

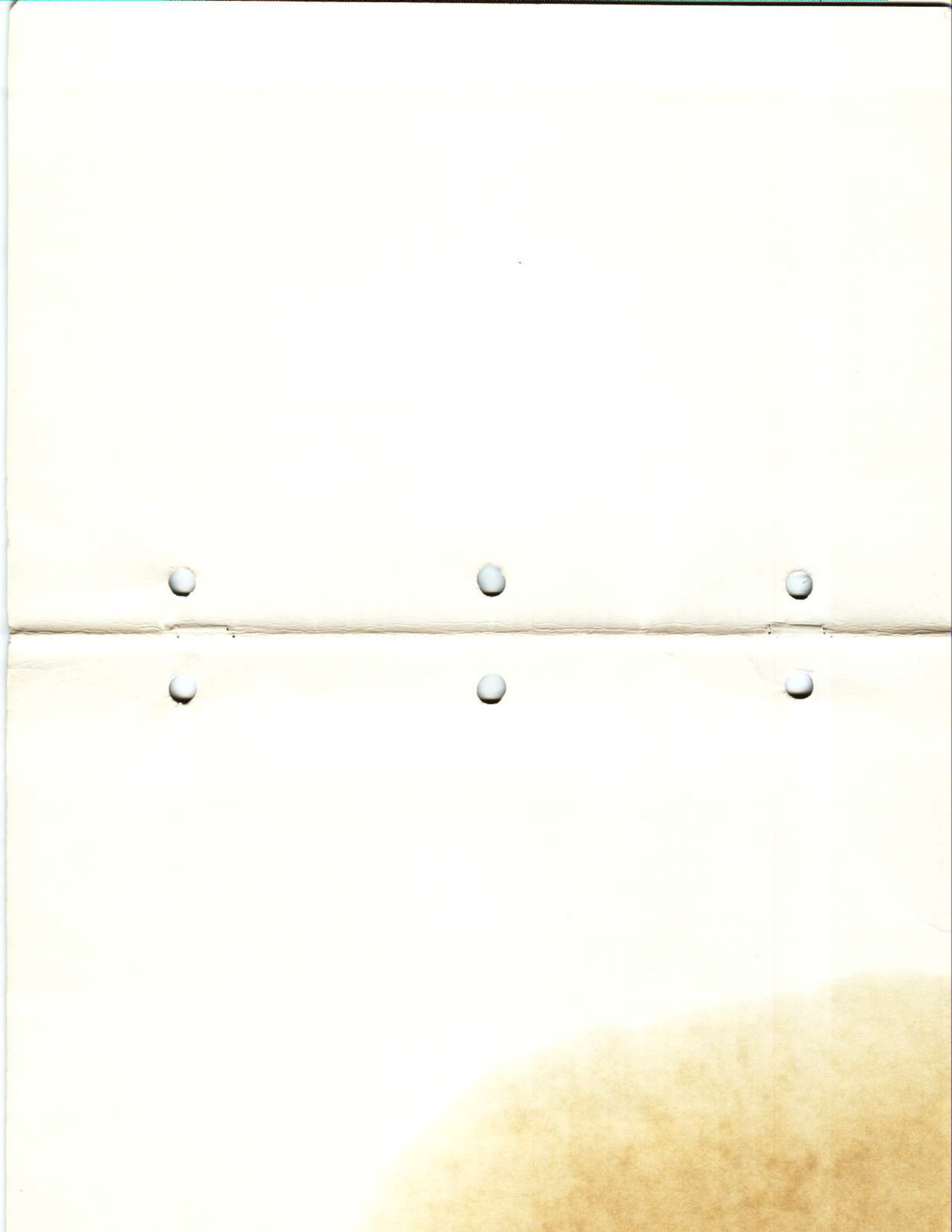


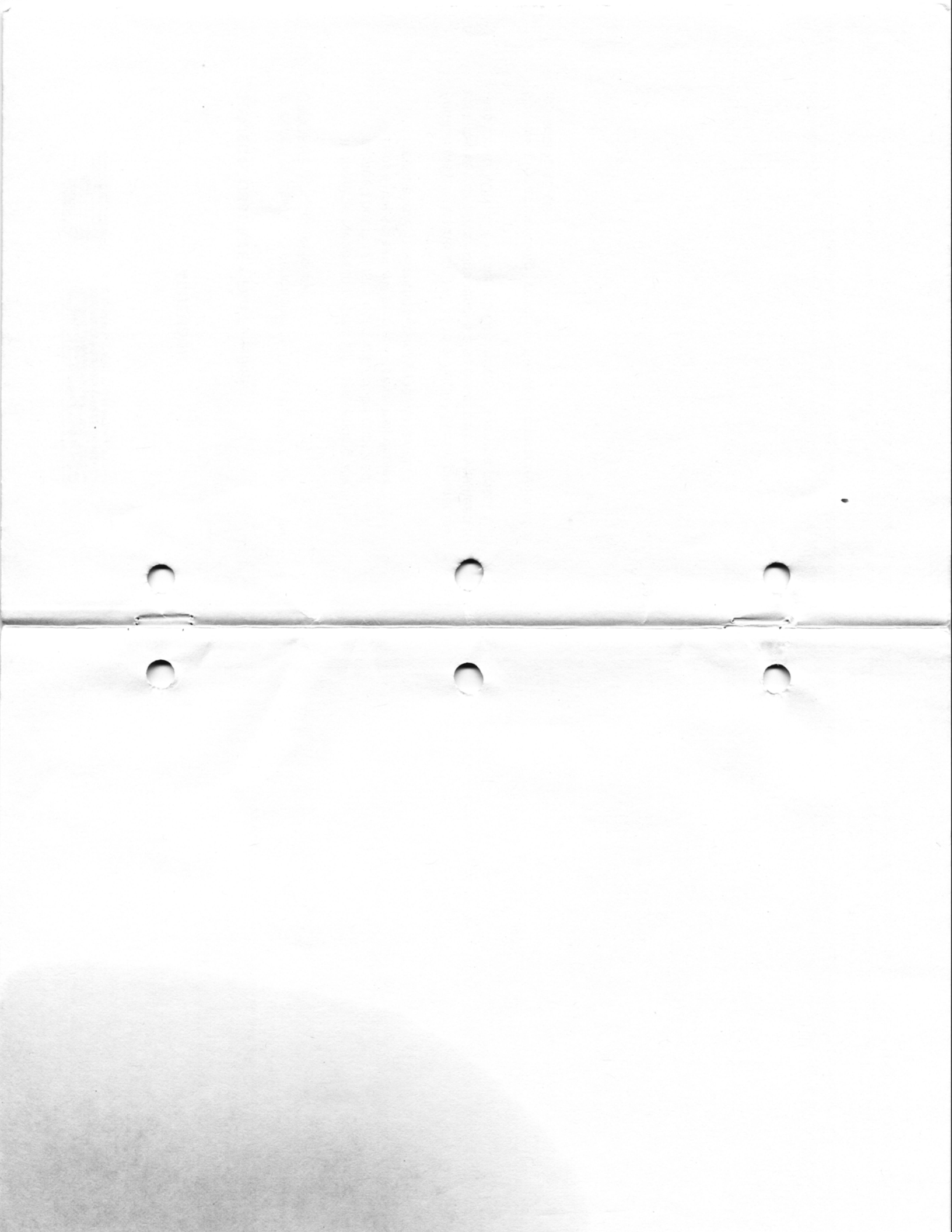
The Micro Link

Wordcraft



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OSBORNE
COMPUTER CORPORATION

ADDENDUM

SUBJECT: OSBORNE 1 Port Function

In order to utilize all functions of THE MICRO LINK on the OSBORNE 1, note the following:

In terminal mode (command 2.1), file sending will proceed but the host's echo will not be captured; hence, the screen will be blank unless half duplex (command 2.3) is in effect during the file sending.

Another way to insure display is to send the file by characters (command 45.3); this command is also necessary if you need to respond to XON/XOFF (control-Q/control-S) from the host.

For line prompt handling, send the file as a character-line file (command 45.4).

- a serial port menu appears after the nameplate when any key is hit. Follow its instructions to proceed to the main menu. The serial port menu is presented upon cold start, too (Command 14).

Subject: Osborne 1 activation sequence

Before entering terminal mode (Command 1 or Command 9) of *The Micro Link* on the Osborne 1, make sure that the port is connected to an active peripheral. For example, a modem should be connected to the Osborne and turned on, although the telephone does not need to be off-hook.

The serial logic in the Osborne 1 generates a false received-character flag when the port is not connected. This appears as a cursor blinking at approximately the baud rate.

Subject: Osborne 1 cable connections

Use the information on pin connections in Chapter 8 of the Osborne User's Manual and in the manual for your modem or other peripheral to obtain a cable which connects the proper pins of each device's port. For most modems, using the RS-232 port, it is sufficient to connect pins 2, 3 and 7, reversing 2 and 3 from Osborne to modem.

Hexadecimal character codes (ASCII)

Space	20	33	46	59	6C
!	21	34	47	5A	6D
"	22	35	48	5B	6E
#	23	36	49	5C	6F
\$	24	37	4A	5D	70
%	25	38	4B	5E	71
&	26	39	4C	5F	72
'	27	3A	4D	60	73
(28	3B	4E	61	74
)	29	3C	4F	62	75
*	2A	3D	50	63	76
+	2B	3E	51	64	77
,	2C	3F	52	65	78
·	2D	40	53	66	79
/	2E	41	54	67	7A
0	2F	42	55	68	7B
1	30	43	56	69	7C
2	31	44	57	6A	7D
	32	45	58	6B	7E
					del 7F

The Micro Link

- Telecommunication power ■ Memory record ■ File sending
- Quick, simple commands ■ Bulletin board, The Source, your office & friends

What the Micro Link Does

The Micro Link program enables you to communicate with other microcomputer users, large computers and terminals over telephone lines.

Files may be prepared in advance and transmitted automatically. The entire two-way record of communication may be recorded in memory and on disk.

With the Micro Link, exchanging information with your office and other computer users becomes easy and practical. You can send and receive memos, documents, forms, data files, and charts created by programs.

Readable word-wrapped display fitted to any screen width, a host of options with convenient default settings, and simple, fast user commands are Micro Link features.

The Micro Link scans The Source and other information bases quickly, recording segments that interest the user for review off line.

You can host another computer or a terminal. The program operates at one end without being required at the other.

Files may be transmitted as a block, or line-by-line with automatic line prompting. The program may be used with others in BASIC, assembly or other languages.

Wordcraft will configure nearly any 8080 or Z-80 computer with serial port and modem to use The Micro Link.

Operating system: Runs under Micropolis DOS or CP/M 1.4 and 2.2.

CONTENTS

What <i>The Micro Link</i> does	1
Learning About <i>The Micro Link</i>	3
Starting up <i>The Micro Link</i>	3
Example: conversation with a bulletin board	4
Copying information to memory	5
Sending files	6
Command mode and terminal mode	8
Menu	9
<i>The Micro Link</i> commands	10
Typical command sequences	26
Offline viewing	29
Printing hard copy	29
Setting up <i>The Micro Link</i>	30
Linking to another program	31
Hexadecimal character codes	32
QUICK REFERENCE TABLE OF COMMANDS ...	16-17

() LOCAL Key: If your computer has a LOCAL key, it must be off to communicate to the modem. When on, it may be used for testing and off-line viewing as the equivalent of a modem set to half duplex.

Linking to another program

The following information is for users with programming knowledge who want to tie *The Micro Link* to another program.

The Micro Link has a warm start re-entry jump at locations 3-5 above its origin point. It should be used when you desire to maintain the command settings from exit to re-entry.

The Micro Link resides in high memory. However, the CP/M version loads at 100H and moves itself. Therefore, load *The Micro Link* first, then load the other program and construct the linkage between them.

Re-entry under CP/M

The following device will allow you to exit *The Micro Link* and re-enter it.

Under CP/M, create an empty command file:
SAVE 0 GO.COM

When you exit *The Micro Link*, you may give the command GO so long as you have not disturbed the Transient Program Area beginning at 100 hex. Commands such as DIR, REN and ERA do not disturb this area.

The re-entry to *The Micro Link* is a warm start; that is, all parameters will remain set as they were upon exit.

Subject: Osborne 1 version customization

Please note the following alterations to *The Micro Link* for this machine:

- default line width is 51.

For these reasons, off-line hard copy printing is the standard *Micro Link* philosophy. However, you may insert a routine to echo on-line. (Not available for Osborne 1 versions.) This routine on entry will find the character in register C. It should protect all registers. The characters are fed to this routine straight from the communication channel without word wrapping, editing, or formatting. The routine must begin at Origin plus B4 hex (where a mandatory RET is situated in the absence of a customized routine) and may extend to Origin plus 29F hex in most versions of *The Micro Link*.

Setting up *The Micro Link*

The Micro Link is ready to be executed as a command program under your operating system when the following environment is prepared.

() *Modem*: You need a modem to use *The Micro Link* over telephone lines. The standard speed is 300 baud (bits per second); the standard high speed is 1200 baud.

Set your modem for originate or answer mode. The host computer uses answer mode; the other computer uses originate.

Set full duplex on your modem, regardless of whether the communication is in half or full duplex; *The Micro Link* Command 2 takes care of all variations.

() *Serial port settings*: Your computer's serial port must be set to match the modem and other computer. Set:

- baud rate
- parity
- word size
- number of stop bits

Common settings are 300 baud, parity off, eight-bit word, and one stop bit. *The Micro Link* requires polled serial chip operation, not interrupts.

Learning about *The Micro Link*

The Micro Link is incredibly flexible and may be configured in an endless variety of ways.

You can connect to a host computer or serve as the host yourself. You can send unformatted text or have *The Micro Link* insert carriage returns, breaking at the last full word before a specified line length.

The best way to learn about the uses of *The Micro Link* is to start with a call to a microcomputer bulletin board system. Any computer store can give you telephone numbers for nearby boards. The next two sections of this manual take you through a sample call to a bulletin board system.

Then study the description of individual commands and experiment with them. Most commands have a default setting, so you do not need to concern yourself with a command until you want its feature.

Starting Up *The Micro Link*

After *The Micro Link* is installed, here is how to start it:

Turn on the computer and bring in (or "boot") your operating system, which is CP/M, MDOS or another system.

Enter the name of *The Micro Link* as it reads on the disk directory, then hit return. For example: **ML**.

You will see the nameplate and copyright notice for *The Micro Link*.

Press any key. The menu of principal commands will appear, followed by *The Micro Link*'s prompt sign, a colon (:). You are now ready to enter your commands.

Commands are described in detail in this manual and summarized in the Quick Reference chart in the middle

of the booklet. To call a bulletin board system, you usually need only one command (see next section).

Your last command to begin a session will be Command 1. Hit the 1, but don't enter it with Return yet.

Your modem must be connected to your computer's serial port, to the telephone and to a power source. Set the switches on the modem. Usually you set originate mode (while the host operates in answer mode) and full duplex (not half duplex).

Dial the telephone number; when you hear a steady tone (called the carrier), you have about 8 seconds to place the telephone handset in the cups of the modem. If your modem is wired directly to the telephone, press the Data button when you hear the carrier, leaving the handset off the hook.

Press Return on the computer. This puts *The Micro Link* in contact with the other end.

Proceed according to the requirements of the other computer.

Example: Conversation with a bulletin board

After you have entered Command 1 and hit Return, press Return twice more. Bulletin boards use them to determine your baud rate (the speed, in bits per second, that you are sending information). The bulletin board introduction will appear on the screen. It will tell you how to use the bulletin board if you are not familiar with its procedure.

Suppose you want to change a setting on *The Micro Link* during the conversation. Send a Control-S to the bulletin board. This is the typical signal to make it pause. Then hit Escape. This does not terminate the connection, but it removes your computer from contact with the other system. *The Micro Link* returns you to its command

(Be quick escaping and turning on copy action, or use control-S before Escape and control-Q on re-entry)

Esc (when done)
:3 (turn off copy action)
:1 (wrapup commands)
Esc
:5.filename (save to disk)

If you used control-Q or have other stray characters at the beginning and end of the file, use your system debug tool to examine and remove them, save file back to disk.

Offline Viewing

You can view files and the copy buffer while offline. You can also determine the effect of a combination of command settings.

Simply turn on your modem; don't bother with the telephone. If you are testing terminal mode, set your modem to half duplex, even though *The Micro Link* is set to full duplex. If you want to test host or half duplex mode, set the modem to full duplex.

Printing hard copy

To print copy buffers that you saved to disk after the communication is complete, you may use your word processor, BASIC line list statement, or operating system utility (TYPE or PIP under CP/M) as appropriate for the type of file.

If your printer has a serial port and can be cabled to the same computer port used by *The Micro Link*, you can send files to the printer with *The Micro Link*, too. *The Micro Link* responds to the XON/XOFF protocol (see Command 17).

By printing after the communication, you can edit unnecessary material and print only desired sections. This method avoids problems of incompatible speeds between baud rate and printing rates, too.

Post a message to a bulletin board:

- :7 (turn off line feed; BBS usually provides)
- :6.filename (load prepared message)
- :45.4 (character-line file)
- :15.63 (typical line width for BBS messages)
- :48 (format the message to line width)
- :1 (issue preliminary commands)
- Esc (return to Command mode)
- :9 (send file)
- Automatic escape (at end of message)
- :1 (so you can tell BBS to save message)

Send a file to mainframe with prompting:

Some large computers require you to enter a line at a time, waiting for an echo of the carriage return or other prompt before entering the next line.

- :7 (turn off line feed; host provides)
- :6.filename (load the file)
- :45.1 (line file)
- :15.80 (or other line width for computer)
- :48 (format the message to line width)
- :46.OD (hex code for carriage return prompt)
- :1 (issue preliminary commands)
- Esc (return to Command mode)
- :9 (send file)
- Automatic escape (at end of message)
- :1 (to issue wrapup commands from keyboard)

Receive a non-ASCII file:

- :4 (clear copy buffer)
- :35 (no editing of non-ASCII values)
- :1 (issue preliminary commands)
- Esc
- :3 (turn on copy action)
- :8 (turn off screen formatting; otherwise, may miss an occasional byte during word wrap operation)
- :1 (back to communication)

mode and presents the prompt sign.

You may reconfigure *The Micro Link* with any commands. For example, if you want to stop adding a line feed to each carriage return (because the bulletin board supplies its own line feeds), enter 7.

- :7
- :
- Perhaps you would like to start copying the information into memory. You can enter:
- :3
- :
- Now you may re-enter contact with the other computer using Command 1 again. Then send control-Q, the usual sign to resume transmission.

When the conversation is over, hang up the telephone. Press Escape; you return to command mode and get the prompt sign necessary to give commands to *The Micro Link*. If you have no further commands for *The Micro Link*, use Command 10 to return to your operating system.

Copying information to memory

Whether you are conducting a conversation or receiving a file from another computer, you can record the entire exchange into a copy buffer.

Before the other computer starts sending the information, see Commands 31 to 35 for configuring the copy action.

Enter Command 3 to turn on the copy action. All data sent in both directions will be recorded in the copy buffer.

If you escape from terminal mode and re-enter, copying will still be in effect, continuing in memory from where it left off.

If you would like to copy only portions of the session, simply escape to terminal mode and use Command 3 to toggle the copy action on and off.

When there are 512 characters ("bytes") left in the copy buffer, *The Micro Link* displays a warning message COPY BUFFER ALMOST FULL and continues. If the copy buffer is filled, *The Micro Link* automatically turns off the copy action and displays COPY BUFFER FULL.

Also, if you have enabled Command 34, *The Micro Link* will automatically transmit a control-S to the other computer. This is commonly used as a pause signal, giving you time to escape to command mode or take other action.

When the conversation is over, it resides in the computer's memory. Now you can save the copy buffer as a disk file with Command 5.

Sending files

If you have a file on the disk that you would like to send, you can bring it in from the disk and send it with the following Micro Link commands.

Load your file into memory with Command 6.

The file will automatically be loaded in from the start of the file buffer. If the file is ASCII text or, in any case, has no nuls (binary zeros) in it, *The Micro Link* is all set to transmit the file from beginning to end.

Tell *The Micro Link* how the other computer needs to receive the file. There are four options:

1. *A line file.* *The Micro Link* will send a line, then wait for the carriage return or other prompt character from the other end before sending the next line.

2. *A block file.* (This is the default setting.) *The Micro Link* simply sends the file one character after another

:2:2 (host the other end; other end should be at 2.1 if *The Micro Link*, or full duplex/originate in general)

:6:filename (load the file)

:1 (if preliminary keyboard talk is needed)

Esc (return to Command mode)

:9 (start sending file)

Automatic escape (occurs at end of file)

:1 (if wrapup talk is needed)

Send an ASCII file to a large computer:

An ASCII file is "all characters;" most text and data files are in ASCII mode.

Set your modem to originate mode; other computer hosts.

:6:filename (load the file)

:1 (for preliminary commands to computer)

Esc (return to Command mode)

:9 (start sending file)

Automatic escape (occurs at end of file)

:1 (if wrapup commands needed)

Send a non-ASCII file to a large computer:

Programs are usually not in ASCII (some BASIC files are); packed binary data files are also non-ASCII.

Set your modem to originate; other computer hosts.

:6:filename (load the file)

:42:hhhh (set address end of file; use location reported by Command 6)

:47 (use address to signal end of file transmission)

:17 (turn off pause-resume signals)

:1 (for preliminary commands to computer)

Esc (return to command mode)

:9 (send file)

Automatic escape (at end of file)

:1 (if wrapup commands needed)

following settings:

- 7 *Add LF to CR off* - BBS supplies it
- 8 *Screen format off* - BBS formats the screen for you
- 48 *Transmit format on* - For entering messages line by line
- 15.59 *Line width* - Message line length
- 45.4 *Character-line file* - To slow down to BBS speed and respond to line prompt ("?")
- 37.0000 - Mark end of file with two nulls

By recalling these settings, you will be set up for most bulletin board systems. Use 1 to enter conversation mode. You can prepare your message in advance offline as a file, then switch to file sending (Escape, 9, Return) when the BBS gives you the first prompt for your message.

For hosting another computer, storage area 2 has the following settings:

- 2.2 *Host* (You should put your modem in answer mode, too)
- 7 *Screen LF with CR off*
- 20 *Send LF with CR on*
- 37.0000 *Two nulls* - To mark end of file

Recall these settings with r.1 or r.2. The S command overwrites these values.

Typical command sequences

Talk with a bulletin board system or information bank:

```
:7 (to turn off the line feed; BBS usually provides)
:1
```

Send a file to another microcomputer:

Set your modem to answer mode; other computer's modem should be in originate mode.

without pause.

3. A *character file*. *The Micro Link* waits after each character to receive one from the other computer.
4. A *character-line file*. It combines the two features. Bulletin boards usually work best with character-line files. They require line file protocol to enter messages, and the character feature gives the bulletin board system (which is usually slow) time to digest each character.

Use Command 45 to specify the type of file transmission. Most bulletin board systems need type 4 or type 1. Most other applications use type 2. If you need to slow down *The Micro Link*, type 3 instead of type 2 will do the trick.

When you first get the other computer on the telephone, begin in conversation mode (Command 1).

When the computer is ready to receive, hit Escape to enter command mode. Enter 9 and Return. *The Micro Link* will begin sending your file, displaying it on the screen, too.

At the end of the file, the screen will display END OF FILE and return you to command mode.

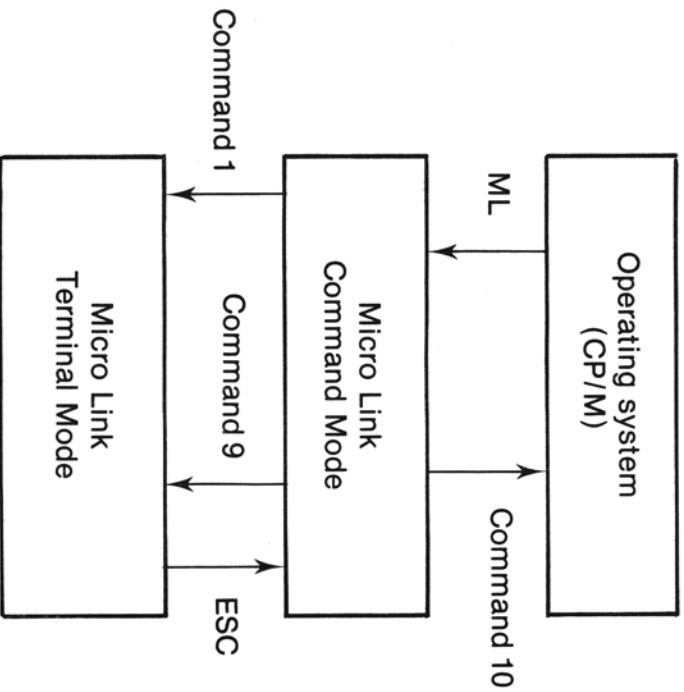
If you wish to halt file transmission before reaching the end, simply hit Escape. You may enter additional commands, then resume sending from where you left off with Command 9 again.

Command mode and Terminal mode

The Micro Link has two general modes, Command mode and Terminal mode. Initially, *The Micro Link* is in Command mode. In Terminal mode you are actually communicating with the other end of the line. From Terminal mode you can return to Command mode at any time by hitting Escape. (You can tell *The Micro Link* to use ano-

the character for this purpose; see Command 19.)

(Here, Terminal mode is used to mean any active communication. The terminal mode of Command 2 refers to the specific situation where a host computer echos everything you send back to you.)



The *Micro Link* looks for the character or pair of characters when you begin file transmission with Command 9. If it cannot find them before the end address, it tells you EOF MARKER NOT FOUND.

Because the end of file marker is calculated from the pointer to the next location to be transmitted, you can repeatedly use Command 9 to send more of the file until the next delimiting character.

48 Format the file line-by-line (now OFF)

Default: OFF.

Action: When toggled on, *The Micro Link* will use the declared transmission line width to insert carriage returns and wrap words. The file in working storage is not affected.

S.n Save parameter settings

Action: Saves the current parameter settings in a storage area where they may be recalled with Command R. There are three storage areas, n = 1, 2, 3. Addresses are not saved (file, copy buffer, and exit address). You may exit *The Micro Link* and return with the saved parameters still in their storage area.

R.n Recall parameter settings

Action: Recalls contents of storage area n and puts them into effect. Addresses are not changed.

Wordcraft supplies *The Micro Link* with settings already written into storage areas 1 and 2. You may change these with an S command, but they arrive on delivery from Wordcraft set up for common uses: sending messages to bulletin boards, and hosting another computer or terminal.

For bulletin board systems, storage area 1 has the

A character-line file combines the features of both file transmission types. It is useful for entering messages in bulletin board systems. A character or character-line file requires that you be in terminal (Command 2.1) so the other computer will echo the character back to you.

46.hh Change line file prompt (now 3F)

Default: 3F (question mark).

Action: Declares the character that the receiver of a line file must send after a carriage return is transmitted.

If you use carriage return, the echo of your transmitted carriage returns by the host computer constitutes a prompt; if you use another character (for example, 3F for "?"), the host must generate and send this character before file transmission of the next line will begin.

Using your word processor, you can prepare text without carriage returns and use Command 48 to generate them automatically.

47 Use address for end of file

47.hh Use character for end of file

47.hhhh Use character pair for end of file

Default: 47

Action: Declares how *The Micro Link* should recognize the end of a file to be transmitted. If the file stop address (which can be altered with Command 42) is to be used, enter 47 (no period).

To stop when a character is encountered, enter 47.hh, where hh is the hexadecimal code for the character. For most files you will use the ASCII code for the character, but any value from 00 to FF may be specified.

To stop when a pair of characters is encountered, enter 47.hhhh.

Menu

When you start *The Micro Link* or execute Command 11 or 14, the menu is displayed. It looks like this:

- 1 ENTER CONVERSATION MODE
2. TERMINAL/HOST/HALF DUPLEX (NOW 2.1)
- 3 COPY BUFFER (NOW OFF) 2B00 2B00 9FFF
- 4 CLEAR COPY BUFFER
5. FILE SAVE
6. FILE LOAD
- 7 ADD LF TO SCREEN CR (NOW ON)
- 8 SCREEN FORMATTING (NOW ON) 2B00 2B00 9FFF
- 9 SEND FILE
- 10 EXIT MICRO LINK
- 11 MENU
12. CHANGE EXIT JUMP (NOW 04E7)
- 13 SEND CMD CHARACTER
- 14 COLD START
15. DD CHANGE LINE WIDTH

The menu displays only the principal commands. *The Micro Link* has over 40 commands.

The numbers on command lines 3, 9, and 12 are addresses in the computer's working memory. Every address holds a character or equivalent amount of information (called a "byte"). The addresses are numbered in hexadecimal notation. In hexadecimal, 1000 equals 4096 in decimal notation, which is a little more than the number of characters on two double-spaced typewritten pages.

The three addresses after the copy command report where copying to memory begins, where the next character will be saved, and where the copy buffer ends. The addresses after the file command, 9, are similar; the middle one reports the address of the next character that will be sent.

Using Commands 31, 32, 41 and 42, you can allocate the available memory space to the copy buffer and the send-file buffer.

The menu shows the status of the system when the menu is displayed to the screen; it is not updated as you enter commands. Command 11 redraws the menu with current values.

The Micro Link Commands

Each command consists of a number and, if required, a parameter, with a period separating them. A command can be entered only when you have the prompt sign, a colon. It is completed with Return. For example, :31.A00 (Return) is a valid command. As the explanation in this manual tells you, it sets the beginning of the copy buffer at location A00.

Commands are independent of each other. For example, you can prepare to send a pause when the copy buffer is full (Command 34) without activating the copy action yet (Command 3).

All keys in command mode are converted and displayed as upper case. This insures that you will not create disk files with lower case letters, a situation in which CP/M is unable to access the file.

A discussion of individual commands follows:

1

Enter conversation mode

Action: Declares that keyboard is source of data to send and enters terminal mode. Used when you have all parameters set and you are ready to communicate through the keyboard with other computer or terminal.

Action: Declares the address of the first byte of data to be transmitted from the file. *The Micro Link* maintains a pointer to the next file location to be transmitted. This command initializes the pointer to the starting address. You may interrupt a file transmission with Escape and resume it with Command 9. The pointer will not be initialized in this situation, so transmission will resume where it left off. (Note: In originate mode, one or two characters will not be displayed to your screen or put in the copy buffer, but they will be sent.)

42.hhhh

Change stop address (now hhhh)

Default: Default is one below *The Micro Link*.

Action: Declares the last byte of the file to be transmitted. This address appears in the menu as the file ending address, even when the effective end is an earlier location determined by a declared character or pair of characters (Command 47).

45.1

Line file

45.2

Block file

45.3

Character file

45.4

Character-line file.

Default: Block file.

Action: Declares the amount of information to transmit from the file before requiring acknowledgment from receiver.

A block file is sent continuously until its end.

A character file is sent one character at a time to acknowledge receipt. Any character will do; no comparison is made.

A line file is sent one line at a time. *The Micro Link* waits for the prompt character to be sent back after it has sent a carriage return.

care. If you allow enough room in the copy buffer for the introductory part of a communication, you can overlay the file buffer and let the copy action "chase after" the file sending action. The file (as handled through the communication) will become part of the copy buffer.

32.hhhh**Change stop location (now hhhh)**

Default: One byte below start of *The Micro Link*.

Action: Changes the last address in working storage of the copy buffer. After it is filled, no more data will be copied. The menu line for copy action has three addresses; the third one is the stop location.

34**Send pause when buffer full (now OFF)**

Default: OFF.

Action: Transmits a control-S to other end when in effect. Many systems interpret this as a pause and will suspend transmission of their data until you send a control-Q. Useful to prevent data transmission while saving copy buffer to a disk file.

35**Edit copy buffer (now ON)**

Default: ON.

Action: No control characters less than 20 hex (space) will be deposited into the copy buffer except carriage return (OD) and line feed (OA). The high bit is set to zero, too. This is an "in-line" edit; it is useful to combine *The Micro Link* with use of your word processor. However, if your word processor makes use of the high bit of bytes or needs control characters embedded in text, editing action should be turned off.

41.hhhh**Change start address (now hhhh)**

Default: Varies with operating system.

2.d**Terminal/host/half duplex**

Default: Terminal

Action: Changes your role in the communications protocol. Use 2.1 for terminal, 2.2 for host, and 2.3 for half duplex.

In Terminal mode, a character entered on your keyboard does not appear on your screen until the other computer echos it back to you. This is the most common setting for information banks. It is required for character file transmission and line-file prompting (see Command 45). In host mode, *The Micro Link* echos received characters back to the other end, while it immediately displays on your screen your keyboard entries. You can host another computer or terminal.

In half duplex mode, each end of the line is responsible for its local display; neither end echos back to the other. If you are getting data from the other end but do not see your own keyboard characters, use half duplex mode.

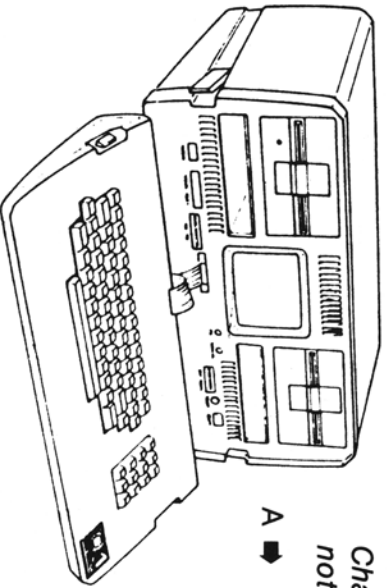
Your modem, if it has a Full Duplex/Half Duplex switch, should always be at Full Duplex when using *The Micro Link*.

3**Copy to memory (now OFF)**

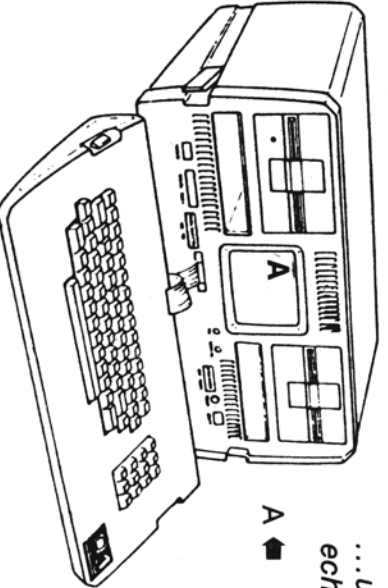
Default: OFF.

Action: Toggles the copy buffer switch. When on, all data through the modem is written into the copy buffer. This buffer is a block of the computer's working memory that can be filled character-by-character with the information going over the line. When off, no data is written to the copy buffer. You may turn this feature on and off during a session. The middle address in the menu shows you where copy action will resume.

TERMINAL MODE



*Character is sent,
not displayed...*



*...until other computer
echos it*

Action: An increasing delay on a scale of 1 to 8 may be inserted before the transmission of each character. Timing will vary with computer clock speed; the longest delay is 98,300 clock cycles with an 8080 chip. This command can be useful when the other end is driving a printer.

25.hhhh Dump until Space (pause) or C (cancel)

Action: This command allows you to examine the copy and file buffers. The display indicates both the binary value of the locations and the ASCII equivalent where it exists (otherwise, a period is shown). Space pauses the display until any key is hit; C cancels the command. The command will stop automatically at location of *The Micro Link*. The starting address given in your command must be below *The Micro Link* in memory.

26 Printer (now OFF)

Default: OFF

Action: This is not a standard Micro Link option. When in effect, it sends all characters going through the communications channel to the printer. Automatic word wrap as with screen display is not provided. See section on "Printing hard copy" for details of implementation.

31.hhhh Change start location (now hhhh)

Default: Varies with operating system.

Action: Changes the starting address of the copy buffer. The first byte of data will be written to this address. This is the first address on the menu line for the copy buffer. *The Micro Link* maintains a pointer to the next location in which to deposit a character. Command 31 initializes this pointer to the start location. The second address on the menu line for copy action shows this location.

You can overlay the copy buffer and the file buffer with

as simple data (for example, in a BASIC program file), toggle the action off.

19.hh Change command mode character (now hh)

Default: 1B hex (Escape)

Action: Declares the character used to return to command mode from terminal mode.

20 Send LF with CR (now OFF)

Default: OFF.

Action: When toggled on, sends a line feed after sending a carriage return.

21 Delay after sending CR (now OFF)

Default: OFF.

Action: The Micro Link waits after sending a carriage return when this action is toggled on. An on-line printer at the other end may need this delay.

22 Convert to upper case on screen (now OFF)

Default: OFF.

Action: Converts lower case ASCII to upper case for screen display. The copy buffer is not affected.

23 Send upper case letters (now OFF)

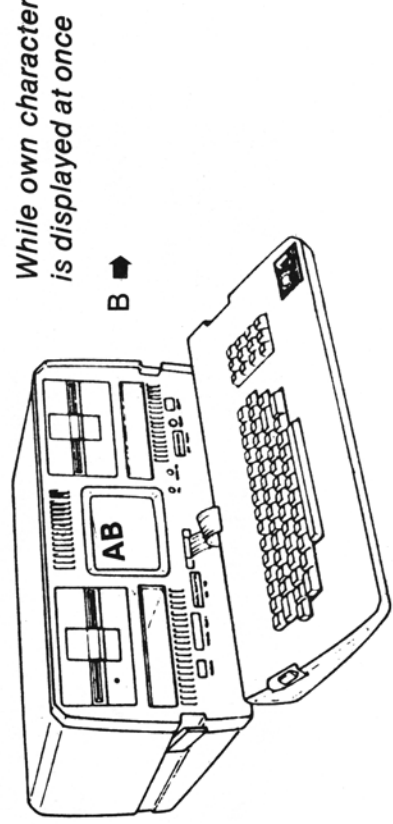
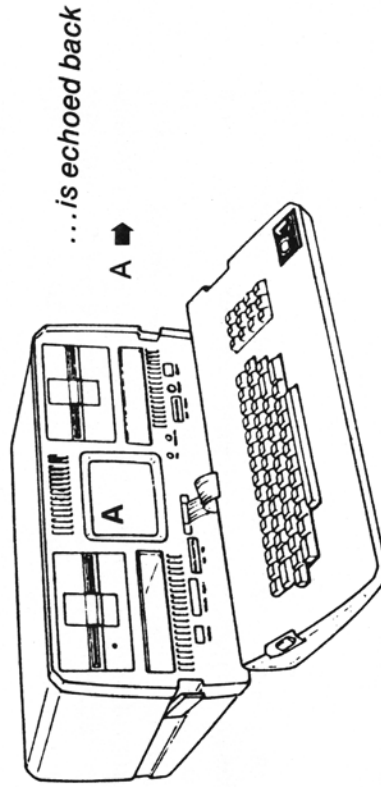
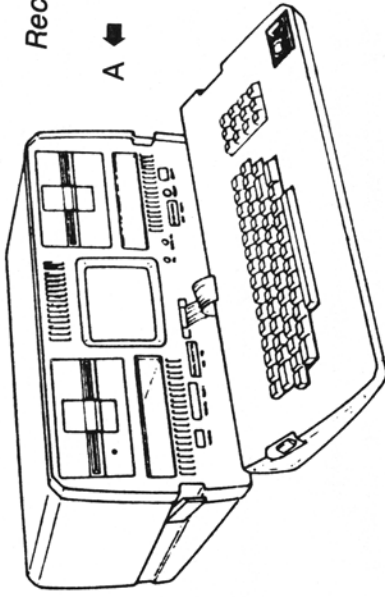
Default: OFF

Action: Converts transmitted characters to upper case when on. Copy buffer is affected.

24.d Delay between characters

Default: 0 (no delay).

HOST MODE



4 Clear copy buffer to zeros

Action: This command immediately clears the copy buffer to binary zeros and resets the internal pointer to the beginning of the buffer. Use with care; usually it is sufficient to declare the start of the copy buffer (Command 31), which also resets the pointer that indicates the next fill location.

5.[filename] Save copy buffer to disk

Action: Saves the contents of the copy buffer under the specified file name.

Be sure the information immediately following the period contains the complete file name in the format of your operating system (CP/M). Disk drive may be specified. For example, under CP/M: 5.B:MSG.TXT.

The buffer is saved from the beginning to the location indicated by the buffer pointer (middle address on the menu). Command 5 automatically appends an end marker to your buffer before saving it. In CP/M it is a control-Z (1A hex). If you use a filename that already exists on the disk, you will get an INVALID COMMAND message. If disk input-output problems occur, you will get an error message.

6.[filename] Load disk file into buffer

Action: Brings specified file on disk into the file buffer area. See Command 5 for filename rules. If the file will not fit into the file buffer area, you will get an INVALID COMMAND message.

The command sets up text files for sending. It does this by asking you if the file buffer is available; you respond Y or N (carriage return not required). If you answer yes, the command immediately clears the file buffer to nulls,

Action: Tells *The Micro Link* how wide a screen line to display. Can be less than the maximum on your monitor, but must be at least 10.

The combination of this command and the word wrap feature allow you to see how text appears in different column widths.

Avoid using your screen width value; use one less instead to avoid interactions between the video circuitry and *The Micro Link*.

This command also tells *The Micro Link* the width to use when transmit lines are formatted. For example, bulletin board messages have a maximum width, such as 60 characters. Use this command with Command 48 to format files as messages to bulletin boards.

16 Period substitute for screen

Default: ON.

Action: This command converts "troublesome" byte values to periods for the purpose of screen display. These codes are any code below 20 hex except 00, 07, 08, 0A and 0D. This command prevents machine language and tokenized BASIC programs from creating a confusing, jumping screen display. If a graphics program or other application needs these codes, the command may be used to toggle the periodizing action.

17 Accept pause and resume signals (now ON)

Default: ON.

Action: When this action is on, *The Micro Link* will stop sending a file upon receipt of a control-S and give you the message RECEIVER PAUSES. You may escape to command mode if you wish. Upon receipt of a control-Q, sending resumes. If you do not want transmission interrupted, or if you want to send and receive these characters

Before entering terminal mode, Command 9 calculates the last address to be transmitted. See notes for Command 47. If *The Micro Link* finds an error in the addresses, it displays an error message and leaves you in command mode.

10**Exit Micro Link**

Action: Micro Link jumps to the address of the controlling program or system.

11**Menu**

Action: Displays command menu with updated information. Useful to recall this information when you have scrolled it off the screen.

12.hhhh**Change exit jump (now hhhh)**

Default: Operating system warm start.

Action: Declares the address to which exit will be made.

13**Send Command character**

Default: Send Escape character.

Action: Sends the character being used to return to command mode. For example, if you need to send an Escape to the other end of the line, exit terminal mode and use this command.

14**Cold start**

Action: This command immediately restarts *The Micro Link*, resetting all options to default values (including addresses). The current parameter settings are lost.

15.dd**Change line width**

Default: 63 in most versions of *The Micro Link*.

loads the file from disk, and sets double null as the end of file marker (equivalent to 47.0000). Since a file of ASCII data has no binary zeros, sending this file will proceed to the last character in it or until interruption by Escape.

Upon completion of the disk load, a memory address appears on the screen. This is the last non-null byte in the file buffer.

7**Screen LF with CR (now ON)**

Default: ON.

Action: Sends a line feed to screen after each carriage return in terminal mode when toggled on.

Most bulletin board systems provide a line feed after each carriage return. To avoid double spacing on the screen, turn this feature off in such instances.

8**Screen formatting (now ON)**

Default: ON.

Action: Causes *The Micro Link* to format text displayed to the screen. *The Micro Link* will wrap words for easy reading. When toggled off, *The Micro Link* will fill each screen line to its declared width.

See command 48. Normally, you want only one of Command 8 and 48 in effect.

9**Send file**

Action: Begins transmission of file. Before using this command, check that:

- The file is in place.
- The beginning address and the end marker are set.
- The file transmission type (block, line, or character) is set and the line prompt declared if a line file is chosen.
- Formatting is taken care of by you or the other end.

QUICK REFERENCE TABLE

Number	Command
1	Enter conversation mode
2	Terminal/host/half duplex (now 2.1)
3	Copy buffer (now OFF)
4	Clear copy buffer to nulls
5.FILE	Save to disk
6.FILE	Load from disk
7	Screen LF with CR (now ON)
8	Format for the screen (now ON)
9	Send file
10	Exit The Micro Link
11	Display the menu
12	Cold start
13	Send command character
14	Cold start
15.dd	Change line width
16	Period substitute for screen (now ON)
17	Accept pause and resume signals
19	Change command mode character (now 1B)
20	Send LF with CR (now OFF)
21	Delay after sending CR (now OFF)
22	Convert screen to upper case (now OFF)
23	Send upper case letters (now OFF)

OF MICRO LINK COMMANDS

Number	Command
24.d	Delay between sending characters (now 0)
25.hhhh	Dump memory
Copying:	
31.hhhh	Change start location (now hhhh)
32.hhhh	Change stop location (now hhhh)
34	Send pause when buffer full (now OFF)
35	Edit copy buffer (now ON)
Files:	
41.hhhh	Change start address (now hhhh)
42.hhhh	Change stop address (now hhhh)
45.1	Line file
.2	Block file
.3	Character file
.4	Character-line file
46.hh	Change line file prompt (now 3F)
47	Use address for end of file
47.hh	Use character for end of file
47.hhhh	Use character pair for end of file
48	Format the file line-by-line (now OFF)
R.n	Recall parameter settings
S.n	Save parameter settings

(Consult rest of this manual for

full explanation of Micro Link commands)