M68KTIE/D4

VERSAdos
Terminal Independent Editor (TIE)
User's Manual

MOTOROLA INC.

SYSTEMS

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TERMINAL INDEPENDENT EDITOR (TIE)

USER'S MANUAL

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CHAPTER 1

INTRODUCTION

1.1 GENERAL

The Terminal-Independent Editor, referred to as the TIE editor, is furnished with VERSAdos as an alternative CRT text editor for the convenience of users whose systems contain a terminal other than Motorola's EXORterm 155 or VME/10. If using the standard Motorola CRT text editor, **E**, non-EXORterm 155 or non-VME/10 users may edit only in the line mode. Using the TIE editor, full-screen editing is possible on virtually any ANSI terminal.

If the terminal you are using is listed in paragraph 1.2 below, the TIE editor may be invoked as discussed in paragraph 1.4.2.1 without any modification of files, and you may select your terminal from the TIE menu. For automatic selection of your terminal, refer to paragraphs 1.4 through 1.4.2.2.

If you are using a terminal that is not listed, simple modifications will be required to one or more of the files furnished prior to using TIE; these are described in paragraphs 1.4.2.3 and 1.4.2.4 of this manual.

1.2 FURNISHED SOFTWARE

Use of the TIE editor assumes the presence of VERSAdos, including the load modules E.LO (the standard VERSAdos text editor) and TIE.LO (the terminal-independent text editor), and the terminal catalog file TERMCAT.CN. Also associated with TIE are files for the terminals supported by TIE, which include the following:

TIE.LO	The executable load module
TERMCAT.CN	The terminal catalog file
ADM22.CN	Configuration file for an L/S ADM-22
AMPEX220.CN	Configuration file for an Ampex 220
EXOR155.CN	Configuration file for a Motorola EXORterm 155
HAZ1420.CN	Configuration file for a Hazeltine 1420
HP2392A.CN	Configuration file for a Hewlett Packard 2392A
QVT109.CN	Configuration file for a Qume QVT-109
QVT202.CN	Configuration file for a Qume QVT-202
TM220.CN	Configuration file for a Motorola TM220
TM3241.CN	Configuration file for a Motorola TM3241
TV950.CN	Configuration file for a TeleVideo 950
TV970.CN	Configuration file for a TeleVideo 970
VME10.CN	Configuration file for a Motorola VME/10
VT100.CN	Configuration file for a DEC VT100
WYSE50.CN	Configuration file for a Wyse 50
WYSE50P.CN	Configuration file for a Wyse 50 Plus
WYSE75.CN	Configuration file for a Wyse 75

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1.3 HARDWARE REQUIRED

The TIE editor can be used on any system capable of running VERSAdos, if that system contains a CRT/keyboard ANSI terminal.

1.4 MODIFYING TIE FILES

Some of the furnished files may require modification in order to use the TIE editor.

a. As furnished, VERSAdos is **SYSGEN**ed for an EXORterm 155 or VME/10. If a new **SYSGEN** is performed, the operating system can be reconfigured for any other type of terminal to be used. Otherwise, the VERSAdos utility **CONFIG** can be used to specify the type of terminal; **CONFIG** can be put into the boot-time chainfile, O.PRIV.UPSYSTEM.CF, so that the reconfiguration will be done automatically when the system is booted. Refer to paragraph 1.4.1.

b. The furnished TERMCAT.CN file may require modification before use. Reasons for modification may include:

   . Assigning index numbers of furnished configuration file(s) to device names listed.

   . Adding new configuration filename(s) and assigning them to device name(s) listed. If this is done, the new configuration file(s) must also be created.

   . Adding additional terminal IDs.

   Paragraphs 1.4.2 through 1.4.2.4 describe the contents of TERMCAT.CN file, and give examples that can be followed to make the modifications. Before any file is modified, the actual furnished file should be examined and its contents known.

c. "Configuration" files are furnished for each of the terminals listed in the furnished TERMCAT.CN file. If a new terminal is added to TERMCAT.CN, a new configuration file must be created for it. This is most easily done by copying an existing configuration file and modifying it. An example is given in paragraph 1.4.3.

1.4.1 O.PRIV.UPSYSTEM.CF

This chainfile is automatically executed when VERSAdos is booted. As furnished, it contains instructions for setting the system security. For users who do not have EXORterm 155 or VME/10 terminals, an additional chainfile, O.PRIV.UPSYS12.CF, is furnished which can be substituted for O.PRIV.UPSYSTEM; it calls **CONFIG** and reconfigures the operating system automatically upon booting the system.

To use this file, perform the following steps.

a. Log onto the system as user 0.

b. Rename 0.PRIV.UPSYSTEM.CF:

```
=RENAME 0.PRIV.UPSYSTEM.CF 0.OLD.UPSYSTEM.CF
=
```

c. Rename 0.PRIV.UPSYS12.CF:

```
=RENAME 0.PRIV.UPSYS12.CF 0.PRIV.UPSYSTEM.CF
=
```

d. Log off, reboot the system, and log back on as user 0; the new version of 0.PRIV. UPSYSTEM.CF will be executed.

1.4.2 TERMCAT.CN

The terminal catalog file, TERMCAT.CN, sets the logical connection between the terminal device name (such as CN00) and the terminal type (such as TeleVideo 970). The catalog file contains the following information, used by the TIE editor to access the appropriate terminal configuration files:

Number of terminal device names
List of terminal device names and their TIE terminal type identifiers
Index of terminal configuration filenames and their TIE terminal type identifiers

The number of terminal device names must be the first line in the file, and must be a decimal integer. It may be any number from 0 to 99, and should exactly match the number of terminal device names listed in the file. A value of 0 indicates that there are no terminal device names listed. (If this number is 0 and no terminal device names are listed, when the TIE editor is called it will prompt the user for the necessary information.)

The list of terminal device names contains an entry for each serial port. Each entry must begin with a four-digit device name (e.g., CN00), followed by a blank and the number of the configuration filename in the index. The number of configuration filenames may be any number from 1 to 99. Any characters to the right of the index number are treated as comments.

The index of configuration filenames consists of complete VERSAdos file descriptors, followed by a "user-friendly" terminal description between a pair of braces. All characters between the braces will be used as a line in a menu of valid TIE terminals, which will be displayed if the terminal being used does not have its ID in the list of terminal IDs. Defaults for the configuration file descriptors are as follows:

Volume ID	The default system volume
User number	0
Catalog	& (blank)
Extension	CN

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In the following examples, the file contents represent a typical TERMCAT.CN file. The one on your media may differ slightly.

1.4.2.1 Using TERMCAT.CN Without Modifications. Entering TIE as furnished produces a menu similar to the following:

```
=TIE TEST.SA
TIE (Terminal Independent Editor) Rev. x.xx
Copyright 1985 Hughes Aircraft Company
Copyright 1985, 1986, 1987 Motorola Inc.
All rights reserved.
port = CNxx  index = x

 1 = L/S ADM-22
 2 = Ampex 220
 3 = EXORterm 155
 4 = Hazeltine 1420
 5 = H.P. 2392A
 6 = Qume QVT-109
 7 = Qume QVT-202
 8 = Motorola TM220
 9 = Motorola TM3241
10 = TeleVideo 950
11 = TeleVideo 910
12 = VME/10
13 = DEC VT100
14 = Wyse 50
15 = Wyse 50 Plus
16 = Wyse 75
 Q = QUIT
                                    (TERMCAT.CN file is not set up
Which terminal are you using?        for automatic selection.)
```

If you are using one of the terminals listed in the menu, type its number. The file you have opened for edit will be displayed on the screen and editing may begin.

If your terminal is not listed in the TIE menu, this indicates that no configuration file exists for it. Enter **Q** to exit TIE, and refer to the following paragraphs.

1.4.2.2 Selecting a Terminal for Which a Configuration File Is Furnished. If your terminal is listed in the terminal selection menu, and you wish to skip the display of the menu and have your terminal selected automatically, you can make the following modifications to the TERMCAT.CN.

As supplied, the contents of the TERMCAT.CN file is similar to this (users should examine the file before making modifications):

```
4                                   (System set for four terminals)
CN00 16  {Wyse 75}                      (Device CN00 set for index 16, Wyse 75)
CN01 1   {ADM-22}                       (Device CN01 set for index 1, ADM-22)
CN02 16  {Wyse 75}                      (Device CN02 set for index 16, Wyse 75)
CN03 16  {Wyse 75}                      (Device CN03 set for index 16, Wyse 75)
ADM22.CN        { L/S ADM-22     }          (Filename, index 1)
AMPEX220.CN     { Ampex 220      }          (Filename, index 2)
EXOR155.CN      { EXORterm 155   }          (Filename, index 3)
HAZ1420.CN      { Hazeltine 1420 }          (Filename, index 4)
HP2392A.CN      { H.P. 2392A     }          (Filename, index 5)
QVT109.CN       { Qume QVT-109   }          (Filename, index 6)
QVT202.CN       { Qume QVT-202   }          (Filename, index 7)
TM220.CN        { Motorola TM220 }          (Filename, index 8)
TM3241.CN       { Motorola TM3241}          (Filename, index 9)
TV950.CN        { TeleVideo 950  }          (Filename, index 10)
TV970.CN        { TeleVideo 970  }          (Filename, index 11)
VME10.CN        { VME/10         }          (Filename, index 12)
VT100.CN        { DEC VT100      }          (Filename, index 13)
WYSE50.CN       { Wyse 50        }          (Filename, index 14)
WYSE50P.CN      { Wyse 50 Plus   }          (Filename, index 15)
WYSE75.CN       { Wyse 75        }          (Filename, index 16)
```

Note that the file indicates that four terminals are in the system: CN00, CN01, CN02, and CN03, and that the four terminals available are three Wyse 75s (the 16th terminal in the index of filenames) and one ADM-22 (the first terminal in the index of filenames). If this configuration is correct, no modifications need be made to this part of the file. (Note also that unused devices need not be deleted from this file.)

If a different terminal whose configuration file is indexed in this file is to be designated as one of the four devices, its index number must be substituted for the index number after the appropriate device name. For example, if a Wyse 50 is to be used on terminal CN02, the line reading "CN02 16" must be changed to "CN02 14". ("{Wyse 75}" should also be changed to "{Wyse 50}", although it is treated as a comment and ignored by TIE.)

The following is an example of using the **E** editor to make the above change.

a. Log onto the system as user 0.

b. Make the entries shown in boldface type below, ending each entry with a carriage return:

```
=E TERMCAT.CN;L                     (Edit the file in line mode)
VERSAdos EDITOR RELEASE x.xx
Copyright 198x by Motorola Inc.
E>L                                 (List the file)
4
CN00 16  {Wyse 75}
CN01 1   {ADM-22}
CN02 16  {Wyse 75}
CN03 16  {Wyse 75}
```

1

```
ADM22.CN     { L/S ADM-22      }
AMPEX220.CN  { Ampex 220       }
EXOR155.CN   { EXORterm 155    }
HAZ1420.CN   { Hazeltine 1420  }
HP2392A.CN   { H.P. 2392A      }
QVT109.CN    { Qume QVT-109    }
QVT202.CN    { Qume QVT-202    }
TM220.CN     { Motorola TM220  }
TM3241.CN    { Motorola TM3241 }
TV950.CN     { TeleVideo 950   }
TV970.CN     { TeleVideo 970   }
VME10.CN     { VME/10          }
VT100.CN     { DEC VT100       }
WYSE50.CN    { Wyse 50         }
WYSE50P.CN   { Wyse 50 Plus    }
WYSE75.CN    { Wyse 75         }
E>F /CN02 16/                        (Find CN02 16)
CN02 16 {Wyse 75}
E>C /CN02 16  {Wyse 75}/CN02 14  {Wyse 50} (Change index number from 16
                                            to 14, and Wyse 75 to Wyse 50)
CN02 14  {Wyse 50}
E>L
4
CN00 16  {Wyse 75}
CN01 1   {ADM-22}
CN02 14  {Wyse 50}
CN03 16  {Wyse 75}
ADM22.CN     { L/S ADM-22      }
AMPEX220.CN  { Ampex 220       }
EXOR155.CN   { EXORterm 155    }
HAZ1420.CN   { Hazeltine 1420  }
HP2392A.CN   { H.P. 2392A      }
QVT109.CN    { Qume QVT-109    }
QVT202.CN    { Qume QVT-202    }
TM220.CN     { Motorola TM220  }
TM3241.CN    { Motorola TM3241 }
TV950.CN     { TeleVideo 950   }
TV970.CN     { TeleVideo 970   }
VME10.CN     { VME/10          }
VT100.CN     { DEC VT100       }
WYSE50.CN    { Wyse 50         }
WYSE50P.CN   { Wyse 50 Plus    }
WYSE75.CN    { Wyse 75         }
E>Q
EDIT DONE
=
```

1.4.2.3 Selecting a Terminal for Which No Configuration File Is Furnished. If a terminal not listed in TERMCAT.CN is to be used, TERMCAT.CN must be modified to add a new configuration filename to the index of terminal configuration filenames, along with a "user-friendly" description, and to change the index number after the appropriate device name. The new configuration file must also be created. For example, if a TeleVideo 910 is to be used as CN00, a simple way to insert the new configuration filename is to alter one of the others, and later modify the configuration file itself (refer to paragraph 1.4.3).

The following is an example of using the **E** editor to make this filename change and assign the file's index number to CN00.

a. Log onto the system as user 0.

b. Make the entries shown in boldface type below, ending each entry with a carriage return:

```
=E TERMCAT.CN;L
VERSAdos EDITOR RELEASE x.xx
Copyright 198x by Motorola Inc.
E>L                                  (List the file)
4
CN00 16  {Wyse 75}
CN01 1   {ADM-22}
CN02 14  {Wyse 50}
CN03 16  {Wyse 75}
ADM22.CN     { L/S ADM-22     }
AMPEX220.CN  { Ampex 220      }
EXOR155.CN   { EXORterm 155   }
HAZ1420.CN   { Hazeltine 1420 }
HP2392A.CN   { H.P. 2392A     }
QVT109.CN    { Qume QVT-109   }
QVT202.CN    { Qume QVT-202   }
TM220.CN     { Motorola TM220 }
TM3241.CN    { Motorola TM3241}
TV950.CN     { TeleVideo 950  }
TV970.CN     { TeleVideo 970  }
VME10.CN     { VME/10         }
VT100.CN     { DEC VT100      }
WYSE50.CN    { Wyse 50        }
WYSE50P.CN   { Wyse 50 Plus   }
WYSE75.CN    { Wyse 75        }
E>f /CN00 16/                        (Find CN00 16)
CN00 16  {Wyse 75}
E>c /16  {Wyse 75}/11  {TeleVideo 910}/      (Change index number and the
                                              comment)
CN00 11  {TeleVideo 910}
E>f /TV970/                          (Find TV970)
TV970.CN     { TeleVideo 970  }
E>C ;A/7/1/                          (Change all 7s in line to 1s)
TV910.CN     { TeleVideo 910  }
E>L                                  (List the file)
4
```

1

```
CN00 11  {TeleVideo 910}
CN01 1   {ADM-22}
CN02 14  {Wyse 50}
CN03 16  {Wyse 75}
ADM22.CN     { L/S ADM-22      }
AMPEX220.CN  { Ampex 220       }
EXOR155.CN   { EXORterm 155    }
HAZ1420.CN   { Hazeltine 1420  }
HP2392A.CN   { H.P. 2392A      }
QVT109.CN    { Qume QVT-109    }
QVT202.CN    { Qume QVT-202    }
TM220.CN     { Motorola TM220  }
TM3241.CN    { Motorola TM3241 }
TV950.CN     { TeleVideo 950   }
TV910.CN     { TeleVideo 910   }
VME10.CN     { VME/10          }
VT100.CN     { DEC VT100       }
WYSE50.CN    { Wyse 50         }
WYSE50P.CN   { Wyse 50 Plus    }
WYSE75.CN    { Wyse 75         }
E>Q
EDIT DONE
=
```

A configuration file for the TeleVideo 910 must now be created and named TV910.CN (refer to paragraph 1.4.3).

Note that any unused entries (terminal IDs or configuration filenames) need not be deleted from the terminal catalog file.

1.4.2.4 Adding Additional Terminal IDs. Additional terminals may be added, if the total number does not exceed the number of terminals configured in the operating system's SYSGEN.

The following is an example of adding a fifth terminal ID.

a. Log onto the system as user 0.

b. Make the entries shown in boldface type below, ending each entry with a carriage return:

```
=E TERMCAT.CN;L
VERSAdos EDITOR RELEASE x.xx
Copyright 198x by Motorola Inc.
E>L                                    (List the file)
4
CN00 11  {TeleVideo 910}
CN01 1   {ADM-22}
CN02 14  {Wyse 50}
CN03 16  {Wyse 75}
ADM22.CN     { L/S ADM-22      }
AMPEX220.CN  { Ampex 220       }
```

```
EXOR155.CN  { EXORterm 155   }
HAZ1420.CN  { Hazeltine 1420 }
HP2392A.CN  { H.P. 2392A     }
QVT109.CN   { Qume QVT-109   }
QVT202.CN   { Qume QVT-202   }
TM220.CN    { Motorola TM220 }
TM3241.CN   { Motorola TM3241}
TV950.CN    { TeleVideo 950  }
TV910.CN    { TeleVideo 910  }
VME10.CN    { VME/10         }
VT100.CN    { DEC VT100      }
WYSE50.CN   { Wyse 50        }
WYSE50P.CN  { Wyse 50 Plus   }
WYSE75.CN   { Wyse 75        }
E>C /4/5/                          (Change number of terminals to 5)
5
E>F /ADM22.CN/                     (Find line after CN03)
ADM22.CN    { L/S ADM-22     }
E>I                                (Enter "insert" mode)
>CN04 16  {Wyse 75}                (Add fifth terminal ID)
>(CR)                              (Return to "command" mode)
E>L                                (List the file)
CN00 11  {TeleVideo 910}
CN01 1   {ADM-22}
CN02 14  {Wyse 50}
CN03 16  {Wyse 75}
CN04 16  {Wyse 75}
ADM22.CN    { L/S ADM-22     }
AMPEX220.CN { Ampex 220      }
EXOR155.CN  { EXORterm 155   }
HAZ1420.CN  { Hazeltine 1420 }
HP2392A.CN  { H.P. 2392A     }
QVT109.CN   { Qume QVT-109   }
QVT202.CN   { Qume QVT-202   }
TM220.CN    { Motorola TM220 }
TM3241.CN   { Motorola TM3241}
TV950.CN    { TeleVideo 950  }
TV910.CN    { TeleVideo 910  }
VME10.CN    { VME/10         }
VT100.CN    { DEC VT100      }
WYSE50.CN   { Wyse 50        }
WYSE50P.CN  { Wyse 50 Plus   }
WYSE75.CN   { Wyse 75        }
E>Q
EDIT DONE
=
```

1

1.4.3 Configuration Files

Each terminal configuration file listed in the terminal catalog file contains all relevant information (to the TIE editor) about a specific terminal. If the terminal being used is not one for which a configuration file is currently in the furnished TERMCAT.CN file, a new configuration file must be created, using the **E** editor in line mode. The simplest way is to copy one of the furnished configuration files and make modifications to it. A complete description of all data required in a terminal configuration file is given in Chapter 4, and listings of several of the currently furnished terminal configuration files are provided in Appendix B. It is recommended that before modifying a terminal configuration file, the user should be familiar with the contents of Chapter 4, the user manual for the terminal being configured, and the listing of the file being copied and edited. It is also advisable to map out the planned changes before beginning the edit.

The following is an example of creating a configuration file.

a. Log onto the system as user 0.

b. Use the **E** editor in line mode to copy and edit the file. Call the **E** editor:

   =E TV970.CN,TV910.CN;L

   This copies TV970.CN into a file named TV910.CN and opens it for editing, in the line mode. The editor prompt "E>" will appear.

c. To view each line and change when necessary, the easiest way is to use the editor commands **DOWN** and **CHANGE**. Each **DOWN** (or **D**) command points to the next record of the file and prints it on the screen. Any changes can be made to that line with **CHANGE** (or **C**).

d. When the file has been edited, type **Q** to return to VERSAdos.

1.5 CONVENTIONS USED IN THIS MANUAL

The following conventions are used in the command syntax, examples, and text in this manual:

boldface strings	A boldface string is a literal such as a command or a program name, and is to be typed just as it appears.
italic strings	An italic string is a "syntactic variable" and is to be replaced by one of a class of items it represents.
|	A vertical bar separating two or more items indicates that a choice is to be made; only one of the items separated by this symbol should be selected.
[ ]	Square brackets enclose an item that is optional. The item may appear zero or one time.

[ ] . . .	Square brackets followed by an ellipsis (three dots) enclose an item that is optional/repetitive. The item may appear zero or more times.
[ ]	Boldface brackets are required characters.

Operator inputs are to be followed by a carriage return. The carriage return is shown, as **(CR)**, only if it is the only input required.

1.6 RELATED DOCUMENTATION

The following publications may provide additional helpful information. If not shipped with this product, they may be obtained from Motorola's Literature Distribution Center, 616 West 24th Street, Tempe, AZ 85282; telephone (602) 994-6561.

DOCUMENT TITLE	MOTOROLA PUBLICATION NUMBER
System Generation Facility User's Manual	M68KSYSGEN
M68000 Family VERSAdos System Facilities Reference Manual	M68KVSF
VERSAdos Data Management Services and Program Loader User's Manual	RMS68KIO
M68000 Family CRT Text Editor User's Manual	M68KEDIT

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CHAPTER 2

CALLING THE TIE EDITOR

The TIE editor is invoked from the VERSAdos command line, after the system prompt. The format of the command line is:

=**TIE** *fname1*[,*fname2*][;*options*]

where:

fname1 is a VERSAdos file descriptor, whose format is:

volume:*user number*.*catalog*.*filename*.*extension*

The default values for *volume*, *user number*, and *catalog* are equal to those set at logon time or with the **USE** command. The default value for *extension* is **SA**.

fname1 may be an existing file or a non-existing file. If the file does not exist, then it will be created and will consist of one blank record. In either case, the contents of the file are then made available for editing.

fname2 is a VERSAdos file descriptor which may be an existing file or a non-existing file. If a file by this name already exists, it may be overwritten or the TIE editor may be exited without overwriting the file.

If *fname2* is specified, *fname1* must be an existing file; *fname2* receives the output of the edit session and the contents of *fname1* are left unchanged. If *fname2* is not specified, the results of the edit session are output to *fname1*.

options may be any of the following:

B Creates a backup file (*fname1*.**BK**). (Backup is ignored if *fname2* is entered.)

I Converts a sequentially formatted file into an indexed sequential file (with duplicate keys).

K Allows the viewing of a file, but ignores any commands that update the contents of the file.

A Sets Assembler tab stops (columns 1, 11, 19, 37).

F Sets FORTRAN tab stops (columns 1, 7, 43).

P Sets Pascal tab stops (columns 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79).

NOTE

If no tab option (**A**, **F**, or **P**) is specified, the default tab stops are set at every 10 columns.

2

S Forces 80-column display if file edited would normally place it in 132-column display format (sequential files with extensions other than SA).

NOTE: Editing files with lines having more than 80 characters in 80-column display mode will result in truncation of the line to CRT width.

X Forces 132-column display if terminal has 132-column capability.

Y Automatically overwrites an existing backup file or existing *fname2* file.

EXAMPLES:

Example 1: Invoking the as-shipped version of TIE.

```
= TIE TEST
TIE (Terminal-Independent Editor) Rev. x.xx
Copyright 1985 Hughes Aircraft Company
Copyright 1985, 1986, 1987 Motorola Inc.
All rights reserved.
port = CNxx  index = xx

 1 = L/S ADM-22
 2 = Ampex 220
 3 = EXORterm 155
 4 = Hazeltine 1420
 5 = H.P. 2392A
 6 = Qume QVT-109
 7 = Qume QVT-202
 8 = Motorola TM220
 9 = Motorola TM3241
10 = TeleVideo 950
11 = TeleVideo 910
12 = VME/10
13 = DEC VT100
14 = Wyse 50
15 = Wyse 50 Plus
16 = Wyse 75
 Q = QUIT

Which terminal are you using ?
```

(TIE's menu is then presented; the list of terminals is derived from the comments found in the terminal ID list in TERMCAT.CN.)

(This example illustrates the use of TIE as shipped. The menu is displayed, presenting a list of terminals derived from TERMCAT.CN. The user has the choice of typing **Q** if the terminal in use is not on the list; otherwise, entering the associated number. If your terminal is not on this list, TERMCAT.CN must be modified appropriately and a configuration file must be created for your terminal as described in Chapter 1.

If you have entered the index number for your terminal, a menu of valid function keys is displayed, followed by a line containing the filename and line number denoting the line location of the cursor; finally the contents of the edit file are displayed on the remainder of the screen.)

(edit session)

QUIT
=

(Pressing the **QUIT** function key or typing **(CTRL) Q** quits the TIE editor and returns to VERSAdos.)

NOTE

The following examples assume that TERMCAT.CN has been modified as necessary and that terminal selection is made automatically, so that the selection menu is no longer displayed.

Example 2: Invoking TIE with assembler tabs and backup options.

=TIE 21..TESTFILE.SA;AB
TIE (Terminal Independent Editor) Rev. *x.xx*
Copyright 1985 Hughes Aircraft Company
Copyright 1985, 1986, 1987 Motorola Inc.
All rights reserved.
port = CNxx index = xx

(Read the file TESTFILE.SA, belonging to user 21 on the default *volume* and *catalog*, into memory. Output of the edit session will overwrite the contents of the file, but a backup file named 21..TESTFILE.BK will be saved on the default *volume* and *catalog* before editing begins. Tab stops will be set for the Assembler.)

Example 3: invoking TIE when output filename already exists.

=TIE TEST,TEST1

(Read file named TEST.SA, belonging to the logged-on user on the default *volume* and *catalog*. TEST.SA is copied into TEST1.SA for editing. TEST.SA is not modified.)

Output file exists, overwrite ? (Y/N)

(The correct response must be provided. Entering **N** returns control to VERSAdos. Entering **Y** enters the editing session.)

2

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CHAPTER 3

USING THE TIE EDITOR

3.1 GENERAL

In this chapter, the following terms are used:

Edit window	The portion of the screen where the edit file text is displayed.
First line	The top line of the edit window.
Last line	The last line of the edit window.
First column	The first column of the edit window.
Last column	The last column of the edit window (usually 80 or 132.)
Record	Synonymous with "line".

When the TIE editor is invoked, the edit window displays the contents of the edit file (if a new file is being created, this is a blank record). Directly above the edit window is the reverse video "status line", which contains the name of the edit file and the line number of the cursor's current position.

The top three lines of the screen are reserved for messages, prompts, and a menu of the currently valid function keys. There will be 4 to 16 function keys, depending upon the capability of the terminal keyboard and the parameters defined in the terminal's configuration file.

Editing may be performed directly on the screen by using the cursor positioning keys and **labeled** keys (Table 3-1) which are standard on most keyboards, and **function** keys (Table 3-2). Certain editing functions require arguments, and are performed by pressing **function** keys (Table 3-3) -- whereupon the TIE editor replaces the command menu with the prompt, and the arguments may be typed in.

TIE supports all the function keys shown in Tables 3-2 and 3-3. On terminals that do not have all the function keys and/or labeled keys which the TIE editor supports, the functionality can usually be performed by using the control key (**CTRL**) in combination with certain other characters (Table 3-4). This functionality must have been defined in the terminal's configuration file.

3.2 DISPLAY EDITING

The cursor can be moved anywhere within the edit window by pressing the up arrow, down arrow, forward arrow, backward arrow, forward tab, backward tab, and home keys. Arrow and tab keys have "wraparound" capability when top, bottom, right, or left boundaries are reached. Text may be typed in directly

at the cursor position. Text may be changed by placing the cursor in the desired position and typing over the existing text, or by pressing certain labeled keys to add or delete a portion of text, such as Insert Character, Delete Character, Insert Line, and Delete Line. (Refer to Table 3-1.)

TABLE 3-1. Standard Labeled Keys

KEY LABEL	SCREEN ACTION
HOME	Sends the cursor to top left corner of the edit window.
CHAR INSERT	All characters on the current line, from the cursor to the end of line, are moved to the right one column (the character in the last column is lost if it is pushed off the screen). The cursor is then set at the inserted space.
CHAR DELETE or **DEL**	All characters on the current line, from the cursor on, are moved to the left one column (the last column receives a blank character). The cursor does not change position.
LINE INSERT	All characters on the current line, from the cursor to the end of the line, are inserted as a new line following the current line. The cursor maintains its position.
LINE DELETE	If the cursor is in column one, the entire line is deleted and all lines below move up one line. Otherwise, if there are non-blank characters from the cursor to end-of-line, they are erased; if all characters to the right of the cursor are blank, then the next line is appended at the cursor position and all other lines below move up one line.
<-- or **BACK SPACE**	The cursor moves to the left one column position. If at the first column, the cursor wraps around to the last column.
-->	The cursor moves to the right one column position. If at the last column, the cursor wraps around to the first column.
^ |	The cursor moves up one line. If in the top line, the cursor wraps around to the bottom line.
| v	The cursor moves down one line. If in the bottom line, the cursor wraps around to the top line.
BREAK	Exits the current operation and returns to the edit window.
SETUP	Gives access to screen format and control. (Offline terminal function, not TIE function.)
TAB	Moves the cursor right to the next tab stop.

Both lines and pages of text can be scrolled on the screen by using the function keys **^LINE**, **vLINE**, **^PAGE**, and **vPAGE**. Tab stops can be set and erased by the **SETTAB** and **CLRTAB** function keys, and the terminal column width may be modified by the **COLUMN** function key. The TIE editor is exited by pressing the **QUIT** function key, returning control to VERSAdos. (Refer to Table 3-2.)

TABLE 3-2. Command Function Keys (No Arguments)

KEY	COMMAND	SCREEN ACTION
F1	**^LINE**	Scrolls forward one line.
F2	**vLINE**	Scrolls backward one line.
F3	**^PAGE**	Scrolls forward one page.
F4	**vPAGE**	Scrolls backward one page.
F7	**COLUMN**	Changes the terminal's column width. This command is shown only if the terminal supports more than one column width.
F13	**SETTAB**	Sets a tab stop in the column where the cursor is positioned.
F14	**CLRTAB**	Deletes a tab stop in the column where the cursor is positioned.
F15	**QUIT**	Exits the TIE editor and returns to VERSAdos.
F16	**MORE**	Displays the next set of commands defined for the function keys. **MORE** may be two or more levels deep, depending on the number of function keys defined for the terminal.

NOTE

The function keys used for certain operations may be different depending upon the number of function keys available on a particular terminal.

3.3 COMMAND EDITING

"Command editing" refers to the use of those function keys which require arguments. (Refer to Table 3-3.) When used, the TIE editor presents its prompt (command:) and waits for user entry of the arguments. An entry must be followed by a carriage return, which sends the command to the TIE editor and returns the user to the screen editing mode. Use of these commands is fully described in the following paragraphs. Commands may be terminated by the **BREAK** key, which terminates the command and returns the user to the screen editing mode.

Several of the TIE editor commands allow the specification of a vertical range. Default values are assumed for the **FIND**, **CHANGE**, **MERGE**, **PRINT**, and **SAVE** commands when a range is not specified. The default ranges are initialized to the entire file, but they may be changed by the **RANGE** command. The default vertical range for **DELETE** is the current record (the line where the cursor is positioned). There are no default values for the **DUP** and **MOVE** commands.

The vertical range format is:

[*startrec*|**dc*[*endrec*|*]]

where:

startrec is the record number at which to begin.

* is the current record (not valid for **DUP** or **MOVE**).

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*). Once a delimiting character is chosen, it must be used throughout the command.

endrec is the record number at which to stop (the default value is end-of-file unless changed by the **RANGE** command).

EXAMPLES:

1/99 Vertical range is from record number 1 to record number 99.

3/* Vertical range is from record number 3 to the current record.

***/24** Vertical range is from the current record to record number 24.

44/ Vertical range is from record number 44 to end-of-file.

***/** Vertical range is from the current record to end-of-file.

NOTE

The vertical range does not start with a delimiter.

TABLE 3-3. Command Function Keys (Arguments Required)

KEY	COMMAND	SCREEN ACTION
F5	**FIND**	Finds a string.
	or	
F5	**MERGE**	Removes record(s) from another file and inserts them above the cursor position.
F6	**SAVE**	Save the specified range of records into the specified output file.
	or	
F6	**CHANGE**	Changes strings within records.
F7	**RANGE**	Establishes default values for the vertical ranges of the **CHANGE**, **FIND**, **MERGE**, **PRINT**, and **SAVE** commands.
F8	**JUMP**	Jumps to a line number.
	or	
F8	**DTABS**	Sets up default tabs.
F9	**DUP**	Duplicates record(s) from another location in the file and inserts them above the cursor position.
F10	**MOVE**	Inserts record(s) above the cursor position and deletes them from their original location in the file.
F11	**PRINT**	Write the specified range of records to the specified print device.
F12	**DELETE**	Deletes records from the edit file.

NOTE

The function keys used for certain operations may be different depending upon the number of function keys available on a particular terminal.

3.3.1 CHANGE

The **CHANGE** command will search an entire file or a portion of a file for a particular string, and change it to a user-specified string. The format of the command is:

CHANGE Change: [[*vert*]*dc string1 dc string2 dc*[*option*]

where:

CHANGE is a function key or control key sequence, as defined in the terminal's configuration file.

Change: is the command mode prompt.

vert is the vertical range of the records to be changed. Its format is described in paragraph 3.3. The default range is the entire file, unless changed by the **RANGE** command.

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*). The same delimiting character must be used for the entire command string.

string1 is the string of characters to be changed.

string2 is the string that is to replace *string1*.

option may be the following:

A ALL option; requests that all occurrences of *string1* in each record are to be changed to *string2*. Default is that only the first occurrence in each record is to be changed.

Y YES option; requests that execution proceed through the vertical range without prompting the user for a **Y** or **N** before each occurrence of the string. Default is that the user will be prompted with CHANGE? (Y/N) at each occurrence. The **Y** option is only valid when also specifying the **A** option.

When a **CHANGE** command is specified with no parameters, the **CHANGE** command last specified is executed, starting at the current line number. The user is prompted for permission to make the change before the command is executed.

EXAMPLES:

Change: **/8/EIGHT/** Change the first occurrence of "8" to "EIGHT". The vertical range is the entire file unless set with the **RANGE** command.

CHANGE

Change: **1/25/8/EIGHT/**	Within the vertical range of lines 1 through 25, inclusive, change the first occurrence of "8" to "EIGHT".
Change: **/8//YA**	Delete all occurrences of "8". Do not prompt for permission before making the change.

3.3.2 DELETE

The **DELETE** command removes one or more records from the edit file. The format of the command is:

DELETE Delete: [*vert*]

where:

DELETE is a function key or control key sequence, as defined in the terminal's configuration file.

Delete: is the command mode prompt.

vert is the vertical range of records to be deleted. Its format is described in paragraph 3.3. If no range is supplied, the current record only is deleted.

After the vertical range is entered, the current line becomes the record after the highest record in the vertical range. Then the screen is erased, the records are deleted, and the screen is redisplayed.

EXAMPLES:

Delete: **(CR)** Delete the current line.

Delete: **1/2** Delete lines 1 and 2.

Delete: ***/300** Delete the current line and all following lines up to and including line 300.

3.3.3 DTABS

The **DTABS** command will reset the current tab stops to one of the settings described below. The format for this command is:

DTABS Dtabs: *option*

where:

DTABS is a function key or a control character sequence, as defined in the terminal's configuration file.

Dtabs: is the command mode prompt.

option may be the following:

n A number between **1** and **132**; sets tab stops at every *n*th column.

A Sets tab stops for Assembly language source (columns 1, 11, 19, 37).

F Sets tab stops for FORTRAN source (columns 1, 7, 43).

P Sets tab stops for Pascal source (columns 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79).

Omitting *option* or entering an invalid number leaves the tabs unchanged. Any other invalid entry generates a syntax error.

EXAMPLES:

Dtabs: **5** Set tab stops every 5th column.

Dtabs: **F** Set FORTRAN tab stops as defined above.

3.3.4 DUP

The **DUP** command copies the specified range of records and inserts them above the cursor position. The format of the command is:

DUP Dup: *vert*

where:

DUP is a function key or control key sequence, as defined in the terminal's configuration file.

Dup: is the command mode prompt.

vert is the vertical range of records to be duplicated. Its format is described in paragraph 3.3, except that the asterisk (*) option is not valid because the vertical record range cannot include the current line. The range must be specified; there is no default value.

After the vertical range is entered, the records duplicated are inserted above the cursor, and the screen is redisplayed. When a **DUP** command is executed, the original records in the specified range are not deleted from the edit file as they are with the **MOVE** command.

EXAMPLES:

Dup: **1** Copy line 1 into the location above the cursor.

Dup: **15/32** Copy lines 15 through 32 into the location above the cursor.

3.3.5 FIND

The **FIND** command searches an entire file or a portion of a file for a specified character string. The format of the command is:

FIND Find: [[*vert*]*dc string dc*[*option*]]

where:

FIND is a function key or a control character sequence, as defined in the terminal's configuration file.

Find: is the command mode prompt.

vert is the vertical range of the string to be found. Its format is described in paragraph 3.3. The default range is the entire file, unless changed by the **RANGE** command.

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*).

string is the specified string of characters for which to search.

option may be the following:

A All option; requests that all occurrences of *string* in each record be found. The default is that only the first occurrence of *string* in each record is found.

When a **FIND** command is executed with no parameters, it implies a re-execution of the last **FIND** command, starting at the current line number. If the last **FIND** command included the **A** option, then execution resumes at the cursor position plus one column.

EXAMPLES:

Find: **/EIGHT/** Find the first occurrence of "EIGHT". The vertical range is whatever the default is at the time.

Find: **1/25/EIGHT/** Find the first occurrence of "EIGHT" within the first 25 lines.

3.3.6 JUMP

The **JUMP** command searches the file for the specified record number. The format of the command is:

JUMP Jump: [+|-] *recnumber*|*

where:

JUMP is a function key or a control character sequence, as defined in the terminal's configuration file.

Jump: is the command mode prompt.

+ or - sets the command to a relative **JUMP** command, locating the record a distance of "+" or "-" *recnumber* from the current record.

recnumber is the line number of the record to be located.

* scrolls the current line to the center of the screen; the cursor follows.

The record to which the **JUMP** command takes the cursor will be centered in the edit window. If *recnumber* is greater than the number of records in the file, then the last record in the file becomes the current line. If *recnumber* is zero or less, the first record in the file becomes the current line.

EXAMPLES:

Jump: -3 Move the cursor 3 lines above the current cursor location.

Jump: 100 Move the cursor to line 100.

Jump: * Move the cursor to the center of the screen.

3.3.7 MERGE

The **MERGE** command copies the specified file or the specified range of records from the specified file and inserts them before the cursor in the edit file. The format of the command is:

MERGE Merge: [*vert*]*dc filename dc*

where:

MERGE is a function key or a control character sequence, as defined in the terminal's configuration file.

Merge: is the command mode prompt.

vert is the vertical range of records to be copied. Its format is described in paragraph 3.3. The default range is the entire file, unless changed by the **RANGE** command.

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*).

filename is the file descriptor of the file from which the records are being merged.

After the range and filename are entered, the file descriptor of the file from which the records are being copied is displayed on the line below the Merge: prompt. Then the screen is cleared, the lines to be merged are inserted before the cursor, and the screen is redisplayed.

EXAMPLES:
(Note the variation in delimiters in these examples.)

Merge: **/TEST.SA/** Merge the contents of the file TEST.SA, located in the default user number and catalog, into the edit file above the current line. The entire file is merged if the vertical range has not been changed with the **RANGE** command.

Merge: **1/25/TEST.SA/** Merge the first 25 lines of the file TEST.SA into the edit file above the current line.

Merge: **!SYS2:313.TEST.NEW.SA!**
Merge the contents of SYS2:313.TEST.NEW.SA into the edit file above the current line. The entire file is merged, or a range of lines if set by the **RANGE** command.

3.3.8 MOVE

The **MOVE** command will insert the specified range of records above the cursor position, then delete the records from their original location. The format of the command is:

MOVE Move: *vert*

where:

MOVE is a function key or a control character sequence, as defined in the terminal's configuration file.

Move: is the command mode prompt.

vert is the vertical range of records to be moved. Its format is described in paragraph 3.3, except that the asterisk (*) option is not valid because the vertical record range cannot include the current line. The vertical range must be explicitly specified; there is no default value for the range.

After the vertical range is entered, the screen is cleared, the records to be moved are inserted before the cursor and deleted from their original position, and the screen is redisplayed.

EXAMPLES:

Move: **1** Delete line 1 from the edit file, then insert it above the current line.

Move: **4/50** Delete lines 4 through 50, then insert them above the current line.

3.3.9 PRINT

The **PRINT** command copies the specified range of records from the edit file to the printer specified on the command line. The format of the command is:

PRINT Print: [*vert*]*dc*[*device name*]*dc*

where:

PRINT is a function key or control character sequence, as defined in the terminal configuration file.

Print: is the command mode prompt.

vert is the vertical range of the records to be found. Its format is described in paragraph 3.3. The default range is the entire file, unless changed by the **RANGE** command.

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*). Delimiters cannot be mixed; only one can be used throughout the command string.

device name is the device descriptor of the printer to which the records are being sent. The default is #PR.

After the range and printer name are entered, the system is checked for the printer specified. If the printer exists on the system but is not available for printing, the message "Printer not ready" is issued. If the printer specified is not known to the system, the message "Invalid/nonexistent printer device" is issued. On return from an error message, the user is returned to the **PRINT** command line.

Once returned, the user may edit the command line to request another printer device or exit the command by pressing the **BREAK** key.

EXAMPLES:
(Note the variation in delimiters in these examples.)

Print: **5/10/#PR/** Sends the records 5 through 10 to the printer PR.

Print: **|#PR1|** Sends the default range of records to the printer PR1.

Print: **!!** Sends the default range of records to the default printer PR.

3.3.10 RANGE

The **RANGE** command will change the vertical range of the **FIND**, **CHANGE**, **MERGE**, **PRINT**, and **SAVE** commands. The format of the command is:

RANGE Range: [*vert*]

where:

RANGE is a function key or control character sequence, as defined in the terminal's configuration file.

Range: is the command mode prompt.

vert is the new vertical range. Its format is described in paragraph 3.3. If not specified, default values currently in effect (entire file or any range previously established by the **RANGE** command) are maintained.

After **RANGE** is entered, the current record range is displayed before the **RANGE** command prompt is shown.

EXAMPLES:

Range: **2/50** Change the range to lines 2 through 50, inclusive.

Range: **1/100000** Change the range to the entire file. (This is the default setting upon entering TIE.)

3.3.11 SAVE

The **SAVE** command copies the specified range of records from the edit file to the file specified on the command line. The format of the command is:

SAVE Save: [*vert*] *dc filename dc*

where:

SAVE is a function key or control character sequence, as defined in the terminal's configuration file.

Save: is the command mode prompt.

vert is the vertical range of the records to be found. Its format is described in paragraph 3.3. The default range is the entire file, unless changed by the **RANGE** command.

dc is a delimiting character. It may be any character other than a blank, an alphanumeric, or an asterisk (*).

filename is the file descriptor of the file to which the records are being saved.

After the range and filename are entered, the file descriptor is displayed on the line below the command mode prompt. The directory specified is checked to see if the file requested exists. If the file does not exist, one is created and written to.

If the file does exist, the user is asked the following question:

File exists, overwrite? (Y/N):

If the answer is **Y** or **y**, the existing file is overwritten with all the previous contents deleted. If the answer is **N** or **n**, the user is returned to the **SAVE** command line. Once returned to the **SAVE** command line, the user may edit the command line to request another file or exit the command level by pressing the **BREAK** key.

EXAMPLES:

Save: **5/10/13..test.sa/** Copy the records 5 through 10, inclusive, to the file test.sa in the login default catalog under user number 13.

Save: **/test.sa/** Save all records within the vertical range currently in effect to the file TEST.SA in the login default user number and catalog. This may encompass the entire file.

3.4 CONTROL KEY EQUIVALENTS

Table 3-4 shows the default **CTRL** key equivalents supported by the TIE editor for function keys and standard labeled keys. Some terminals may use different control keys for some of these functions.

TABLE 3-4. Default Control Key Equivalents

CONTROL KEY	EQUIVALENT
CTRL E	F1 key
CTRL R	F2 key
CTRL T	F3 key
CTRL Y	F4 key
CTRL A	Character insert
CTRL]	Character delete
CTRL Z	Line insert
CTRL X	Line delete
CTRL K	Cursor up
CTRL J	Cursor down
CTRL L	Cursor right
CTRL H	Cursor left
CTRL B	Cursor home
CTRL I	Tab
CTRL \	Back tab
CTRL V	Cursor to start of line
CTRL G	Cursor up five lines
CTRL F	Cursor down five lines
CTRL ^	Dump internal I/O buffers to screen
CTRL C	BREAK-key
CTRL W	MORE command
CTRL M	RETURN key
CTRL U	^LINE command (next line)
CTRL D	vLINE command (previous line)
CTRL N	^PAGE command (next page)
CTRL P	vPAGE command (previous page)
CTRL Q	QUIT command
PF1	Character insert
PF2	Character delete
PF3	Line insert
PF4	Line delete

CHAPTER 4

TERMINAL CONFIGURATION FILE

4.1 INTRODUCTION

A configuration file contains all relevant information (to the TIE editor) about a specific terminal. For example, the TIE editor needs to know the CRT height, width, number of function keys, what codes are output by which keys, what capabilities the terminal has, what codes to send to the terminal to perform these capabilities, which keys to ignore, how the terminal should be initialized for the TIE editor, and how it should be set up after exiting the TIE editor. Refer to Appendix B for examples of configuration files.

The contents of a configuration file must be in the exact order that the TIE editor expects, and must obey the following format rules:

a. Any line that begins with a blank is ignored.

b. Any characters to the right of a "left curly bracket" ({) are ignored.

c. Each line of data must begin in column one.

d. Each data line must be represented by a string of ASCII hexadecimal character pairs and must end with 00 (e.g., "ESC ?" is represented by 1B 3F 00), unless it is specifically stated as being a line of decimal integer input.

e. Each line of data must be 80 bytes or less (where one ASCII hexadecimal pair = 1 byte).

f. The strings to set up the terminal and the reset the terminal are variable in length (up to 512 bytes), so multiple lines can be concatenated to make up a single string. Since each line that is being concatenated ends with 00, the last line of the string must end with 00 00.

g. The configuration file must be ordered in the following manner:

- General terminal information
- Cursor addressing information
- Function key outputs
- Labeled key outputs
- Terminal key outputs to ignore
- Control character table
- Strings sent to the terminal to perform various capabilities
- String to return/reset the terminal to normal operation after the TIE editor is exited
- String to program/set up the terminal for operation with the TIE editor

4.2 GENERAL TERMINAL INFORMATION

Each entry in this section is in decimal integer format and must be in the following order:

a. CRT height -- enter the number of lines this terminal has.

b. CRT width -- enter the number of columns in normal mode.

c. Increased column width -- enter the larger column width of two widths available. If the terminal does not have this capability, enter a 0.

d. Number of function keys -- enter the number of function keys; must be less than or equal to 16. The "function key outputs" section must contain the exact number of functions specified here.

e. Auto CR/LF -- enter a 1 if the terminal does a carriage return and a line feed upon displaying a character in the last column; otherwise, enter a 0.

f. Visible display attribute -- enter a 1 if this terminal uses a byte on the CRT when characters are to be displayed with a specified attribute (such as reverse video). Enter a 0 if the attribute does not use any space on the screen.

g. Column switch delay -- enter the number of milliseconds to delay after sending the string to change the number of columns on the terminal. If the terminal doesn't support this function or need to delay, then enter a 0.

4.3 CURSOR ADDRESSING INFORMATION

Each line in this section, except for the cursor addressing string, is in decimal integer format. The cursor addressing string is in hexadecimal character pair format and is the string to position the cursor to the top row in the leftmost column. This string will have the same effect as the string to home the cursor, but it is different than the home string because cursor addressing is being used. It is very important that this string is exactly correct because it is used every time the cursor is positioned to an (X,Y) coordinate. The desired (X,Y) coordinates are added to the cursor addressing string and then this string is sent to the terminal to position the cursor.

There are two modes supported: binary and decimal. In binary mode, a row and column are addressed by one ASCII character each. In decimal mode, a row and column are addressed by one integer value each. If a terminal uses decimal mode, the coordinates in the cursor addressing string must be zero-filled so that the number of digits equals the maximum digits allowed for a given coordinate (e.g., if (1,1) is the home position and the terminal will support 132 columns, then the X coordinate part of the cursor addressing string should be zero-filled to be 30 30 31).

This section of the configuration file must be in the order shown below.

NOTE

Most terminals use a (row,column) addressing scheme, rather than an (X,Y) matrix approach, so be sure that the X and Y values of the addressing string are in the correct order.

a. Cursor addressing mode -- enter a **1** for binary mode, or a **2** for decimal mode.

b. Cursor addressing string -- enter the string to put the cursor at the home position using cursor addressing.

c. Start of Y coordinate -- enter the number of the hexadecimal pair at which the Y coordinate begins (e.g., if it begins at the third byte, enter a **3**).

d. Length of Y coordinate -- enter the number of bytes used by the Y coordinate in the addressing string.

e. Start of X coordinate -- enter the number of the hexadecimal pair that at which the X coordinate begins (e.g., if it begins at the third byte, enter a **3**).

f. Length of X coordinate -- enter the number of bytes used by the X coordinate in the addressing string.

EXAMPLES

(1) If a terminal's cursor addressing mode is binary and the addressing string's format is:

ESC = *Yvalue Xvalue*

where space is the lowest coordinate value, then the string in the configuration file would be:

1B 3D 20 20 00

The start of the Y coordinate would be 3, and its length would be 1. The start of the X coordinate would be 4, and its length would be 1.

(2) If a terminal's cursor addressing mode is decimal and the terminal can support 132 columns, and the addressing string's format is:

ESC = *Yvalue* ; *Xvalue* =

where 1 is the lowest coordinate value, then the string in the configuration file would be

1B 3D 30 31 3B 30 30 31 3D 00

The start of the Y coordinate would be 3, and its length would be 2. The start of the X coordinate would be 6, and its length would be 3.

4.4 FUNCTION KEY OUTPUTS

The number of entries in this section must match the number given in paragraph 4.2 under "number of function keys", and they must be in ascending order, beginning with F1. If the terminal does not have function keys, or if the first character sent out by pressing a function key is not a control character, then this section will be empty. Otherwise, enter the function key outputs in ASCII hexadecimal pair format.

4.5 LABELED KEY OUTPUTS

There must be exactly 11 entries of labeled key strings in this section. If the terminal does not have a key to perform a given function or if the key outputs a single control character, then enter 00. In either of the above cases, the control character table will perform the function. The order of this section is:

a. Character insert
b. Character delete
c. Line insert
d. Line delete
e. Cursor up (up arrow)
f. Cursor down (down arrow)
g. Cursor right (right arrow)
h. Cursor left (left arrow)
i. Home
j. Tab
h. Back tab

4.6 TERMINAL KEY OUTPUTS TO IGNORE

There must be exactly 32 entries of key outputs to ignore. If the terminal has fewer, then fill the rest of the lines with 00. Most of the entries in this section are strings sent out by shifted function keys or special labeled keys.

4.7 CONTROL CHARACTER TABLE

This section allows the user to program 27 of the 32 control characters to perform functions for the TIE editor. The five control keys that are not programmed will simply be ignored. **(CTRL) @** should always be one of the five because VERSAdos ignores it, and **ESC** plus any other lead-in characters should not be programmed either (refer to the NOTE below). There must be exactly 27 lines with a control code in hexadecimal pair format. For example, if the **QUIT** command is to be assigned to **(CTRL) Q**, then the 27th entry in the table would read **11 00** because **(CTRL) Q** has a value of 11 and the **QUIT** command is the 27th in the list of control functions.

NOTE

If any control sequences for a particular terminal begin with "CTRL [" (control character $1B), DO NOT enter 1B in the configuration file. Several control characters are used by VERSAdos or the <terminal>.CN configuration files for specific purposes. The following table applies:

Control Sequence	Hex Equivalent	
CTRL @	00	(Do not use; this is transmitted as a null and ignored.)
CTRL A	01	
CTRL B	02	
CTRL C	03	
CTRL D	04	
CTRL E	05	
CTRL F	06	
CTRL G	07	
CTRL H	08	
CTRL I	09	
CTRL J	0A	
CTRL K	0B	
CTRL L	0C	
CTRL M	0D	
CTRL N	0E	
CTRL O	0F	(Do not use; this is the discard character in terminal configuration.)
CTRL P	10	
CTRL Q	11	
CTRL R	12	
CTRL S	13	(Do not use; VERSAdos uses it as XOFF character to stop output to terminal.)
CTRL T	14	
CTRL U	15	
CTRL V	16	
CTRL W	17	
CTRL X	18	
CTRL Y	19	
CTRL Z	1A	
CTRL [	1B	(Do not use; this is the ESC character.)
CTRL \	1C	
CTRL]	1D	
CTRL ^	1E	(1E may be created on some terminals by the CTRL-SHIFT-~ keys.)
CTRL _	1F	

NOTE

Any control key that has a function assigned to it and is the first character sent out by pressing a key described in any of the paragraphs 4.4, 4.5, or 4.6 (function key outputs, labeled key outputs, or key outputs to ignore), will generate a warning message and the control code function will be ignored. For example, if **ESC** is a lead-in character for some of the labeled keys and **(CTRL) A** is a lead-in character for the function keys, then 1B and 01 cannot be used in the table.

The functions for the control character table must be defined in the following order:

F1-key equivalent
F2-key equivalent
F3-key equivalent
F4-key equivalent
Character insert
Character delete
Line insert
Line delete
Cursor up (up arrow)
Cursor down (down arrow)
Cursor right (right arrow)
Cursor left (left arrow)
Home
Tab
Back tab
Move cursor to start of line
Move cursor up five lines
Move cursor down five lines
Dump internal I/O buffers to screen
BREAK key equivalent
MORE command
RETURN key
^LINE command (next line)
vLINE command (previous line)
^PAGE command (next page)
vPAGE command (previous page)
QUIT command

4.8 STRINGS SENT TO THE TERMINAL TO PERFORM VARIOUS CAPABILITIES

There must be exactly 14 capability strings and they must be in the order shown below. If a terminal does not have one of the capabilities, enter 00 on that line.

String to erase to end of screen
String to erase to end of line
String to insert a character
String to delete a character
String to insert a line
String to delete a line
String to move the cursor up
String to move the cursor down
String to move the cursor right
String to move the cursor left
String to set reverse video
String to end reverse video
String to set normal column width
String to set increased column width

4.9 RESET STRING

This section in the configuration file is a variable-length string (up to 512 bytes) that is sent to the terminal when the **QUIT** command has been selected. It sets up the terminal for use after the TIE editor has been exited. If this terminal has the capability of changing column width, then the reset string does not need to include the desired width because the TIE editor automatically returns the terminal to its normal width.

4.10 SET-UP STRING

This section is a variable-length string (up to 512 bytes) that is sent to the terminal to set it up properly for use with the TIE editor. Parameters likely to be included in the set-up string are: programming the function keys, turning off auto-wrap (auto CR/LF), disabling various modes the terminal may support, and similar escape sequences.

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APPENDIX A

CONFIGURATION NOTES

A.1 NOTES ON GETTING STARTED

Operation of TIE is dependent on the following:

The physical characteristics of the terminal
The values set in the terminal configuration file
The values set for the terminal either through
SYSGEN or through use of the **CONFIG** utility

Before TIE is installed on the system, there are several items that need to be set correctly. It is strongly suggested that the set-up of the port on which the terminal is attached be verified to match the values VERSAdos has for the terminal. Refer to the description of the **CONFIG** utility in the M68000 Family VERSAdos System Facilities Reference Manual on how to verify and change, if necessary, the **CONFIG** values being used for the port.

Each brand of terminal has a unique method for setting configuration values. Refer to the user's manual for the terminal to be used to determine how to verify and change, if necessary, these values.

Most terminals operate best with TIE using 9600 baud, XON/XOFF, and one stop bit per character. If TIE does not work after it has been installed, it is usually due to a mismatch between the terminal set-up and the **CONFIG** values.

After TIE is installed and operating, any individual problems with functions such as "delete line", "insert character", etc., are usually related to an improper value in the terminal configuration file which was created for use with TIE. These values should be checked with the user's manual for the terminal if any problems are experienced.

Common errors made in the terminal configuration file are not following each entry with a byte of zeros, not having the correct number of function key assignments, and not terminating strings for entry/exit with two bytes of zeros.

The configuration files furnished in this manual and on the TIE media should be used as a guide for building the terminal configuration file.

Use the area of entry set-up to create the TIE entry environment. Use the exit set-up area to return to any special environment desired when exiting TIE. With some terminals, this area can be used to override default settings, thus eliminating any potential need of physically setting up before entering TIE.

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A.2 CHECK LIST FOR TIE SET-UP

a. Terminal set-up values

b. **CONFIG** values

c. *Configuration-file*.CN

d. TERMCAT.CN

A.3 EXAMPLE TERMINAL SET-UP

The following set-up is used by VERSAdos and TIE with a WYSE 75 terminal. Use these as a guide for setting the terminal to be used.

NEWLINE	OFF	
WRAP	ON	
REPEAT	ON	
ATTRIBUTES	DIM	(NOTE)
MARGIN BELL	OFF	(NOTE)
MODE	ANSI	
PARITY	OFF	
LOCAL ECHO	OFF	
MODEM PORT SPEED	9600	
HANDSHAKE	XON/XOFF	
DATA BITS	8	
AUXILIARY PORT SPEED	9600	
SCREEN	DARK	(NOTE)
COLUMNS	80	
CRT SAVER	ON	(NOTE)
CURSOR	BLINKING BLOCK	(NOTE)
SHIFT 3	#	
TEST	OFF	(NOTE)

NOTE: These items have no affect on VERSAdos or TIE.

A.4 EXAMPLE VERSAdos CONFIG VALUES

The following **CONFIG** values are used by VERSAdos and TIE with a WYSE 75 terminal. These values can be used as a guide for configuring the terminal to be used.

ATTRIBUTES WORD	0000 0001 0000 0010
PHYSICAL LINE WIDTH	80
LINES PER PAGE	24
XON CHARACTER	$13
XOFF CHARACTER	$00
BREAK EQUIVALENT	$03

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DISCARD OUTPUT	$0F
REPRINT LINE	$1A
CANCEL LINE	$18
READ TERMINATOR	$*0D*DE0000
END-OF-LINE	$*0D*0A0000
BAUD RATE	9600
NULL PADDING	0
TERMINATOR CLASS	00
TERMINAL CODE	0

Refer to the **CONFIG** utility in the M68000 Family VERSAdos System Facilities Reference Manual for a complete description of these fields and values.

ASCII Code Conversion

Listed in Table 1 below are ASCII characters with equivalent **CTRL**/*character* sequences, and values in decimal, hexadecimal, and octal.

TABLE 1. ASCII Code Conversion

ASCII CHARACTER	CTRL CODES	DECIMAL	HEX	OCTAL
NUL	@	000	00	000
SOH	A	001	01	001
STX	B	002	02	002
ETX	C	003	03	003
EOT	D	004	04	004
ENQ	E	005	05	005
ACK	F	006	06	006
BEL	G	007	07	007
BS	H	008	08	010
HT	I	009	09	011
LF	J	010	0A	012
VT	K	011	0B	013
FF	L	012	0C	014
CR	M	013	0D	015
SO	N	014	0E	016
SI	O	015	0F	017
DLE	P	016	10	020
DC1	Q	017	11	021
DC2	R	018	12	022
DC3	S	019	13	023
DC4	T	020	14	024
NAK	U	021	15	025
SYN	V	022	16	026
ETB	W	023	17	027
CAN	X	024	18	030
EM	Y	025	19	031
SUB	Z	026	1A	032

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TABLE 1. ASCII Code Conversion (cont'd)

ASCII CHARACTER	CTRL CODES	DECIMAL	HEX	OCTAL
ESC	[	027	1B	033
FS	\	028	1C	034
GS	]	029	1D	035
RS	^	030	1E	036
US	_ (underscore)	031	1F	037
SP		032	20	040
!		033	21	041
"		034	22	042
#		035	23	043
$		036	24	044
%		037	25	045
&		038	26	046
'		039	27	047
(		040	28	050
)		041	29	051
*		042	2A	052
+		043	2B	053
,		044	2C	054
- (dash)		045	2D	055
.		046	2E	056
/		047	2F	057
0		048	30	060
1		049	31	061
2		050	32	062
3		051	33	063
4		052	34	064
5		053	35	065
6		054	36	066
7		055	37	067
8		056	38	070
9		057	39	071
:		058	3A	072
;		059	3B	073
<		060	3C	074
=		061	3D	075
>		062	3E	076
?		063	3F	077
@		064	40	100
A		065	41	101
B		066	42	102
C		067	43	103
D		068	44	104
E		069	45	105
F		070	46	106
G		071	47	107
H		072	48	110
I		073	49	111
J		074	4A	112

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TABLE 1. ASCII Code Conversion (cont'd)

ASCII CHARACTER	CTRL CODES	DECIMAL	HEX	OCTAL
K		075	4B	113
L		076	4C	114
M		077	4D	115
N		078	4E	116
O		079	4F	117
P		080	50	120
Q		081	51	121
R		082	52	122
S		083	53	123
T		084	54	124
U		085	55	125
V		086	56	126
W		087	57	127
X		088	58	130
Y		089	59	131
Z		090	5A	132
[		091	5B	133
\		092	5C	134
]		093	5D	135
^		094	5E	136
_ (underscore)		095	5F	137
`		096	60	140
a		097	61	141
b		098	62	142
c		099	63	143
d		100	64	144
e		101	65	145
f		102	66	146
g		103	67	147
h		104	68	150
i		105	69	151
j		106	6A	152
k		107	6B	153
l		108	6C	154
m		109	6D	155
n		110	6E	156
o		111	6F	157
p		112	70	160
q		113	71	161
r		114	72	162
s		115	73	163
t		116	74	164
u		117	75	165
v		118	76	166
w		119	77	167
x		120	78	170
y		121	79	171
z		122	7A	172

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TABLE 1. ASCII Code Conversion (cont'd)

ASCII CHARACTER	CTRL CODES	DECIMAL	HEX	OCTAL
{		123	7B	173
|		124	7C	174
}		125	7D	175
~		126	7E	176
DEL		127	7F	177

APPENDIX B

EXAMPLE TERMINAL CONFIGURATION FILES

B.1 TELEVIDEO 970 TERMINAL

```
{ Configuration file for the TELEVIDEO 970 terminal }

24    { CRT Height (number of lines this terminal has) }
80    { CRT Width  (number of columns in normal mode ) }
132   { Increased column width  (0, if terminal does not have capability) }
16    { Number of Function Keys this terminal has (must be <= 16) }
0     { 0 = Doesn't have Auto CR-LF, 1 = Auto CR and LF at EOL }
0     { 0 = Doesn't use a byte on the CRT for Reverse Video, 1 = Steals a byte }
0     { Milliseconds to delay after sending the string to change # of columns }

2     { Cursor Addressing Mode is Decimal }
1B 5B 30 30 31 3B 30 30 31 48 00 {String to HOME cursor WITH CURSOR ADDRESSING}
3     { Index at which Y begins }
3     { Length (in bytes) of Y  }
7     { Index at which X begins }
3     { Length (in bytes) of X  }

{ Strings generated (or output) by pressing a given Function-Key }
1B 3F 61 00      { Output of F1 }
1B 3F 62 00      { Output of F2 }
1B 3F 63 00      { Output of F3 }
1B 3F 64 00      { Output of F4 }
1B 3F 65 00      { Output of F5 }
1B 3F 66 00      { Output of F6 }
1B 3F 67 00      { Output of F7 }
1B 3F 68 00      { Output of F8 }
1B 3F 69 00      { Output of F9 }
1B 3F 6A 00      { Output of F10 }
1B 3F 6B 00      { Output of F11 }
1B 3F 6C 00      { Output of F12 }
1B 3F 6D 00      { Output of F13 }
1B 3F 6E 00      { Output of F14 }
1B 3F 6F 00      { Output of F15 }
1B 3F 70 00      { Output of F16 }
```

B

```
{ Strings generated (or output) by pressing the following labeled keys }
1B 5B 40 00      { Character Insert }
1B 5B 50 00      { Character Delete }
1B 5B 4C 00      { Line Insert }
1B 5B 4D 00      { Line Delete }
1B 5B 41 00      { Cursor Up }
1B 5B 42 00      { Cursor Down }
1B 5B 43 00      { Cursor Right }
1B 5B 44 00      { Cursor Left  }
1B 5B 48 00      { Home }
00               { Tab  (use '00' because Tab is a Control-Char) }
1B 5B 5A 00      { Back Tab }

{ Strings generated (or output) by terminal keys that TIE is to ignore }
{ There must be exactly 32, use '00' to fill if there are less than 32 }
1B 5B 33 67 00    { Shift Tab }
1B 5B 67 00       { Shift Back-Tab }
1B 5B 69 00       { Print }
1B 5B 3F 31 69 00 { Shift Print }
1B 48 00          { Shift Home }
1B 44 00          { Shift Down-Arrow }
1B 4D 00          { Shift Up-Arrow }
1B 5B 20 41 00    { Shift Left-Arrow }
1B 5B 20 40 00    { Shift Right-Arrow }
1B 5B 45 00       { Shift Line-Feed }
1B 5B 32 4A 00    { Clear Space }
1B 5B 34 68 00    { Shift Char-Insert }
1B 5B 34 6C 00    { Shift Char-Delete }
1B 5B 51 00       { Shift Line-Insert }
1B 5B 31 51 00    { Shift Line-Delete }
1B 5B 4B 00       { Line Erase }
1B 5B 31 39 6C 00 { Shift Line-Erase }
1B 5B 4A 00       { Page Erase }
1B 5B 31 39 68 00 { Shift Page-Erase }
1B 5B 55 00       { Page }
1B 5B 56 00       { Shift Page }
1B 53 00          { Send }
1B 35 00          { Shift Send }
1B 5B 67 00       { Shift Tab (KeyPad) }
1B 5B 32 4E 00    { CE }
1B 5B 32 4B 00    { Shift CE }
00
00
00
00
00
00
```

```
{ Program the Control-Keys for TIE }
{ Each hex value below is the decimal value of a control-character.  }
{ Everything to the right of the '=' must stay in the order below.    }
{ To program a control-character, change the order of the hex values. }
05 00 { Ctl E  =  F1-Key equivalent                      }
12 00 { Ctl R  =  F2-Key equivalent                      }
14 00 { Ctl T  =  F3-Key equivalent                      }
19 00 { Ctl Y  =  F4-Key equivalent                      }
01 00 { Ctl A  =  Character Insert                       }
1D 00 { Ctl ]  =  Character Delete                       }
1A 00 { Ctl Z  =  Line Insert                            }
18 00 { Ctl X  =  Line Delete                            }
0B 00 { Ctl K  =  Cursor Up                              }
0A 00 { Ctl J  =  Cursor Down                            }
0C 00 { Ctl L  =  Cursor Right                           }
08 00 { Ctl H  =  Cursor Left                            }
02 00 { Ctl B  =  Home Cursor                            }
09 00 { Ctl I  =  Tab                                    }
0F 00 { Ctl O  =  Back Tab                               }
16 00 { Ctl V  =  Move Cursor to Start of Line           }
07 00 { Ctl G  =  Cursor Up Five Lines                   }
06 00 { Ctl F  =  Cursor Down Five Lines                 }
1E 00 { Ctl ^  =  Dump Internal I/O Buffers to Screen    }
03 00 { Ctl C  =  Break-Key equivalent                   }
17 00 { Ctl W  =  More Command                           }
0D 00 { Ctl M  =  Return-Key                             }
15 00 { Ctl U  =  ^Line Command (NextLine)               }
04 00 { Ctl D  =  vLine Command (PrevLine)               }
0E 00 { Ctl N  =  ^Page Command (NextPage)               }
10 00 { Ctl P  =  vPage Command (PrevPage)               }
11 00 { Ctl Q  =  Quit Command                           }

{ Strings to send to the terminal in order to perform various capabilities }
{ Use '00' for each capability that is not supported by the terminal       }
1B 5B 4A 00          { String to Erase to End of Screen }
1B 5B 4B 00          { String to Erase to End of Line }
1B 5B 40 00          { String to Insert a Character }
1B 5B 50 00          { String to Delete a Character }
1B 5B 4C 00          { String to Insert a Line }
1B 5B 4D 00          { String to Delete a Line }
1B 5B 41 00          { String to move the Cursor Up }
1B 5B 42 00          { String to move the Cursor Down }
1B 5B 43 00          { String to move the Cursor Right }
1B 5B 44 00          { String to move the Cursor Left }
1B 5B 37 6D 00       { String to set Reverse Video }
1B 5B 30 6D 00       { String to end Reverse Video }
1B 5B 3F 33 6C 00    { String to set Normal column width }
1B 5B 3F 33 68 00    { String to set Increased column width }
```

B

```
{ String to return/reset terminal to normal operation after TIE is exited }
1B 5B 3F 37 68 00                                     { Turn AutoWrap On }
1B 5C 32 34 3B 32 37 3B 39 31 3B 36 38 0D 00          { Left Arrow }
1B 5C 32 38 3B 32 37 38 39 31 3B 36 37 0D 00          { Right Arrow }
1B 5C 32 36 3B 31 30 3B 39 31 3B 36 36 0D 00          { Down Arrow }
1B 5C 32 37 3B 31 30 3B 39 31 3B 36 35 0D 00          { Up Arrow }
00 00                                                 { End of Reset String }

{ String to program/setup terminal for operation with TIE }
1B 3C 00                    { Take out of VT52 mode }
1B 5B 31 39 6C 00           { Edit Bound Display }
1B 5B 31 51 00              { Edit Extent Line }
1B 5B 37 6C 00              { Edit on or below line }
1B 5B 31 30 6C 00           { Edit on or beyond cursor }
1B 5B 3F 37 6C 00           { No cursor AutoWrap }
1B 5B 3F 32 31 68 00        { TV970 mode }

1B 7C 30 31 3B 31 3B 32 37 3B 36 33 3B 30 39 37 0D 00   { Program F1  }
1B 7C 30 32 3B 31 3B 32 37 3B 36 33 3B 30 39 38 0D 00   { Program F2  }
1B 7C 30 33 3B 31 3B 32 37 3B 36 33 3B 30 39 39 0D 00   { Program F3  }
1B 7C 30 34 3B 31 3B 32 37 3B 36 33 3B 31 30 30 0D 00   { Program F4  }
1B 7C 30 35 3B 31 3B 32 37 3B 36 33 3B 31 30 31 0D 00   { Program F5  }
1B 7C 30 36 3B 31 3B 32 37 3B 36 33 3B 31 30 32 0D 00   { Program F6  }
1B 7C 30 37 3B 31 3B 32 37 3B 36 33 3B 31 30 33 0D 00   { Program F7  }
1B 7C 30 38 3B 31 3B 32 37 3B 36 33 3B 31 30 33 0D 00   { Program F8  }
1B 7C 30 39 3B 31 3B 32 37 3B 36 33 3B 31 30 35 0D 00   { Program F9  }
1B 7C 31 30 3B 31 3B 32 37 3B 36 33 3B 31 30 36 0D 00   { Program F10 }
1B 7C 31 31 3B 31 3B 32 37 3B 36 33 3B 31 30 37 0D 00   { Program F11 }
1B 7C 31 32 3B 31 3B 32 37 38 36 33 3B 31 30 38 0D 00   { Program F12 }
1B 7C 31 33 3B 31 3B 32 37 3B 36 33 3B 31 30 39 0D 00   { Program F13 }
1B 7C 31 34 3B 31 3B 32 37 3B 36 33 3B 31 31 30 0D 00   { Program F14 }
1B 7C 31 35 3B 31 3B 32 37 38 36 33 3B 31 31 31 0D 00   { Program F15 }
1B 7C 31 36 3B 31 3B 32 37 3B 36 33 3B 31 31 32 0D 00   { Program F16 }
1B 5C 32 34 3B 38 0D 00          { Left Arrow }
1B 5C 32 38 3B 31 32 0D 00       { Right Arrow }
1B 5C 32 36 3B 31 30 0D 00       { Down Arrow }
1B 5C 32 37 3B 31 31 0D 00       { Up Arrow }
00 00                            { End of Setup String }
```

B.2 WYSE 50 TERMINAL

```
{ Configuration file for the WYSE 50 terminal }

24    { CRT Height (number of lines this terminal has) }
79    { CRT Width  (number of columns in normal mode ) }
132   { Increased column width  (0, if terminal does not have capability) }
16    { Number of Function Keys this terminal has (must be <= 16) }
1     { 0 = Doesn't have Auto CR-LF, 1 = Auto CR and LF at EOL }
1     { 0 = Doesn't use a byte on the CRT for Reverse Video, 1 = Steals a byte }
100   { Milliseconds to delay after sending the string to change # of columns }

2     { Cursor Addressing Mode is Decimal }
1B 61 30 31 52 30 30 31 43 00    {String to HOME cursor WITH CURSOR ADDRESSING}
3     { Index at which Y begins }
2     { Length (in bytes) of Y  }
6     { Index at which X beings }
3     { Length (in bytes) of X  }

{ Strings generated (or output) by pressing a given Function-Key }
01 40 0D 00      { Output of F1 }
01 41 0D 00      { Output of F2 }
01 42 0D 00      { Output of F3 }
01 43 0D 00      { Output of F4 }
01 44 0D 00      { Output of F5 }
01 45 0D 00      { Output of F6 }
01 46 0D 00      { Output of F7 }
01 47 0D 00      { Output of F8 }
01 48 0D 00      { Output of F9 }
01 49 0D 00      { Output of F10 }
01 4A 0D 00      { Output of F11 }
01 4B 0D 00      { Output of F12 }
01 4C 0D 00      { Output of F13 }
01 4D 0D 00      { Output of F14 }
01 4E 0D 00      { Output of F15 }
01 4F 0D 00      { Output of F16 }

{ Strings generated (or output) by pressing the following labeled keys }
1B 51 00     { Character Insert }
1B 57 00     { Character Delete }
1B 45 00     { Line Insert }
1B 52 00     { Line Delete }
00           { Cursor Up    (use '00' because Cursor-Up is a Ctl-Char) }
00           { Cursor Down  (use '00' because Cursor-Down is a Ctl-Char) }
00           { Cursor Right (use '00' because Cursor-Right is a Ctl-Char) }
00           { Cursor Left  (use '00' because Cursor-Left is a Ctl-Char) }
00           { Home         (use '00' because Home is a Ctl-Char) }
00           { Tab          (use '00' because Tab is a Ctl-Char) }
1B 49 00     { Back Tab }
```

B

```
{ Strings generated (or output) by terminal keys that TIE is to ignore }
{ There must be exactly 32, use '00' to fill if there are less than 32 }
01 60 0D 00     { Shift F-1  }
01 61 0D 00     { Shift F-2  }
01 62 0D 00     { Shift F-3  }
01 63 0D 00     { Shift F-4  }
01 64 0D 00     { Shift F-5  }
01 65 0D 00     { Shift F-6  }
01 66 0D 00     { Shift F-7  }
01 67 0D 00     { Shift F-8  }
01 68 0D 00     { Shift F-9  }
01 69 0D 00     { Shift F-10 }
01 6A 0D 00     { Clear F-11 }
01 6B 0D 00     { Shift F-12 }
01 6C 0D 00     { Shift F-13 }
01 6D 0D 00     { Shift F-14 }
01 6E 0D 00     { Shift F-15 }
01 6F 0D 00     { Shift F-16 }
1B 59 00        { CLR Scrn }
1B 54 00        { CLR Line }
1B 71 00        { Ins  }
1B 72 00        { Repl }
1B 4A 00        { PAGE Prev }
1B 4B 00        { PAGE Next }
1B 37 00        { Send }
1B 50 00        { Print }
00
00
00
00
00
00
00
00

{ Program the Control-Keys for TIE }
{ Each hex value below is the decimal value of a control-character.  }
{ Everything to the right of the '=' must stay in the order below.    }
{ To program a control-character, change the order of the hex values. }
05 00 { Ctl E  =  F1-Key equivalent                    }
12 00 { Ctl R  =  F2-Key equivalent                    }
14 00 { Ctl T  =  F3-Key equivalent                    }
19 00 { Ctl Y  =  F4-Key equivalent                    }
02 00 { Ctl B  =  Character Insert                     }
1D 00 { Ctl ]  =  Character Delete                     }
1A 00 { Ctl Z  =  Line Insert                          }
18 00 { Ctl X  =  Line Delete                          }
```

```
0B 00 { Ctl K  =  Cursor Up                              }
0A 00 { Ctl J  =  Cursor Down                            }
0C 00 { Ctl L  =  Cursor Right                           }
08 00 { Ctl H  =  Cursor Left                            }
1E 00 { Ctl ^  =  Home Cursor                            }
09 00 { Ctl I  =  Tab                                    }
1C 00 { Ctl \  =  Back Tab                               }
16 00 { Ctl V  =  Move Cursor to Start of Line           }
07 00 { Ctl G  =  Cursor Up Five Lines                   }
06 00 { Ctl F  =  Cursor Down Five Lines                 }
0F 00 { Ctl O  =  Dump Internal I/O Buffers to Screen    }
03 00 { Ctl C  =  Break-Key equivalent                   }
17 00 { Ctl W  =  More Command                           }
0D 00 { Ctl M  =  Return-Key                             }
15 00 { Ctl U  =  ^Line Command (NextLine)               }
04 00 { Ctl D  =  vLine Command (PrevLine)               }
0E 00 { Ctl N  =  ^Page Command (NextPage)               }
10 00 { Ctl P  =  vPage Command (PrevPage                }
11 00 { Ctl Q  =  Quit Command                           }

{ Strings to send to the terminal in order to perform various capabilities }
{ Use '00' for each capability that is not supported by the terminal       }
1B 79 00          { String to Erase to End of Screen }
1B 74 00          { String to Erase to End of Line }
1B 51 00          { String to Insert a Character }
1B 57 00          { String to Delete a Character }
1B 45 00          { String to Insert a Line }
1B 52 00          { String to Delete a Line }
0B 00             { String to move the Cursor Up }
0A 00             { String to move the Cursor Down }
0C 00             { String to move the Cursor Right }
08 00             { String to move the Cursor Left }
1B 47 34 00       { String to set Reverse Video }
1B 47 30 00       { String to end Reverse Video }
1B 60 3A 00       { String to set Normal column width }
1B 60 3B 00       { String to set Increased column width }

{ String to return/reset terminal to normal operation after TIE is exited }
1B 2A 00     { Sets entire screen's character display attributes to NULL }
00 00        { End of Reset String }

{ String to program/setup terminal for operation with TIE }
1B 2A 00     { Sets entire screen's character display attributes to NULL }
00 00        { End of Setup String }
```

B

B.3 WYSE 75 TERMINAL

```
{ Configuration file for the WYSE 75 terminal }

24    { CRT Height (number of lines this terminal has) }
80    { CRT Width  (number of columns in normal mode ) }
132   { Increased column width  (0, if terminal does not have capability) }
16    { Number of Function Keys this terminal has (must be <= 16) }
0     { 0 = Doesn't have Auto CR-LF, 1 = Auto CR and LF at EOL }
0     { 0 = Doesn't use a byte on the CRT for Reverse Video, 1 = Steals a byte }
0     { Milliseconds to delay after sending the string to change # of columns }

2     { Cursor Addressing Mode is Decimal }
1B 5B 30 30 31 3B 30 30 31 48 00 {String to HOME cursor WITH CURSOR ADDRESSING}
3     { Index at which Y begins }
3     { Length (in bytes) of Y  }
7     { Index at which X beings }
3     { Length (in bytes) of X  }

{ Strings generated (or output) by pressing a given Function-Key }
1B 5B 3F 35 69 00    { Output of F1 }
1B 5B 3F 33 69 00    { Output of F2 }
1B 5B 32 69 00       { Output of F3 }
1B 5B 40 00          { Output of F4 }
1B 5B 4D 00          { Output of F5 }
1B 3F 66 00          { Output of F6 }
1B 3F 67 00          { Output of F7 }
1B 3F 68 00          { Output of F8 }
1B 3F 69 00          { Output of F9 }
1B 3F 6A 00          { Output of F10 }
1B 3F 6B 00          { Output of F11 }
1B 3F 6C 00          { Output of F12 }
1B 3F 6D 00          { Output of F13 }
1B 3F 6E 00          { Output of F14 }
1B 3F 6F 00          { Output of F15 }
1B 3F 70 00          { Output of F16 }

{ Strings generated (or output) by pressing the following labeled keys }
1B 4F 50 00      { Character Insert }
1B 4F 51 00      { Character Delete }
1B 4F 52 00      { Line Insert }
1B 4F 53 00      { Line Delete }
1B 5B 41 00      { Cursor Up }
1B 5B 42 00      { Cursor Down }
1B 5B 43 00      { Cursor Right }
1B 5B 44 00      { Cursor Left  }
1B 5B 48 00      { Home }
00               { Tab  (use '00' because Tab is a Control-Char) }
1B 5B 5A 00      { Back Tab }
```

```
{ Strings generated (or output) by terminal keys that TIE is to ignore }
{ There must be exactly 32, use '00' to fill if there are less than 32 }
1B 5B 35 69 00    { Shift F1 (Transparent print off) }
1B 5B 34 69 00    { Shift F1 (Transparent print off) }
1B 5B 3F 31 69 00 { Shift F2 }
1B 5B 30 69 00    { Shift F3 }
1B 5B 4C 00       { Shift F4 }
1B 5B 4B 00       { Shift F5 }
1B 5B 33 31 7E 00 { Shift F6 }
1B 5B 33 32 7E 00 { Shift F7 }
1B 5B 33 33 7E 00 { Shift F8 }
1B 5B 33 34 7E 00 { Shift F9 }
1B 5B 33 35 7E 00 { Shift F10 }
1B 5B 31 7E 00    { Shift F11 }
1B 5B 32 7E 00    { Shift F12 }
1B 5B 33 7E 00    { Shift F13 }
1B 5B 34 7E 00    { Shift F14 }
1B 5B 35 7E 00    { Shift F15 }
1B 5B 36 7E 00    { Shift F16 }
00
00
00
00
00
00
00
00
00
00
00
00
00
00
00
00

{ Program the Control-Keys for TIE }
{ Each hex value below is the decimal value of a control-character.  }
{ Everything to the right of the '=' must stay in the order below.    }
{ To program a control-character, change the order of the hex values. }
05 00 { Ctl E  =  F1-Key equivalent                    }
12 00 { Ctl R  =  F2-Key equivalent                    }
14 00 { Ctl T  =  F3-Key equivalent                    }
19 00 { Ctl Y  =  F4-Key equivalent                    }
01 00 { Ctl A  =  Character Insert                     }
1D 00 { Ctl ]  =  Character Delete                     }
1A 00 { Ctl Z  =  Line Insert                          }
18 00 { Ctl X  =  Line Delete                          }
0B 00 { Ctl K  =  Cursor Up                            }
0A 00 { Ctl J  =  Cursor Down                          }
0C 00 { Ctl L  =  Cursor Right                         }
08 00 { Ctl H  =  Cursor Left                          }
02 00 { Ctl B  =  Home Cursor                          }
```

```
09 00 { Ctl I  =  Tab                                  }
1C 00 { Ctl \  =  Back Tab                             }
16 00 { Ctl V  =  Move Cursor to Start of Line         }
07 00 { Ctl G  =  Cursor Up Five Lines                 }
06 00 { Ctl F  =  Cursor Down Five Lines               }
1E 00 { Ctl ^  =  Dump Internal I/O Buffers to Screen  }
03 00 { Ctl C  =  Break-Key equivalent                 }
17 00 { Ctl W  =  More Command                         }
0D 00 { Ctl M  =  Return-Key                           }
15 00 { Ctl U  =  ^Line Command (NextLine)             }
04 00 { Ctl D  =  vLine Command (PrevLine)             }
0E 00 { Ctl N  =  ^Page Command (NextPage)             }
10 00 { Ctl P  =  vPage Command (PrevPage              }
11 00 { Ctl Q  =  Quit Command                         }

{ Strings to send to the terminal in order to perform various capabilities }
{ Use '00' for each capability that is not supported by the terminal       }
1B 5B 4A 00          { String to Erase to End of Screen }
1B 5B 4B 00          { String to Erase to End of Line }
1B 5B 40 00          { String to Insert a Character }
1B 5B 50 00          { String to Delete a Character }
1B 5B 4C 00          { String to Insert a Line }
1B 5B 4D 00          { String to Delete a Line }
1B 5B 41 00          { String to move the Cursor Up }
1B 5B 42 00          { String to move the Cursor Down }
1B 5B 43 00          { String to move the Cursor Right }
1B 5B 44 00          { String to move the Cursor Left }
1B 5B 37 6D 00       { String to set Reverse Video }
1B 5B 30 6D 00       { String to end Reverse Video }
1B 5B 3F 33 6C 00    { String to set Normal column width }
1B 5B 3F 33 68 00    { String to set Increased column width }

{ String to return/reset terminal to normal operation after TIE is exited }
1B 5B 3F 37 68 00       { Set Cursor AutoWrap }
1B 5B 3E 2C 2F 2F 00    { Clear Status Line }
00 00                   { End of Reset String }

{ String to program/setup terminal for operation with TIE }
1B 3C 00                { Take out of VT52 mode }
1B 5B 3F 31 30 6C 00    { Block mode off }
1B 5B 3F 37 6C 00       { No cursor AutoWrap }
1B 5B 3F 34 69 00       { Copy passthru off }
1B 5B 3F 31 6C 00       { Cursor key mode off }
1B 5B 34 6C 00          { Insert char mode off }
1B 3E 00                { Numeric keypad mode }
1B 5B 32 30 6C 00       { Newline mode off }
1B 5B 31 74 00          { Enhance attribute is inverse }
```

```
1B 5B 3E 61 2F 1B 3F 66 2F 00    { Program F6  }
1B 5B 3E 62 2F 1B 3F 67 2F 00    { Program F7  }
1B 5B 3E 63 2F 1B 3F 68 2F 00    { Program F8  }
1B 5B 3E 64 2F 1B 3F 69 2F 00    { Program F9  }
1B 5B 3E 65 2F 1B 3F 6A 2F 00    { Program F10 }
1B 5B 3E 66 2F 1B 3F 6B 2F 00    { Program F11 }
1B 5B 3E 67 2F 1B 3F 6C 2F 00    { Program F12 }
1B 5B 3E 68 2F 1B 3F 6D 2F 00    { Program F13 }
1B 5B 3E 69 2F 1B 3F 6E 2F 00    { Program F14 }
1B 5B 3E 6A 2F 1B 3F 6F 2F 00    { Program F15 }
1B 5B 3E 6B 2F 1B 3F 70 2F 00    { Program F16 }

{ Set Status Message }
1B 5B 3E 2C 2F 00
0E 0F 50 20 20 50 46 31 3D 43 68 61 72 20 49 6E 73 00   { PF1=Char Ins }
20 20 20 20 20 50 46 32 3D 43 68 61 72 20 44 65 6C 00   { PF2=Char Del }
20 20 20 20 20 50 46 33 3D 4C 69 6E 65 20 49 6E 73 00   { PF3=Line Ins }
20 20 20 20 20 50 46 34 3D 4C 69 6E 65 20 44 65 6C 00   { PF4=Line Del }
20 20 0E 0F 40 2F 00
00 00                    { End of Setup String }
```

B

B.4 ADM-22 TERMINAL

```
{ Configuration file for the ADM-22 terminal }

24    { CRT Height (number of lines this terminal has) }
80    { CRT Width  (number of columns in normal mode ) }
0     { Increased column width  (0, if terminal does not have capability) }
7     { Number of Function Keys this terminal has (must be <= 16) }
1     { 0 = Doesn't have Auto CR-LF, 1 = Auto CR and LF at EOL }
0     { 0 = Doesn't use a byte on the CRT for Reverse Video, 1 = Steals a byte}
0     { Milliseconds to delay after sending the string to change # of columns }

1     { Cursor Addressing Mode is Binary }
1B 3D 20 20 00    {String to HOME cursor WITH CURSOR ADDRESSING }
3     { Index at which Y begins }
1     { Length (in bytes) of Y  }
4     { Index at which X begins }
1     { Length (in bytes) of X  }

{ Strings generated (or output) by pressing a given Function-Key }
01 40 0D 00      { Output of F1 }
01 41 0D 00      { Output of F2 }
01 42 0D 00      { Output of F3 }
01 43 0D 00      { Output of F4 }
01 44 0D 00      { Output of F5 }
01 45 0D 00      { Output of F6 }
01 46 0D 00      { Output of F7 }

{ Strings generated (or output) by pressing the following labeled keys }
00            { Character Insert }
00            { Character Delete }
00            { Line Insert }
00            { Line Delete }
00            { Cursor Up    (use '00' because Cursor-Up is a Control-Char) }
00            { Cursor Down  (use '00' because Cursor-Down is a Control-Char) }
00            { Cursor Right (use '00' because Cursor-Right is a Control-Char)}
00            { Cursor Left  (use '00' because Cursor-Left is a Control-Char) }
00            { Home }
1B 69 00      { Tab  }
1B 49 00      { Back Tab }

{ Strings generated (or output) by terminal keys that TIE is to ignore }
{ There must be exactly 32, use '00' to fill if there are less than 32 }
1B 50 00     { Print Key }
1B 51 00     { Char Insert Key }
1B 57 00     { Char Delete Key }
1B 45 00     { Line Insert Key }
1B 52 00     { Line Delete Key }
00
00
00
00
00
00
```

```
00
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00

{ Program the Control-Keys for TIE }
{ Each hex value below is the decimal value of a control-character.  }
{ Everything to the right of the '=' must stay in the order below.    }
{ To program a control-character, change the order of the hex values. }
05 00 { Ctl E  =  F1-Key equivalent                    }
12 00 { Ctl R  =  F2-Key equivalent                    }
14 00 { Ctl T  =  F3-Key equivalent                    }
19 00 { Ctl Y  =  F4-Key equivalent                    }
02 00 { Ctl B  =  Character Insert                     }
1D 00 { Ctl ]  =  Character Delete                     }
1A 00 { Ctl Z  =  Line Insert                          }
18 00 { Ctl X  =  Line Delete                          }
0B 00 { Ctl K  =  Cursor Up                            }
0A 00 { Ctl J  =  Cursor Down                          }
0C 00 { Ctl L  =  Cursor Right                         }
08 00 { Ctl H  =  Cursor Left                          }
1E 00 { Ctl ^  =  Home Cursor                          }
09 00 { Ctl I  =  Tab                                  }
0F 00 { Ctl O  =  Back Tab                             }
16 00 { Ctl V  =  Move Cursor to Start of Line         }
07 00 { Ctl G  =  Cursor Up Five Lines                 }
06 00 { Ctl F  =  Cursor Down Five Lines               }
1C 00 { Ctl \  =  Dump Internal I/O Buffers to Screen  }
03 00 { Ctl C  =  Break-Key equivalent                 }
17 00 { Ctl W  =  More Command                         }
0D 00 { Ctl M  =  Return-Key                           }
15 00 { Ctl U  =  ^Line Command (NextLine)             }
04 00 { Ctl D  =  vLine Command (PrevLine)             }
0E 00 { Ctl N  =  ^Page Command (NextPage)             }
10 00 { Ctl P  =  vPage Command (PrevPage              }
11 00 { Ctl Q  =  Quit Command                         }
```

B

```
{ Strings to send to the terminal in order to perform various capabilities }
{ Use '00' for each capability that is not supported by the terminal       }
1B 79 00      { String to Erase to End of Screen }
1B 74 00      { String to Erase to End of Line }
1B 51 00      { String to Insert a Character }
1B 57 00      { String to Delete a Character }
1B 45 00      { String to Insert a Line }
1B 52 00      { String to Delete a Line }
0B 00         { String to move the Cursor Up }
0A 00         { String to move the Cursor Down }
0C 00         { String to move the Cursor Right }
08 00         { String to move the Cursor Left }
1B 29 00      { String to set Reverse Video }
1B 28 00      { String to end Reverse Video }
00            { String to set Normal column width }
00            { String to set Increased column width }

{ String to return/reset terminal to normal operation after TIE is exited }
1B 3A 00    { Set the entire screen's character display attributes to NULL }
00 00       { End of Reset String }

{ String to program/setup terminal for operation with TIE }
1B 3A 00    { Set the entire screen's character display attributes to NULL }
00 00       { End of Setup String }
```

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Microcomputer Division
2900 South Diablo Way
Tempe, Arizona 85282
P.O. Box 2953
Phoenix, Arizona 85062

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