go back to the SMART TERMINAL MENU and create a new buffer.

When you are copying to or from a buffer, the background screen color will change to green. When the transfer is finished, the screen will return to black. The screen will change to red approximately 700 characters before buffer space is full. When your buffer space is completely full, the screen color returns to black and the computer beeps once.

#### V) VARIABLE BAUD RATE

The MPP-1000E is built to operate at a standard 300 baud, but some computers may communicate at a different baud rate (ie. 110 baud). Using this option, you can change the baud rate anywhere from 100 baud to an upper limit around 450 baud depending on the modem and your telephone connection. You will likely start getting transmission errors at the higher baud rates.

#### STATUS LINES

TR: ASCII	XM: OFF	DUP: FULL	ONLINE	BD: 300
SL: SNAP	OP: BRCV	BF: 1	PG: 1	

TR: = Translation mode. ASCII OR ATARI

XM: = X-Modem. Off or On

DUP: = Duplex mode. Full or Half

OFFLINE or ONLINE

BD: = Current Baud rate setting.

SL:SNAP = Pressing select will copy the contents of the screen into the current buffer.

OP: = Operation Indicator. Action will be started after pressing **OPTION**.  
DSND , sending direct from disk.  
DRCV , saving direct to disk.  
BSND , sending from buffer.  
BRCV , saving to buffer.

BF: = Buffer number in use.

PG: = Phone directory page number 1, 2, or 3.

D: = Name of File being saved or loaded

## TECHNICAL SPECIFICATIONS

The MPP-1000E MODEM is a 300 baud (bps), Bell 103 compatible, frequency shift-keyed modulator-demodulator. The MPP-1000E simultaneously sends and receives serial data, automatically switching to Originate or Answer mode as the need arises.

## TELEPHONE COMPANY NOTIFICATION

Before connecting the MPP-1000E MODEM to the telephone network, you must provide your local telephone company with the following:

- \*Your telephone number
- \*The modem FCC Registration Number
- \*The Ringer Equivalence Number
- \*The USOC Jack required

You can find this information on the bottom of the modem case.

## APPENDIX A

### ATARI FILE TYPES

The Atari computer recognizes three basic file types on cassette and disk. Games that you buy, programs you write, business software, systems software, etc., will all fit into one of the three categories. You need to be able to recognize these different types of files to upload and download software and use the other features of the SMART TERMINAL correctly.

#### BINARY FILES

The first file type is a binary (machine language) file. Most system software (DOS, disk duplicators, etc.), and a lot of games and applications software (word processors, compilers, etc.) are binary files and usually do not require a cartridge in your computer to use. Binary files on disk will usually load by themselves or you will load them using DOS option L) LOAD BINARY FILE. You do not need to do anything special to load or save disk binary files with the SMART TERMINAL because DOS handles them the same as other files. Binary files on tape will usually be loaded by pressing (START) while turning on the computer. When the computer beeps, you type hit any key to begin loading and it will automatically run when it is loaded. When saving a binary file to cassette with the SMART TERMINAL, you need to be sure to specify C:SHORT for the file name. The SHORT tells the computer to use short inter-record gaps (IRGs). Short IRG tapes are distinguishable by the short delay between the beeps the computer makes when loading the file. Short IRGs are about 1/2 second in duration as opposed to about 5 seconds for long IRGs. You must be sure to specify C:SHORT when saving and loading binary cassette files. *Not all* tapes with short IRGs are binary files. See BASIC LOAD FILES for more information

## BASIC LOAD FILES

Basic load files are like binary files but they are BASIC programs. When you type a program into your computer using BASIC, the common commands such as PRINT, REM, FOR, NEXT, etc.. are condensed into a one character "token" to save memory space. If you were to look at a BASIC program as it is stored internally, it would not make sense. BASIC takes care of this by converting the tokens back to normal words when you list your program to the screen. When you use the BASIC commands CSAVE and SAVE"D:filename", the program is saved out in token format. These BASIC load files usually load faster and are shorter than a comparable BASIC list file. You load the file back into BASIC by using the CLOAD and LOAD"D:filename" commands. Cassette load files are stored using short IRGs (see BINARY FILES) so you need to specify C:SHORT for the filename when saving and loading these files with the SMART TERMINAL. BASIC programs can also be saved in the LIST format.

## LIST (TEXT) FILES

List files are files that contain information in text form. A list file is anything that is not a BINARY or BASIC LOAD file and could be word processor text, instructions you download from a bulletin board, a message to a friend, etc. A list file may also be a BASIC program saved with the LIST"C:" or LIST"D:filename" command. When you save a program with the LIST command, BASIC converts its internal tokens back to the original commands so the saved program looks the same as it does when you LIST it to the screen. You load a BASIC list file into the computer with the ENTER command; for cassette the command would be ENTER"C:" and for disk it would be ENTER"D:filename". List files on cassette must be saved using long IRGs (specified by only C:) because BASIC has to process each line as it is loaded.

List files are frequently used for downloading programs from bulletin boards because transmission errors are easy to find. Most bulletin boards will indicate when a file is not a BASIC LIST file, and binary files will usually have special instructions for loading and using. If you have problems downloading a particular file from a bulletin board you should consult the SYSOP (System Operator) for help.

## APPENDIX B

### EXAMPLES OF USING THE SMART TERMINAL

#### DOWNLOADING FROM AN ATARI BULLETIN BOARD (BBS)

When communicating with another Atari, you should have the following options set: FULL DUPLEX, ATASCII, NO PARITY. Go to TERMINAL MODE and call the other Atari. Go through the necessary steps to get the program ready to download. Press **OPTION** to tell the SMART TERMINAL to start saving and then press **RETURN** (or whatever character the BBS requires to start sending). The timing here is critical because you do not want to miss any data. When the entire file has been sent, press **OPTION** again to stop saving. To download another file you should return to the SMART TERMINAL MENU and create a NEW BUFFER and go through the same steps again.

Once you have finished and are logged off the BBS, you should save your buffers. Go to the SMART TERMINAL MENU and chose C) COPY BUFFER TO DEVICE and the device to which you want to save the file. To get a listing of the program and save it also, you could save to disk and then repeat the process to the printer.

Saving to a buffer is not the only way that you can download a file. You can also use the DIRECT DISK option to transfer files. To use this option chose B) MODEM↔DISK DIRECT. Now select 1) MODEM → DISK DIRECT and respond with the the disk filename to save the file to. The SMART TERMINAL automatically goes to TERMINAL MODE and you can start saving data by pressing **OPTION** . Pressing **OPTION** again will stop saving data to the disk. When the complete file has been transferred, you must press **START** to return to the SMART TERMINAL MENU. Doing this causes the remaining data to be saved and disk file is closed. Downloading another program is as easy as repeating this process with another filename.

Many Atari bulletin boards offer the choice of using X-MODEM protocol. If possible, you should always use it because it eliminates transmission errors. Downloading with X-MODEM is basically the same as before, but starting and stopping the transfer is easier. You start the transfer by pressing **OPTION** and it is automatically stopped when the end of the file is received. You can use X-MODEM protocol with the buffer save or with DIRECT DISK.

### UPLOADING TO AN ATARI BBS

You should basically follow the same steps as for a bulletin board. The one difference is that both computers should be in HALF DUPLEX.

### UPLOADING AND DOWNLOADING WITH THE SOURCE, COMPUSERVE, AND OTHER COMPUTERS

You should be in ASCII mode and set the necessary other options (you should be able to communicate with most computers with the default options set). When uploading and downloading to a non-Atari, you will probably be transferring text files and *not* programs. Other than this, the basic steps are the same.

## **APPENDIX C**

### **MPP-1000E MODEM QUESTIONS**

This set of questions and answers has been provided to give you solutions to the most often encountered problems associated with the MPP-1000E modem. There are, we admit, a few portions of the original owners manual that are not crystal clear. We hope that this document will give you the answers that you need. If you have questions that are not answered here or in the manual, feel free to contact us and talk to the Technical Support department. If you call us, please have your manual in hand so that our technicians can help you find the answers to your problems.

#### **1. Can I store my files to my disk/tape from the modem?**

Yes. You can even store directly to the disk without going through the computer's memory. This allows you to receive files larger than the free memory in your computer. This cannot be done with the cassette due to the very slow speed of the tape. The normal method of saving files is to first capture them from the modem into a buffer in the computer's memory. When done communicating, the buffers can be saved to disk or tape individually, or even sent to the printer.

#### **2. Can I send my disk/tape files to another computer?**

Yes. You can send files directly from disk which allows you to send files larger than your computer's free memory. Tape files must first be loaded into a buffer before being sent. This limits the size of tape file transfers to the amount of memory in your machine. A good practice for sending multiple files is to load them into the computer's buffers before calling the other computer. This allows you to send the files one after another without breaking the communication link.

### 3. What Is a buffer?

A buffer is a temporary holding place for information. The SMART TERMINAL allows you to set up as many as 9 buffers in the computer's memory. This allows you to receive (download) or send (upload) several files without having to go off-line. The buffers are dynamically allocated, which means that each buffer takes only as much room as the file actually requires.

### 4. What does on-line (or off-line) mean?

On-line means that you are actually in communication with another computer. Your computer and the remote computer have established a communication link over the phone line. In some instances on-line is taken to mean actively communicating, as when in the terminal mode or when sending or receiving a file. You can go off-line while using the Smart Terminal program without actually breaking the communication link.

### 5. What is BAUD rate and what is the BAUD rate of the MPP-1000E?

BAUD stands for BITS of ACTUAL USABLE DATA (per second). The MPP-1000E modem is generally a 300/BAUD modem (actually variable from 110 to about 450). Each character, or byte, requires eight (8) data bits plus two extra bits called START and STOP bits. This means that 300 baud translates to about 30 characters per second that can be sent. If an average page of single-spaced text contains 2000 characters (remember to include blank spaces!) it should take about 54 seconds to transmit an entire page. There are other factors that can reduce your actual transfer speed.

## 6. What is DUPLEX?

DUPLEX can be either FULL or HALF. A computer operating in the FULL DUPLEX mode echoes each character that it receives back to the sending computer. Each character that you type is sent to the other computer and transmitted back before it is displayed on your screen. In HALF DUPLEX the computer displays each character as you type it and does not expect a character echoed back. The duplex mode that you should use depends on the requirements of the other system.

## 7. What is PARITY, and how should my computer be set?

Parity is a system that allows your computer to verify the transmission accuracy of each incoming byte of data. Each byte comes in as a series of BITS that represent either ones or zeroes. In EVEN PARITY the computer adds the bits up, and if the result is even it will add another bit that contains a one. If the result of adding the bits up is odd, the computer will tack on a bit that contains a zero. ODD PARITY is done the same way but with the parity bit reversed. Very few systems now days require parity.

## 8. Can I download machine language (binary) files and run them?

Yes, within certain limits. Machine language files are especially sensitive to transmission errors, and a single incorrect BIT can cause a machine language program to fail. Machine language files are usually sent or received using X-MODEM protocol. This is a system that checks the transmitted data in 128 character blocks as it is received and verifies the data integrity. You have to save the program to a tape or disk and load it back in without the SMART TERMINAL cartridge in your computer before you can run it. Machine language programs for tape differ in file format and will not work if saved to disk. Likewise, disk versions of machine language programs will not load when saved to tape.

9. When I download BASIC programs and save them on disk (or tape) I can't get them to load and run. Why?

There are two types of BASIC program files. If the program that you download LOOKS like normal BASIC (the way it would appear on the screen when you type it in) it is a LIST file. If it appears to be full of weird characters (inverse video and control characters) then it is probably a tokenized LOAD file. After having been saved disk or tape, a LIST file must be brought back into the computer with BASIC by using the ENTER command instead of the LOAD command. Let's say you download a LIST file named "WORMS". You load the program back into the computer with ENTER"D:WORMS". Type RUN and press **RETURN** to execute the program. If WORMS is a tokenized LOAD file, use LOAD"D:WORMS" to load it in. Now simply RUN it as before. You can also use RUN"D:WORMS" to load and automatically run the program. Tape users should use the same commands with C: instead of D: .

10. When I try to use the DIRECT →PRINTER option, the printer runs for a while then I get an error # 137. What does this mean?

The error #137 means that some of the data (information) that was being sent to the computer was lost. This is because the printer is not fast enough to keep up with the incoming data. Many printers are not as fast as their advertised print rate for sustained periods. The printer takes time for filling its line buffer, moving the print head, doing line feeds and other chores. All of this subtracts from the time available to actually print. To make good use of the DIRECT→PRINTER option, your printer must be capable of printing at least 35 characters per second for sustained periods. You can also use a printer buffer to buffer any overflow data. MPP provides the MicroStuffer(tm) 64K Printer Buffer which retails for \$149.95 that will work great for this problem.

11. Can I talk to COMPUERVE and THE SOURCE with the MPP-1000E modem?

The MPP-1000E modem and Smart Terminal software are compatible with both systems. As a matter of fact, most databank systems in the United States can be accessed with the MPP-1000E. The few computers that are not compatible with the MPP-1000E are those that use 7 bit characters rather than standard 8 bit data characters. Generally, these systems are very old. They are being replaced quickly by new equipment, so there are very few limitations as to which systems you can contact with your MPP-1000E.

12. I have heard lately that Atari has made a cartridge that will allow Atari owners with Atari modems to get onto the PLATO network. What about the MPP-1000E?

Atari has incorporated the driver code for the MPP-1000E into the "PLATO" cartridge. This will allow users of the MPP-1000E modem to interact with the PLATO network without buying a new modem.

13. I have heard about a DRIVER disk (sometimes called an EMULATOR) for the MPP-1000E. Will that help me to write my own programs?

The MODEM DRIVER is actually a package of software and documentation that is intended to allow knowledgeable users to write or modify communications software to work with the MPP-1000E. We have provided several public domain terminal programs as well as sample Bulletin Board System programs on the disk. The provided sample programs are intended to show examples of how to write various routines. The terminal software is functional, and the BBS software can also be run, but the package was not intended to be a complete BBS. MICROBITS is currently marketing a complete, ready to run BBS package that is simple enough for novice users to easily operate.

14. When I download directly to disk, I sometimes cannot load the file back into the computer. The directory usually shows only one sector. Why is this?

There is a minor bug in the SMART TERMINAL program. The fix is very simple. After completing a direct-to-disk download, make sure that you are no longer in the SAVE mode. Press **START** to return to the main menu. Now press the **(A)** key. This will force the file directory on the disk to be updated and will close the file correctly. Your new file should be shown on the directory, and the number of sectors should be correct. You may now return to terminal modem and continue your session.

## **SERVICE**

**If your MPP—1000E Modem does not work, check the following:**

- 1) Is it plugged into joystick port #2 ?**
- 2) Do you have the telephone cable connected?**
- 3) Is the power adapter plugged in?**

If your modem appears to be malfunctioning, you should immediately disconnect it from the phone lines until the source of the problem is discovered. Contact our service department at (503) 967-9075 for repair instructions. Do not return any equipment without a Return Materials Authorization. If you are having problems using the MPP—1000E or the SMART TERMINAL software, you should contact your local dealer for help. You can also call us for assistance if your local dealer cannot answer your questions.

## **WARRANTY**

Microbits Peripheral Products, Inc. warrants the MPP—1000E Modem and included cartridge to be free from defects in material and workmanship and to meet applicable specifications under normal use and service for a period of one (1) year after sale to original owner. If any parts or equipment are deemed to be defective originally, or if these parts or equipment have become defective under normal usage rather than misuse, negligence, or accident, Microbits Peripheral Products, Inc. will repair or replace them without charge. This warranty shall not apply to parts or equipment that have been repaired or altered outside our repair facility. Equipment that has been subjected to misuse, negligence, or accident; or that has been altered, defaced, or has the serial number missing is not covered by this warranty. Repairs that are not covered by this warranty will be billed at current shop charges. Microbits Peripheral Products, Inc. does not assume any liability for any consequential damages caused by the use of the MPP—1000E modem or included software.

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