

I N T R O D U C T I O N

MIKEYTERM is an advanced, user friendly, general purpose terminal program that supports many of the popular file transfer protocols, such as ASCII, XMODEM, and pure binary. Advanced buffer entry is also provided, as well as support for modems, printers, and BOTH disk and tape systems.

First time users will find MIKEYTERM to be easy to use and extremely forgiving, yet experienced users will find their most wanted features included. Users may also configure MACRO key definitions for specific functions, such as CompuServe ID's and passwords. In addition, MIKEYTERM may be used with the more common "smart" modems.

MIKEYTERM requires a fully implemented 64K Color Computer (or TDP-100) using either Disk BASIC Version 1.0 or Version 1.1, although many custom ROMs function equally as well. At least one disk drive, a cassette recorder/player, a printer, and a modem will enable the user to avail himself of all of the features that are inherent in MIKEYTERM.

NOTICE: The author does not warrant the suitability of this program for any particular user application and will not be responsible for damages (consequential or otherwise) that are incidental to its use in a user system.

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Getting Started With MIKEYTERM

MIKEYTERM comes pre-configured to the following settings:

```

Full Duplex
7-bit word
No Parity
No Linefeed on Carriage return
Auto Buffer on
Buffer open at startup
Startup at Main Menu
Word Wrap enabled
Auto Halt off
Cursor color for closed buffer is dark blue.
(&HAF)
Cursor color for open buffer is yellow.
(&H9F)
No pre-defined strings for control keys.

```

These settings are the common defaults for most information services and bulletin board systems.

A BASIC program has been provided with MIKEYTERM in order to allow the user to set the default options to whatever is desired. With "CONFIG", one can customize MIKEYTERM to the most convenient default values for:

1. Function key definitions
2. Duplex, full or half
3. Word length, 7 or 8 bits
4. Auto Halt ON/OFF
5. Linefeed on carriage return ON/OFF
6. Auto-buffering ON/OFF
7. Cursor colors
8. Buffer initially open or closed
9. Word wrap ON/OFF
10. Initial entry into Communications or the Main Menu.

Simply insert a BACKUP copy of the distribution disk into your default drive and enter the line RUN "CONFIG" <ENTER> to begin. You'll be prompted for the necessary information as you progress.

The first question asked by "CONFIG" is "Filename to configure?". Just pressing the <ENTER> key will load the distribution version of MIKEYTERM.

Text input is NOT required for the control key string definitions. For these, just pressing <ENTER> will advance to the next (optional) string definition, or you may enter any appropriate string of text that you choose. Text string length for the configurable keys is limited to 31 characters. You may use all keyboard characters up to and

including this length. "CONFIG" will alert you if you attempt to use strings that are too long. You will then be prompted to re-enter the desired string.

Next, you'll be asked several questions about how MIKEYTERM should communicate with other systems and computers. If in doubt about exactly which communications parameters you should select, choosing the following will usually provide successful communication with the great majority of BBS's and telecommunication services:

```

Full duplex
7-bit word length
Auto halt OFF
No linefeed on carriage return
Automatic buffer open/close option ON

```

The "Auto Halt" feature needs a little explanation, since it isn't implemented in most other terminal programs. When in Communications with the "Auto Halt" feature turned ON, (and assuming that the host supports XON/XOFF protocol) leaving Communications will send a control-S to disable the host's transmission. When returning to Communications, MIKEYTERM will send a control-Q to restart the host's transmission.

This means that if there was any traffic pending, it will be sent at this time. It is even possible to exit in mid-sentence, if desired. When returning to Communications, all defaults and communication parameters will be restored, just as before. (It's a good idea to leave this feature OFF if in doubt about the host.)

Linefeeds are discarded internally by the Color Computer, so the "Linefeed on carriage return" option is normally set to "no". However, linefeeds must be inserted after each carriage return when operating in half-duplex mode, especially during communication with another Color Computer. If half-duplex operation is chosen, a linefeed after a carriage return option is automatically set to "on".

Automatic buffer control is a desirable option, as it is used by most BBS systems for downloading purposes. When initiating a download, the BBS or the host will send a special character (a control-R) to open MIKEYTERM's buffer. After the download is complete, the BBS or host will send another special character (a control-T) to close the buffer. Normally, the automatic buffer option should be set to "yes" unless its operation would cause undesirable effects. (Note: automatic buffer control is not possible in the 8-bit mode. If you have selected 8-bit mode, the automatic buffering option will be ignored by MIKEYTERM.)

The -cursor- colors are normally set to yellow for an "open" buffer, and to dark blue for a "closed" buffer unless overridden

during the configuration process. Just pressing the <ENTER> key at the prompt for each cursor value will automatically assign the above default cursor colors. You may define any values that you desire for the cursor characters, just as long as they are each greater than 128 (&H80). You may even define a checkerboard cursor if you like! The "CONFIG" program will optionally display all possible cursor colors for you, if desired. After viewing them, you'll be returned to the cursor selection menu where you can insert the desired colors.

Next, you'll be prompted for the initial status of the buffer, whether "open" or "closed". Normally, you should choose to have the buffer "open", but the option is provided for those who choose otherwise. You'll then be asked to choose whether you want "word wrap" enabled. It's generally best to choose "yes" at this point, in order that MIKEYTERM will format the screen display into 32-character lines. Words that would normally be "broken" at the right-hand side of the screen will then be "wrapped" around to begin on the next line. This option will produce the most readable display for most people.

Lastly, you'll be asked for the initial entry point into MIKEYTERM. Until you become familiar with the operation of the program, you may choose to enter at the "Main Menu". Later on, it's a simple matter to change the entry point to "Communications".

When you complete "CONFIG", you'll be asked for a filename for your customized version of MIKEYTERM. Use a standard formatted disk to save it.

A Word About Backups

For your convenience and protection, MIKEYTERM is supplied on unprotected media. You should use your working disk to save your customized version. Always save the original MIKEYTERM disk in a safe place, (preferably write-protected) and ONLY operate from your backup disk with your customized version(s).

Also, never give anyone a copy of MIKEYTERM, especially if it's your customized version. The reason for this is that your configuration data is stored within your customized version(s) in the area from &HE00 to &HEFF. Your configuration data could conceivably include things like your User ID numbers, personal passwords, etc.

COMMUNICATIONS

Main Menu Option 1

Communications is where you'll undoubtedly spend most of your time, so it's a good idea to get off to a good start.

When auto-buffering is ON and your parameters are setup for 7-bit mode, receipt of a control-R (hexadecimal 12) will open the buffer and turn the cursor to yellow if the buffer wasn't previously open. A control-T (hexadecimal 14) will close the buffer and turn the cursor to dark blue. (The buffer is closed automatically whenever the buffer is filled.) This protocol, sometimes called either DC2/DC4 protocol or "ASCII buffer capture", is used by CompuServe and many of the more popular BBS systems. (Note: the cursor colors may be modified to your taste by using the "CONFIG" program.)

In 8-bit mode, detection of the buffer open/close control characters is not possible since those characters may form a part of the incoming data stream. If auto-buffering has been set to ON, it will be ignored in 8-bit mode and data will be stored in the buffer only if the buffer has been opened manually.

Operation

All single-key commands may be entered in either upper or lower case text. In all cases, the <down-arrow> key is used as a "control" key, since the Color Computer lacks a designated "control" key. Most other terminal programs use this convention also.)

To send a control character, press <down-arrow> and simultaneously press the control key of your choice.

Example: <down-arrow>+<C> will send a control-C.

<BREAK> will send a control-C. <SHIFT>+<BREAK> will do the same, and so will <control>+<C>. True line-break can not be sent.

<Right-arrow> will transmit a space. If you wish to transmit a horizontal tab, then use the <control> + <right-arrow> pair.

<CLEAR> will send a left bracket ([) character.

<SHIFT>+<right-arrow> will send a right bracket (]) character.

<SHIFT>+<zero> toggles the display and the keyboard between the upper and lower case modes. Selecting lower case mode affects what is displayed on the screen and sent from the keyboard, but does NOT affect the data that is being stored in the buffer.

<control>+<CLEAR> issues an "escape" character.

<control>+<=> will issue a "rubout" character.

Control Key Designations:

- Cntl/1 Open/close the buffer
- Cntl/2 Turn word-wrap on or off
- Cntl/3 XMODEM transmit <BREAK> will abort at the end of the block being sent
- Cntl/4 XMODEM receive into the buffer <BREAK> will abort immediately
- Cntl/5 Exit Communications into Display mode, and display most recent data in the buffer
- Cntl/6 Send predefined text string
- Cntl/7 Exit Communications and go to the Main Menu
- Cntl/8 Send predefined text string
- Cntl/9 Transmit the buffer
- Cntl/0 Send predefined text string

Using the Buffer

All routines that output from the buffer (tape, disk, printer, transmit buffer, and XMODEM transmit) will use the start and end marks. Reading a file into the buffer will automatically set the start and end marks for that file. However, if the buffer is marked later, these marks will be honored instead.

For example: A disk file is loaded into the buffer for upload. It is desired to leave the buffer open because a record of the session is to be saved or printed. This is permitted with MIKEYTERM. The incoming data will simply be appended to the end of the existing file in your buffer. The best part is that the end mark won't be altered. It is still positioned to mark the end of the file that was loaded. When the time comes to transmit or upload, only the file that was loaded will be sent, and nothing more.

Whenever you exit Communications mode, MIKEYTERM remembers all of the parameters that you set, things like whether word wrap was on/off, whether the buffer was open or closed, your ENTIRE screen and cursor position, etc. When re-entering Communications, all of these parameters will be restored, just as if you'd never left.

When in Communications with the "Auto Halt" feature turned ON, (assuming that the host supports XON/XOFF protocol) the act of leaving Communications will issue a control-S to the host so that while the user is away scanning the buffer (or any other function) the host won't send anything. Upon returning to Communications mode, MIKEYTERM will send a control-Q to restart the host's transmission. That way if any traffic was pending, it will be sent at that time. It is even possible to exit right in the middle of a line, if necessary. When returning to Communications, conditions will be restored to normal, just as if the exit had never occurred. (It's a good idea to leave this feature OFF if in doubt about your host.)

What Is Saved In The Buffer

Received data that is to be saved in the buffer will be appended to section on "Marking the Buffer" for further details.

When in 7-bit mode, all data received from the RS-232 interface will go into the buffer except:

Linefeeds	(Hex 0A)	
Control-R	(Hex 12)	(Open buffer)
Control-T	(Hex 14)	(Close buffer)
Null	(Hex 00)	
Rubout	(Hex 7F)	

When in 8-BIT mode, everything received from the RS-232 port is saved in the buffer if it is open. Data sent from the keyboard is not saved in the buffer in Communications mode.

D I S P L A YMain Menu Option 2

The Display mode is provided in order that users may view the contents of the buffer. The following commands are supported by MIKEYTERM:

<T>op	Move to the top of the buffer
ottom	Move to the bottom of the buffer
<Down-arrow>	Move down one line
<Up-arrow>	Move up one line
<SHIFT>+<down-arrow>	Move down a full screen
<SHIFT>+<up-arrow>	Move up 12 lines

<P>rint Print the contents of the buffer. If a portion of the buffer has been marked, then only that portion will be printed. Since BASIC's print routine is used, you must set the baud rate prior to EXECuting MIKEYTERM. This may be changed at any time by using Main Menu Option 8, or you may use a short BASIC program to LOADM MIKEYTERM, set the baud rate with the appropriate POKE, (i.e., "POKE 150,41" for a 1200 baud printer) and then EXEC MIKEYTERM.

<BREAK> Return to MIKEYTERM's Main Menu. If you are printing, <BREAK> will abort the print operation and redisplay the screen from which printing was initiated.

<spacebar> Return to Communications mode.

<F>ind Find a character string in the buffer. You will be prompted for a "search string". Type in the string for the search and hit <ENTER>. Use upper and/or lower case as required. The buffer will then be scanned for the first occurrence of the search string. When found, a full screen will be displayed beginning with the search string. If the search string is not found, the screen from which the search was initiated will then be redisplayed.

<N>ext Find the next occurrence of the search string defined previously with the "F" function. If another occurrence of the string cannot be found, then the current screen will be re-displayed.

Marking the Buffer for Saving or Printing

To mark a portion of the buffer, the Display mode must first be selected from the Main Menu. You may mark any portion of the buffer for output to disk, tape, or printer. While there are no restrictions on the nature of the data that can be marked, saving marked portions of binary data (such as M/L programs or compressed BASIC programs) may produce undesirable and/or unpredictable results. The user is urged to use caution.

Here's how to mark the buffer. Put the first line of the portion you wish to save on the screen somewhere using the up and down arrow keys. (Use the <SHIFT> key also, if necessary.) Push <M> for "MARK". A blue cursor will appear at the upper left-hand corner of the screen. Position the cursor at the START of the line of the portion of the buffer that you want to save, then push <S> for "START". The blue cursor will then disappear and you'll hear a tone to inform you that the mark was made.

Now the end mark. Use the up and down arrow keys (and the <SHIFT>, if you choose) to put the last line of the chosen area on the screen. Push <M> for mark. The blue cursor will be visible again. Place it UNDER the last line of the portion that you wish to save, then push <E> for "END". The cursor will disappear and again you'll hear a tone to inform you that the end point is now marked also.

NOTE: You may mark EITHER the starting point or the ending point of the buffer first.

Anytime you push <M> for mark, the "word wrap" feature will be disabled and the screen will be "unwrapped". This means that the lines within the buffer will "break" at the right side of the screen, rather than being formatted for 32 characters per line. (This is necessary in order to let you mark the buffer accurately.) Don't let this concern you, because all of your default parameters (including "word wrap") will be restored when you return to Communications. In the meantime, you may turn the "word wrap" function on and off (while you're in display mode) by pressing the <W> key.

Now that the buffer has been marked, you may save the marked portion of the buffer to disk or tape, print it, or transmit it. All functions that output from the buffer (tape, disk, printer, or transmit buffer) use the start and end marks. If you never mark the buffer, the marks will remain the same as the LOGICAL start and end of your buffer.

This means that if you load a file into the buffer, the start and end marks will be adjusted to reflect the true start and end points of the file that you just loaded. The file may

then be saved, printed, (if appropriate) or transmitted. However, if you sign-on to your favorite BBS, even with the buffer open, YOU MUST MARK THE BUFFER before saving, printing, or transmitting any portion of the buffer. If in doubt, it's ALWAYS best to mark the buffer manually.

M O D E MMain Menu Option 3

This option is primarily designed to support the Radio Shack Modem II. MIKEYTERM will program the Modem II to dial a phone number using "fast rotary" dialing. A 3 to 11 digit phone number may be set at any time using Main Menu Option 8. (Change parms)

Those wishing to use the Hayes SmartModem may enter the appropriate command string into the buffer using the "Buffer Entry" option from the Main Menu.

Example: To dial a number using the Hayes' "TouchTone" method, use Main Menu Option 7 (Buffer Entry) to enter the string "AT DT 555-5555 <ENTER>" into the buffer in order to dial the local phone number of 555-5555. (Without quotes, of course.)

After entering Communications, a control-9 will send the command string to the SmartModem.

A more reasonable alternative is the use of the "CONFIG" program to define one of the function keys with the required command string, which can then be used to send the string to the Hayes SmartModems.

RESET BUFFERMain Menu Option 4

Choosing <4> at the Main Menu will allow the entire buffer to be cleared. This action will make available the full buffer capacity.

You will be asked to verify that you REALLY want to erase the buffer. Anything besides a "Y" will abort the operation. The buffer is automatically cleared before loading files from disk or tape.

The amount of used and free buffer space is displayed (in decimal) whenever the Main Menu is selected.

T A P E U T I L I T YMain Menu Option 5

This portion of MIKEYTERM is provided for those who wish to use tape I/O. It is menu driven for simplicity of operation.

MIKEYTERM will read most common tape files into the buffer, and will write files to tape in either ASCII or binary format. The buffer will be automatically cleared before a file is loaded. It's usually convenient to position the tape to be read at the beginning of the file. However, loading of a cassette file may begin practically anywhere on the tape because a general purpose routine is used to locate the start of the file.

To use the tape utility portion of MIKEYTERM, hit <5> at the Main Menu. You'll be asked if you want to:

- [1] Read a tape into MIKEYTERM's buffer, or
- [2] Write the buffer (or a marked portion) to tape.

Choose whichever option is appropriate. <BREAK> will return you to the Main Menu.

If writing the buffer to tape, you'll be prompted for the file type:

- [1] ASCII, or
- [2] Binary

Again choose whichever type is appropriate to your situation. If you choose [2], you'll be given the opportunity to supply the starting and execute addresses (in hexadecimal) that will be written to tape. If you merely press <ENTER>, binary files written to cassette will be given start and execute addresses of zero. (The user should use whatever offsets are appropriate when loading the tape from BASIC.)

You'll then be prompted to prepare your cassette machine. Hit <ENTER> whenever you're ready.

MIKEYTERM writes "gapped" files to tape. The starting and stopping motion that you may notice from your cassette recorder is normal while MIKEYTERM is writing the buffer to tape.

D I S K U T I L I T YMain Menu Option 6

The disk utility portion of MIKEYTERM is also menu driven in order to make it friendly and easy to use, as well as to provide the user with good error recovery and descriptive messages. It was provided to allow MIKEYTERM's users to read files from disk into the buffer, save to disk from the buffer, and obtain disk directory displays. All drives are supported.

A directory display (in two column format) can be obtained by entering the drive number in response to the "FILENAME?" prompt. Free disk space is also indicated. After the directory is displayed, you will be re-prompted for the filename.

There are no restrictions on the filename as long as you use at least two characters. (One character entries are interpreted as drive numbers for purposes of obtaining directory displays.) Use upper and/or lowercase characters as appropriate.

The default extension is TXT. If a blank extension is desired for reading or writing a file, use a "/" after the filename followed by an <ENTER> at the "FILENAME?" prompt.

Example: TESTFILE/<ENTER> or TESTFILE/:1<ENTER>

A drive number may be appended to the filename if a drive other than the current default drive is to be used. It must be separated from the extension with a colon.

Example: TESTFILE/TXT:1<ENTER>

The data in the buffer (or a marked portion) may be written to disk as any file type you choose. When a disk file is read into the buffer, the file type is displayed. Note that the buffer is automatically cleared before loading a file.

Re-writing an existing disk file (with the same name) is not permitted by MIKEYTERM.

The <BREAK> key will abort any operation except actual disk I/O. When in doubt, use it and start over.

Disk VERIFY is always ON when using MIKEYTERM.

Disk and Tape File Compatability

Only ASCII files can be freely transferred from tape to disk and vice versa. However, transfer of any file type from disk to disk is no problem.

The following file types are supported when saving the buffer to disk. They are menu selectable from within MIKEYTERM.

- BASIC program / ASCII format
- BASIC program / Compressed (binary) format
- Machine language program
- Data / ASCII
- Data / Binary

You may save the data in your buffer (or any portion of it) in ANY of the above formats. No checks are performed on the contents of the buffer regarding data type. This makes it possible to transmit any type of disk file to another user of MIKEYTERM as long as the sender loads it from disk and the receiver saves it on disk as the same file type that the sender transmitted.

Machine language programs will have their start and execute addresses preserved. Compressed BASIC programs will function normally.

This also makes it possible to save your buffer data as something that it is not. For example, you may save ASCII data files as machine language programs if you wish. MIKEYTERM will be able to read it, but BASIC may not.

NOTE: These features of MIKEYTERM are extremely flexible, and the user is cautioned to exercise due care in their use.

B U F F E R E N T R YMain Menu Option 7

Selecting this option will present you with a blank screen. Simply type in any desired data or messages that you wish to send, a screenful at a time. To edit, just use the arrow keys to move the blue, nondestructive cursor anywhere that you wish on the screen.

The orange blocks that you'll see when you hit <ENTER> indicate where you have "carriage return" characters on the screen. This is a convenience feature of MIKEYTERM, since it allows you to enter your text in lines of a certain length.

The Color Computer displays lines 32 characters long, so you may enter lines up to 64 characters long, for example, by simply entering the data until two screen lines are almost full on your screen. Pressing <ENTER> at this point will terminate the line with a carriage return, and ensure that the length of the line doesn't exceed 64 characters. Similarly, 80-character lines can be entered by pressing <ENTER> after two and one-half lines or less have been entered.

Some editors that are used on BBS's or CompuServe (in particular) will not allow lines longer than a certain preset limit, say 64 or 80 characters. MIKEYTERM, by displaying the carriage return characters on the screen as orange blocks, allows you to avoid the frustration of having to edit the contents of the buffer in order to deal with this problem.

To put the screen in the buffer, just press <BREAK>. Your screen data will be appended to any existing data in the buffer, and then you will be returned to the Main Menu.

NOTE: Once the screen data has been moved to the buffer, it CANNOT be edited further by MIKEYTERM. It is advisable to edit the text carefully BEFORE pressing <BREAK>.

If you desire, you may enter more data into the buffer by re-entering BUFFER ENTRY mode. The DISPLAY mode may be used to view or print the buffer contents or portion thereof.

If you wish to abort and return to the Main Menu without moving any screen data to the buffer, then use <SHIFT>+<CLEAR>.

C H A N G E P A R A M E T E R S

Main Menu Option 8

This menu option will allow you to view or change some of the internal parameters used by MIKEYTERM. Use the up and down arrow keys to position the "->" marker on the line that contains the parameter to be changed. Use the <ENTER> key to toggle the selected option through its allowable parameters. When the parameter reads as desired, nothing further is required. The options are set as they are displayed.

The baud rate for the printer may be set from this menu also. Instead of entering a phone number, type an "*" followed by the hexadecimal value that you would normally POKE into locations &H95 & &H96 (149 and 150 in decimal). Leading zeroes are not required but you may use them if you choose. If more than 4 hexadecimal characters are entered, only the last 4 are used. To use MIKEYTERM with a 1200 baud printer, for example, you would enter "*0029" or just "*29". (Don't use the quotes, of course.) Naturally, the printer and the modem may not be used simultaneously, due to current hardware and software limitations of the Color Computer.

The <spacebar> will return you to Communications, while the <BREAK> key will return you to the Main Menu.

Miscellaneous Notes:

When 8-bit word length is selected, parity is automatically set to "NONE". This is a requirement and may not be modified.

When half duplex is selected, "Linefeed on carriage return" is automatically set to "YES". This is the usual case for successful operation by your Color Computer but may be changed if desired.

EXITMain Menu Option *

Typing an "*" (asterisk) at the Main Menu will produce the prompt: " ARE YOU SURE ? (Y)

Any reply other than a 'Y' will return you to the Main Menu. A 'Y' will reset all disk drive heads to track zero (if a disk system is in use) and then initialize BASIC.

Going Online F-A-S-T

Since MIKEYTERM is supplied pre-configured for successful operation with most BBS's and information services, there really isn't a reason to avoid going online NOW! It's EASY!

First, just type in LOADM "<filename>": EXEC. The <filename> is the name you've given to your customized version of MIKEYTERM if you've run the "CONFIG" program, or use "MTERM" if you're running from a BACKUP copy of the distribution disk.

After the program is loaded into your computer, you'll see MIKEYTERM's distinctive title screen displayed. At this point, you'll probably just want to push the "1" to enter communications mode, unless you need to alter some of the default settings. Don't worry about pressing the wrong keys. If you happen to make a mistake, the <BREAK> key will exit all modes except Communications, where you'll have to use either control-5 or -7. If you press any key other than those between 1-8 or the <*> key, you'll receive the "*-INVALID OPTION-*" message from MIKEYTERM. In any case, you haven't harmed anything.

Next, dial your favorite BBS or information service, (use the directions supplied by that service) and await the high-pitched tone from the distant modem. When you hear it, just put your modem into the "ORIGINATE" position, (see your modem instructions for information if you need it) and you're ONLINE with the host!

At this point, you'll need to transmit either a control-C or an <ENTER> to get the ball rolling. After that, you've successfully entered the fascinating world of TELECOMPUTING!

Have FUN!!

Q U I C K S U M M A R Y

I. COMMUNICATION Mode:

A. Special Characters

To Send	Press these keys
Control characters:	<down-arrow> + control key
Space:	<Spacebar> or <Right-arrow>
Horizontal tab:	<control> + <right-arrow>
[<CLEAR>
]	<SHIFT> + <right-arrow>
Escape	<control> + <CLEAR>
Rubout	<control> + <=>

B. Control Key Designations:

- 1 Open/close the buffer
- 2 Turn word-wrap on or off
- 3 XMODEM transmit from buffer
- 4 XMODEM receive into the buffer
- 5 Exit Communication into Display mode
- 6 Send predefined text string
- 7 Exit Communication and go to the Main Menu
- 8 Send predefined text string
- 9 Transmit the buffer
- 0 Send predefined text string

II. DISPLAY Mode:

<T>op	Move to the top of the buffer
ottom	Move to the bottom of the buffer
<Down-arrow>	Move down one line
<Up-arrow>	Move up one line
<SHIFT>+<down-arrow>	Move down a full screen
<SHIFT>+<up-arrow>	Move up 12 lines
<P>rint	Print the contents of the buffer
<BREAK>	Return to MIKEYTERM's Main Menu
<spacebar>	Return to Communication mode
<F>ind	Find a character string in the buffer
<N>ext	Find next occurrence of search string

What Is XMODEM?

The following description of XMODEM protocol is included as background information for the technically interested, and may be omitted by others.

XMODEM is an asynchronous, "receiver driven" file transfer protocol that is configured for 8 data bits, no parity, and one stop bit. The protocol imposes no restrictions on the contents of the data being transmitted. No checks are performed for control characters in the 128-byte data blocks. Absolutely any kind of data may be sent - binary, ASCII, "compressed" BASIC, etc. The protocol has not yet been formally adapted to a 7-bit environment for the transmission of ASCII-only (or unpacked hex) data.

MIKEYTERM uses a deviation from the XMODEM standard that enables the user to transmit ASCII files freely. This deviation, while not part of the original specification, is consistent with the recommendation of the author of the XMODEM protocol for purposes of adapting it to a 7-bit environment. The differences are listed here in brief:

1. A linefeed/carriage-return pair is inserted at the end of the data to be transmitted. This ensures that the last data line ends with a carriage-return.
2. A linefeed is inserted after each carriage-return if one does not already follow it in the buffer.
3. Blocks are padded with 127 blanks with a carriage return in the 128th position. This ensures that the last block, if shorter than 128 bytes, will be a terminated with a carriage-return.

The user is prompted as to whether the file is ASCII when XMODEM TRANSMIT is selected. (Control-3 while in Communications.)

XMODEM's popularity is due to the fact that it is an "Error Detecting, Error Correcting" protocol. Transmission errors due to phone line noise or other electrical disturbances will be detected and the block containing the error will be retried 10 times. After 10 consecutive errors or "timeouts" the transmission is aborted with a message indicating the reason.

MIKEYTERM transmits only from the buffer. By using a buffer, MIKEYTERM eliminates the time consuming disk access time that's found in some other terminal programs.

The way that file transfer proceeds is something like this: since the protocol is "receiver driven", the sender waits for the receiver to send him an initial NAK ("negative acknowledgement", which is a hexadecimal 15). Then a block is sent and the sender waits for the receiver to send either a

NAK or an ACK ("acknowledgement", which is a hexadecimal 6). If a NAK is received, the sender will then re-send the block. If it's an ACK, then the next block will be sent.

This process continues until the last block has been sent. The sender then transmits an EOT ("end of text", which is a hexadecimal 4) and waits for an ACK. When that is received, the file has been transmitted correctly.

A typical data block looks like this:

- 1-byte SOH ("Start of Header", or hex 1)
- 1-byte block number, starting with 1
- 1-byte complement of the block number (255-block #)
- 1-block of 128 bytes of data
- 1-byte checksum: The sum of the data bytes only,
discarding any carry