

**GRiDTerm and GRiDReformat  
User's Guide**

GRiDTerm/  
GRiDReformat

# UPDATE

For GRiDTerm User's Guide

The following changes have been made to Version 3.1.0 of GRiDTerm.

- o **Transfer Menu.** This menu (described in Chapter 3 of the manual) has three new items: Print Display Buffer, Record Character Stream to the Printer, and Stop Recording to the Printer. Also, a new form called the Send File Properties form is displayed after selecting the Send a File item on the Transfer menu.
- o **ESC Key Function.** While connecting to a host system, you can stop dialing or disconnect after dialing by pressing ESC or CODE-A. Formerly you pressed CODE-A.

## TRANSFER MENU

The new Transfer menu is shown in Figure 1 below. The new or changed items are marked with an asterisk. Each of these items is described below.

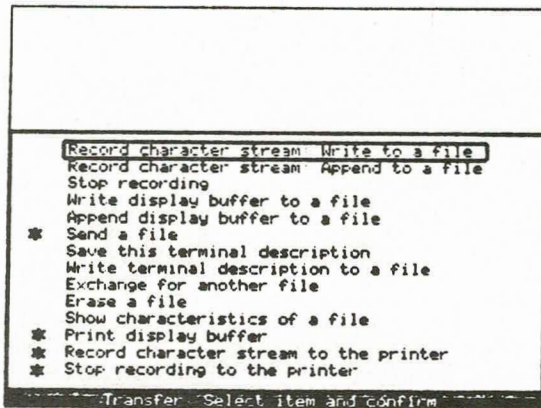


Figure 1. The Transfer Menu

## SEND A FILE

After selecting this item and filling in the File form with the name of the file you want to send, the Send File Properties form is displayed (see Figure 2). Each of the items on the form is described in alphabetical order below. For more information on sending files, see the Send a File section in Chapter 3.

ASCII Binary	
Type of data to send	ASCII
Intercharacter delay	None
Interline delay	None
Line prompt from Host	None
Wait for Host prompt	No time limit
Send file properties: Fill in form and confirm	

Figure 2. The Send File Properties Form

### Intercharacter Delay

Initial setting is None. Choices are: Hundredth(s) of a second, None.

This item specifies how long, in hundredths of a second, GRiDTerm should pause between each character transmitted to the host system. If the file being sent has missing characters, GRiDTerm may be sending data too quickly and the transmission rate needs to be slowed down.

**NOTE:** Because changing the Intercharacter Delay item from None significantly slows down the transfer rate, you should first try using the Interline Delay item (described below) before specifying an intercharacter delay.

## Interline Delay

Initial setting is None. Choices are: Seconds, None.

This item specifies how many seconds GRiDTerm should pause after transmitting a line of data to the host system.

Leave the setting at None unless GRiDTerm is sending data too quickly to the host system. When data is sent too quickly, the file received at the host system probably has missing characters.

If setting this item does not solve the problem, try changing the setting of the Intercharacter Delay item.

**NOTE:** The delay specified here occurs after the host prompt is received (see the Line Prompt from Host item) or the time limit specified in the Wait for Host prompt is reached.

## Line Prompt from Host

Initial setting is None. Choices are: Enter Prompt, None.

Use the Line Prompt from Host item when you wish GRiDTerm to transmit data in response to a pre-determined prompt from the host system. You must either specify the exact characters sent by the host system, or a wildcard character (...) representing the prompt characters, followed by the last character in the prompt. A wildcard character, inserted by pressing CODE-W, matches anything up to the character you specify. For example, if the host system sends characters which always end in a colon, you could specify the characters "...:" as your line prompt.

If you choose the None setting, GRiDTerm will not wait for any prompt from the host system before transmitting the next text line.

**NOTE:** When sending a file in half-duplex mode, GRiDTerm waits for a line turnaround string as well as the line prompt (if one is defined) from the host system.

## Type of Data to Send

Initial setting is ASCII. Choices are: ASCII, Binary.

This item specifies the type of data you are sending to the host system.

Select ASCII when you want to send only the data in the file usually visible to the user. GRiDTerm deletes the file properties (explained below) before transferring the file.

Select Binary when you want to transmit the entire file, including

file properties, as it exists within GRiD-OS. Depending on the type of file being sent, file properties can contain the following information:

- o Cell definitions in worksheet files.
- o The settings of the Options, Property, and other forms in worksheet, text, database, graph, and other files.
- o Erased records in database files.

You would typically use this option when you want to transmit a worksheet file to a host system and you want to retain the cell definitions associated with the file. You would, of course, require a conversion program at the host to recover the definitions.

When sending binary data, be sure to set the Bits Per Character item on the Properties form to 8, and the Echo Mode item to Local Echo. Note that GRiDTerm ignores the settings of the items on the following forms: The End Line Automatically and Word Wrap on the Options form, and the Interline Delay and Line Prompt from Host item on this form.

**NOTE:** You cannot choose the Binary setting when communicating with another computer that is also using GRiDTerm. If you want to send binary data between two GRiD computers, you can use the GRiDAccess application. If you would like more information on using GRiDAccess, contact your local GRiD dealer.

#### **Wait for Host Prompt**

Initial setting is No Time Limit. Choices are: Seconds, No Time Limit.

This item specifies how many seconds GRiDTerm waits for the line prompt from the host system (see Line Prompt from Host item). If the prompt is not received within this time limit, GRiDTerm sends the next line of text. If Line Prompt from Host is set to None, GRiDTerm ignores the setting of this item.

**NOTE:** When sending a file in half-duplex mode, GRiDTerm waits for a line turnaround string as well as the line prompt (if defined) from the host system.

#### **PRINT DISPLAY BUFFER**

The Print Display Buffer item lets you print the contents of your display buffer. The display buffer contains both the characters that you type and the data received from the host system. After confirming this command, the printer skips to the top of a new page and begins printing. The maximum length of each printed line is

determined by the Display Width setting on the Options form. Once printing has begun, GRiDTerm cannot receive any more data. You may stop the printing at any time by pressing ESC and confirming.

#### **RECORD CHARACTER STREAM TO THE PRINTER**

The Record Character Stream to the Printer item prints characters received from a host system or the data that you type in. After confirming this command, your printer will skip to the top of a new page. Any characters subsequently displayed are then printed. Note that if the host system sends characters to GRiDTerm too quickly, the printer may stop printing until the host system stops sending the data or slows down. To stop recording to the printer, confirm the Stop Recording to the Printer item.

Also, note that you may record to the printer at the same time that you are recording to a file either using the Record Character Stream: Write to a File, or Append to a File items.

**NOTE:** The Display Received Characters item on the Options form must be set to Yes for printing to occur.

#### **STOP RECORDING TO THE PRINTER**

The Stop Recording to the Printer item stops the recording of data to the printer initiated with the Record Character Stream to the Printer item.

**GRIDTERM USER'S GUIDE**

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## ABOUT THIS BOOK

This manual explains how to set up and use GRiDTerm and GRiDReformat, GRiD Systems software products designed to run on the GRiD Compass.

## WHAT IS GRiDTERM?

GRiDTerm is an emulator program that transforms your GRiD Compass into a portable terminal capable of communicating with a variety of host systems. From any suitable telephone connection, you can obtain stock quotes, economic and marketing information, news articles, and more. Timesharing services give you access to customized software for applications such as budgeting, economic analysis, inventory control, and material requirements planning.

For step-by-step instructions that introduce you to terminal emulator functions and show you how to connect to a host system, see "Session 7: GRiDTerm Terminal Emulation" in the tutorial Getting Started with the GRiD Compass. This tutorial was shipped with your computer.

## WHAT IS GRiDREFORMAT?

GRiDReformat converts data you receive via GRiDTerm into a format suitable for GRiDPlot, GRiDPlan, GRiDFile, or any other GRiD application requiring the tabular placement of data. The data you receive from a host computer with GRiDTerm quite often has the format of a printed report, which is not suitable for processing in

a graph, worksheet, or database file.

GRiDReformat operates independently of GRiDTerm, as described in Chapter 6 of this guide.

### WHO IS THIS GUIDE FOR?

This guide is for both the GRiDTerm user who wants to communicate with a host system and the programmer or technician responsible for the initial set-up of GRiDTerm after it is received from GRiD Systems.

### BEFORE USING THIS GUIDE

If you are responsible for setting up GRiDTerm, you must be aware of the communication protocols used by the applications at the host system as well as line protocols the system requires.

If you are a GRiDTerm user who wants to communicate with a host system, the following requirements must be met:

- o You must have the GRiDTerm program under the Programs subject and a valid (set up) GRiDTerm terminal description file in bubble memory or other device available to your GRiD Compass.
- o You must know the log-on and log-off procedures of the application at the host system, and how to use the program function keys and other keys that interact with the application.
- o You must be familiar with the GRiD Compass keyboard, menus and forms, file creation procedures, and file handling commands as described in Getting Started with the GRiD Compass.

You can get the information you need from another GRiDTerm user in your company, or from a programmer or technician at the data center responsible for the application.



## HOW DO I BEGIN?

If you are the person responsible for setting up GRiDTerm, read Chapter 5. It describes how to create a terminal description file and contains the necessary reference information.

If you are a GRiDTerm user, read Chapter 1 to acquaint yourself with the concepts and procedures you should know to use GRiDTerm. Where necessary, the chapter refers you to other parts of the book for detailed information on how to use certain GRiDTerm facilities.

## OTHER BOOKS YOU MAY NEED

If you are a new user to the GRiD Compass, you may need to refer to the following publications:

- o GRiD Management Tools Reference manual for detailed reference information on the basics of using the GRiD Compass.
- o Getting Started with the GRiD Compass, a tutorial that includes step-by-step instructions on using GRiDTerm and the GRiD Management tools.

## TYPOGRAPHICAL CONVENTIONS

This guide follows certain typographical conventions concerning keycaps and using the keyboard. You should be aware of these conventions as you read.

### **KEYCAPS**

Keycap labels are in upper case, just as they appear on your keyboard. Thus, when you see the symbol CODE, you should press the key labeled CODE rather than typing the word "CODE" letter by letter.

### **MULTI-KEY OPERATIONS**

Throughout this manual, you are instructed to perform operations like "press CODE-RETURN." When you see a hyphen between two keycap names, press the keys in the order in which they appear and hold them down together. Thus, when you see "press CODE-RETURN," press down the CODE key and, while holding it down, press the key labeled RETURN. If you see three keycap names linked with hyphens, all

three must be held down together.

## **CONFIRM**

You are instructed both in this manual and in prompts that appear on your GRiD Compass screen to "confirm" that a form is filled out correctly or that you are ready to go on to the next step of the task at hand. The proper response to a "confirm" request is to press CODE-RETURN.

## SUMMARY OF CHANGES

This guide incorporates information formerly in the GRiDTerm Reference Manual and contains additional information on new GRiDTerm facilities as summarized below.

1. **GRiDReformat.** This software product lets you convert data you receive via GRiDTerm into a format suitable for use by GRiDPlan, GRiDPlot, and GRiDFile. GRiDReformat is described in Chapter 6.
2. **Soft Keys.** GRiDTerm now supports user-defined soft keys, which permit the automation of a series frequently used keystrokes into one key sequence. The section Automating Keystrokes in Chapter 1 introduces soft keys, and Chapter 4 contains the information needed to define soft key functions.
3. **Current Typeface.** A new item in the Options form, Current Typeface, lets you change the font size that appears on the GRiDTerm screen. Reducing the font size increases the amount of information that you can display on the screen at one time. This item is described in Chapter 2.
4. **Wait For Call From Host.** This new command allows a host system or another GRiD Compass to initiate a connection to a GRiD Compass using GRiDTerm. The command is described in Chapter 1.
5. **Edit Access Form.** With this command, you can edit and confirm the Access form without actually initiating a connection to a remote computer. The command is described in Chapter 1.
6. **Erase a File, Save This Terminal Description, and Show Characteristics of a File.** These new items have been added to the Transfer menu and are described in Chapter 3.
7. **Try Again.** This new item in the Access form lets you ask GRiDTerm to re-dial the remote computer when the line either doesn't answer or is busy. The item is described in Chapter 5.
8. **New Terminology in Access Form.** The names of the Line Bit Rate, Prompt For Data Mode, and Connection Timeout items have been changed to Baud Rate, Voice Before Data, and Wait For Answer respectively. The basic functions of these items, as described in Chapter 5, remain the same.
9. **ENQ/ACK Support.** This new item has been added to the Full-Duplex Properties form and is described in Chapter 5.

The editor has a number of features which are not described in this manual. These features are described in the manual for the editor. The manual for the editor is available in the directory `$EDITOR_HOME`.

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## CHAPTER 1: COMMUNICATING WITH A HOST SYSTEM

This chapter will acquaint you with concepts and procedures you should know in order to communicate with a host system. Where applicable, the chapter refers you to other parts of this guide for technical and implementation details. Topics in this introduction include

- o The preconnection checklist, a list of items you should read before communicating with a host system for the first time.
- o The terminal description file, which controls connecting to and communicating with the host system.
- o Connecting to the host system or another GRiD Compass, a procedure to follow when dialing up and starting communications with a remote computer.
- o Automating keystrokes with soft keys, which lets you press a single key sequence to enter a series of commands or keystrokes you would otherwise enter manually at the keyboard.
- o The display buffer, which temporarily holds the data you receive from a host system.
- o Recording data, which lets you save the data you receive in a file for later use.
- o A summary of the GRiDTerm commands available to you while communicating with the host system.

## PRECONNECTION CHECKLIST

Check the following items before connecting to a host system:

1. Make sure that you have the proper telephone line connections available. A checklist for this purpose, as well as other information on telephone connections, is given in Appendix A.
2. Know the requirements of the application at the host system with which you want to connect. For example, you may need a special identification or password to log on and special procedures to log off. Once logged on, you must know how to interact with the programs at the host system.

You can get the information you need from another GRiDTerm user, from the data center with which you want to communicate, or from a programmer or technician at the data center responsible for the host application or program.

3. Make sure that you have the "GRiDTerm" and "Modem" files in the Programs subject of your GRiD Compass. When using an external modem, you must also have the "Serial" file in Programs.
4. Make sure that you have a valid terminal description file (described in the next section) on a storage device available to your GRiD Compass.

## THE TERMINAL DESCRIPTION FILE

The terminal description file is the file you select to communicate with the desired application or system. It contains the Access, Options, and Properties forms, which must be filled in to conform with the application and communication protocols at the host system. The file also contains any soft key definitions (described in Chapter 4) you may have written.

If you don't already have a terminal description file, you'll have to find another user who has one and then duplicate it into your own file. Make sure that the file you duplicate is valid for the host system you want to communicate with.

If a valid terminal description file isn't available, read Chapter 5 before continuing with this chapter.

## CONNECTING TO THE HOST SYSTEM OR ANOTHER GRID COMPASS

Follow the five steps below to connect with a host system or another GRiD Compass using GRiDTerm.



### TO CONNECT TO A HOST SYSTEM OR ANOTHER GRiD COMPASS

1. If necessary, remove the plug from the rear of your telephone, put it into the LINE slot on the rear panel of the GRiD Compass, and turn on your computer.
2. The File form appears. Type in the Device, Subject, and Title of your terminal description file (described in the previous section), and confirm.
3. The Access form appears. What you do next depends on whether you are originating the call or awaiting an incoming call.

If you are originating the call to a host system or another GRiD Compass, make sure that the Access form is filled in correctly; you may want to change an item, such as the phone number, in the form. Once the form is correct, confirm to start dialing.

If you are awaiting a call from the host system or another GRiD Compass, press CODE-?; then select Wait For Call From Host and confirm. Then, make sure that the Access form is correct and confirm to start dialing.

In either of the above cases, you can stop dialing or disconnect once the number is dialed by pressing CODE-A.

**NOTE:** In communications between two GRiD Compass computers, each operator must determine in advance a protocol for placing the call. That is, one must originate the call with CODE-A, while the other must await the call by using the Wait For Call From Host item in the Transfer form.

4. Once connected, data communications can begin, or, if the Voice Before Data item in the Access form is set to Yes (see Chapter 3), you can talk to the operator using the GRiD Compass telephone handset. On completing the conversation, confirm to start data communications.
5. Once the GRiD Compass is in data mode, you're ready to log on to the host system. You'll need the password and other information required to log you on to the host system.

If the connection isn't successful, you'll receive a message giving a reason; check this message against the list of messages in the "Error Messages" chapter at the end of this book and take the appropriate action.

## AUTOMATING KEYSTROKES

GRiDTerm lets you, by pressing only one key sequence, automatically send a series of messages, responses, commands, or any other data you would normally type in manually from the keyboard. You define this information as a soft key definition in a form provided by the Define Soft Key command. When you press a specified key sequence, GRiDTerm then processes the definition, interpreting the information in it as one or more keystrokes entered from the keyboard. A soft key definition can also provide the following capabilities:

- o GRiDTerm will process the soft key definition only when a message or prompt you define is received from the host system. For example, you can define a password in the soft key definition so that the password is automatically sent when a message from the host arrives requesting it .
- o You can define a period of time that GRiDTerm should wait for a message from the host system before it cancels the soft key.
- o You can intermix keystrokes you manually enter from the keyboard with those GRiDTerm processes as part of the soft key definition.
- o You can decrease the speed with which GRiDTerm transmits the data generated by the soft key definition. This is useful for those host systems unable to handle data transmitted to them at high speeds.

Here is an example of a practical use of soft keys together with the recording facility: you can define a soft key that automatically logs you on to the Dow Jones News/Retrieval service, requests the closing prices on the stocks of one or more corporations you specify, and then logs you off. You can then print or look at the closing prices in the file where you recorded them.

Defining soft keys for such repetitive tasks helps ensure accuracy in your transmissions and decreases the amount of data you must enter; using soft keys may also reduce connect time and billings for host system services and the use of long distance telephone lines.

See Chapter 4 for details on how to write soft key definitions and for examples that you can modify and use for your own purposes.

## THE DISPLAY BUFFER

The display buffer contains both the characters that you type and the data received from the host system. As shown in Figure 1-1, the display buffer can hold up to 32,000 characters -- over 500 lines of 60 characters each -- depending on the amount of transient storage



available. When the buffer is full, older data is removed to make room for newer data as it arrives.

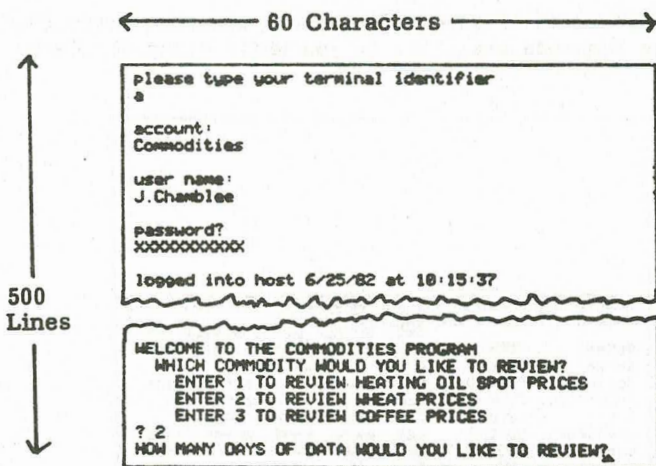


Figure 1-1. The Display Buffer

In GRiDTerm, pressing the Arrow keys does not move the cursor, as it does in the other applications. Instead, the entire display moves vertically or horizontally, allowing you to examine different portions of the display buffer as new data arrives.

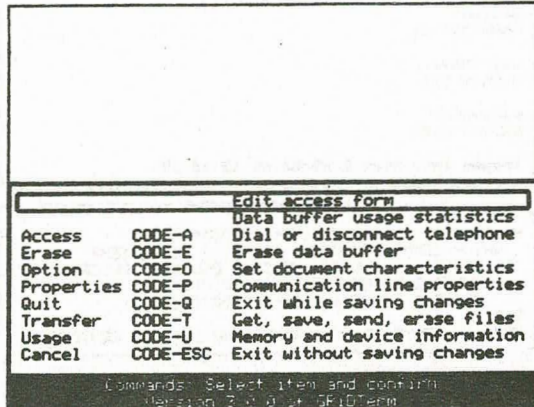
## RECORDING DATA

GRiDTerm exceeds the capabilities of other terminal support systems in one important aspect: it lets you record the data you send to and receive from the host system into a file on your GRiD Compass. You record data with the Record Character Stream items in the Transfer command (CODE-T), as described in Chapter 3.

Once the data is recorded, you may need to change its format for use as source data to GRiDPlan, GRiDPlot, or GRiDFile. GRiD Systems provides two products to aid you in converting the data to a suitable format: GRiDReformat, which converts the data automatically and GRiDWrite, with which you make the changes manually. Conversion with GRiDReformat is discussed in Chapter 6; conversion with GRiDWrite is discussed in Appendix B.

## COMMANDS AVAILABLE

The Commands menu (Figure 1-2) appears when you press CODE-?; it shows the commands available to you while using GRiDTerm.



Edit access form		
Access	CODE-A	Data buffer usage statistics
Erase	CODE-E	Dial or disconnect telephone
Option	CODE-O	Erase data buffer
Properties	CODE-P	Set document characteristics
Quit	CODE-Q	Communication line properties
Transfer	CODE-T	Exit while saving changes
Usage	CODE-U	Get, save, send, erase files
Cancel	CODE-ESC	Memory and device information
		Exit without saving changes

Commands: Select item and confirm  
Version 2.0.0 of GRiDTerm

Figure 1-2. The Commands Menu

The following sections lists the commands in alphabetical order and briefly describes the purpose of each command and, if applicable, where you can find more information about it.

### **ACCESS — CODE-A**

The Access command (CODE-A) displays the Access form; by filling in and confirming the form, you initiate connection to the desired host system. The form provides the information necessary to connect to the host system and becomes part of your terminal description file. See Chapter 5 for information on filling in the form.

When communications are over, you press CODE-A to disconnect from the host system.

### **BREAK — CTRL-ESC**

The Break command (CTRL-ESC) is not displayed in the Commands menu. It lets you stop communicating without logging off or disconnecting. Note that this command isn't recognized by all host systems. For more information on the Break key sequence and your host system, contact the customer service representative at the host system.

To signal a break, press CTRL-ESC. GRiDTerm then sends 500

milliseconds of space bits, which many host systems recognize as a signal to break communications. Upon recognition, the host system stops transmission and returns control to you.

You may need to press CTRL-ESC repeatedly, or hold those keys down until the host system recognizes the break.

Some host systems require a Break key sequence other than CTRL-ESC. If so, determine the correct Break sequence from your host system; then turn to Appendix C for the corresponding key sequence to use on the GRiD Compass.

#### **CANCEL — CODE-ESC**

The Cancel command (CODE-ESC) lets you exit GRiDTerm without saving any changes you've made to the Access, Property, or other GRiDTerm forms. The forms remain exactly as they were when you last saved them.

#### **DATA BUFFER USAGE STATISTICS — CODE-?**

Data Buffer Usage Statistics (CODE-?) shows what percentage of the display buffer is full. The display buffer stores both the data you type in and the data being received from the host system.

#### **DEFINE SOFT KEYS — CODE-?**

The Define Soft Keys command lets you automate a multi-key interactive sequence between GRiDTerm and the host system. You define in the Soft Keys form one or more expected character sequences from the host and the appropriate responses. See Chapter 4 for details.

#### **EDIT ACCESS FORM — CODE-?**

The Edit Access Form command lets you enter or change information in the Access form just as the Access command (CODE-A) does. When you confirm the form, the changes you make are in effect. However, GRiDTerm doesn't try to connect you to the host system as it does when you use CODE-A.

#### **ERASE — CODE-E**

The Erase command (CODE-E) erases the entire contents of the display buffer. You cannot erase only a portion of the buffer.

## OPTIONS -- CODE-O

The Options command (CODE-O) changes the manner in which data is displayed on your GRiDTerm screen. See Chapter 2 for details on the options available and how you select them.

## PROPERTIES -- CODE-P

The Properties command (CODE-P) provides forms that become part of the terminal description file; in the forms, you describe the rules and conventions that GRiDTerm uses when communicating with a particular host system. See Chapter 5 for information on filling in the Properties forms.

## QUIT -- CODE-Q

The Quit command (CODE-Q) lets you exit GRiDTerm and save any changes you made in the Access, Options, Properties, and other forms since you last saved them.

## TRANSFER -- CODE-T

The Transfer command (CODE-T) records data onto a storage device and performs a variety of other data transfer functions. See Chapter 3 for details.

## USAGE -- CODE-U

The Usage command (CODE-U) shows how the main memory (RAM, or Random Access Memory) in your GRiD Compass is being used, the amount of space being used, and the amount of space available in your external storage devices.

## WAIT FOR CALL FROM HOST -- CODE-?

The Wait For Call From Host command enables a host system or another GRiD Compass to initiate a call to you, instead of your initiating the call with the Access command (CODE-A). You can cancel the Wait For Call From Host command at any time by pressing CODE-A.

TO RECEIVE A CALL FROM A HOST SYSTEM OR GRiD COMPASS:

1. Make sure that the entries on the Access and Options forms are set correctly to allow communication with the host system.

**NOTE:** When sending a file to another GRiD Compass, the Transmission Mode item in the Properties form of the GRiD

Compass sending the file must be set to Full Duplex.

2. Move the outline until it surrounds the Wait For Call From Host command and confirm.
3. The Access form appears. Confirm this form.
4. GRiDTerm displays the message Waiting for Call until the connection is made.

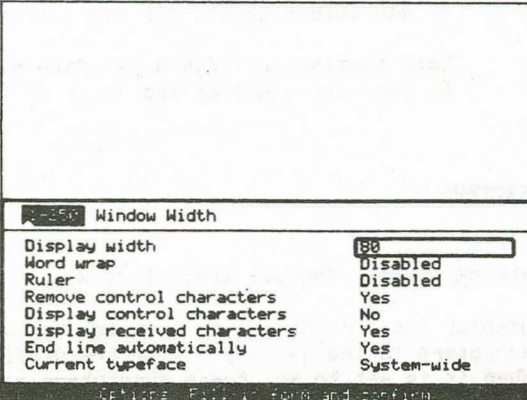
Note the following when communications are between two GRiD Compass computers:

- o Each GRiD Compass can use either the GRiD3101, GRiDTerm, or GRiDVT100 terminal emulator. It is not necessary for both emulators to be the same. A person using GRiDTerm can communicate with someone using GRiDVT100 or GRiD3101.
- o When GRiDTerm receives consecutive carriage return characters, it treats them as a single carriage return.
- o When transmitting a file using the Send a File item of the Transfer command (CODE-T), the Transmission Mode item in the Properties form must be set to Full Duplex.



## CHAPTER 2: THE OPTIONS COMMAND -- CODE-0

The Options command (CODE-0) invokes the Options form (Figure 2-1). You use the form to set the terminal options shown in the form and described in this section.



The screenshot shows a terminal window with a dark background. At the top, there is a large empty rectangular area. Below it, a horizontal line separates the header from the options. The header contains a small icon and the text "Window Width". Below the header, a list of options is displayed in two columns. The first column lists the options, and the second column shows their current settings. A small rectangular box highlights the "Display width" option, which is set to "80". At the bottom of the form, there is a dark bar with the text "Options: Fill in form and perform".

Window Width	
Display width	80
Word wrap	Disabled
Ruler	Disabled
Remove control characters	Yes
Display control characters	No
Display received characters	Yes
End line automatically	Yes
Current typeface	System-wide

Options: Fill in form and perform

Figure 2-1. The Options Form with Initial Settings

After filling out the form, either press CODE-RETURN to confirm the new settings or press ESC to cancel your selections, leaving the form as it was originally.

The following sections describe the items in the Options form in alphabetical order.

## CURRENT TYPEFACE

Initial setting is System-wide. Choices are: System-wide, Built-in 53, GRiD 53, GRiD 64, and GRiD 80.

By changing the size of the display characters, the Current Typeface option lets you increase or decrease the number of columns that appear on your screen. When you increase the number of columns, you increase the amount of information that appears.

<b>Choice</b>	<b>Result</b>
System-wide	The System-wide setting for Typeface set in the GRiDManager Options form applies.
Built-in 53	This setting provides the most efficient use of main memory (RAM) and is the same as GRiD 53. GRiD 64 and GRiD 80 use approximately 2,000 additional characters (bytes) of memory.
GRiD 53	This setting provides a typeface size that displays 53 characters across the width of the screen.
GRiD 64	This setting provides a typeface size that displays 64 characters across the width of the screen.
GRiD 80	This setting provides a typeface size that displays 80 characters across the width of the screen.

## DISPLAY CONTROL CHARACTERS

Initial setting is No. Choices are: Yes, No.

When the Display Control Characters item is set to Yes, all the control characters in the display buffer are displayed on the screen. When it is set to No, these characters are displayed as spaces.

You may need to see control characters in order to reformat the data sent by a host system into a format suitable for database, worksheet, and graph files. For information on reformatting data, see Chapter 6 and Appendix B.

This option doesn't affect recording of data to files.



## DISPLAY RECEIVED CHARACTERS

Initial setting is Yes. Choices are: Yes, No.

When Display Received Characters is set to Yes, all characters received from the host are displayed on your screen. When it is set to No, these characters aren't displayed.

To prevent losing data, set Display Received Characters to No when receiving large files at high line speeds.

## DISPLAY WIDTH

Initial setting is 80. Choices are: 2-250, Window Width.

Display Width defines the maximum length of a single line on the display. If GRiDTerm receives a line that is longer than the display width, the additional characters are wrapped around to the next line. (If the Word Wrap item is enabled, GRiDTerm wraps an entire word.) The display is adjusted to match the Display Width setting.

The Display Width option also determines where line-end or line-turnaround strings are inserted. See the End Line Automatically item described later in this section.

The Display Width item doesn't affect recording of data to files.

2-250            Allows you to type to a right margin setting between 1 and 250. If you type more than 52 characters, the right-most text will not appear on the screen. To see the additional text, scroll the display horizontally with Arrow keys.

Window Width    Sets the right margin at 52, the standard right margin of the GRiD Compass screen. Each line can contain up to 52 characters.

## END LINE AUTOMATICALLY

Initial setting is Yes. Choices are: Yes, No.

The End Line Automatically item applies only when you use the Transfer command (CODE-T) to send a file. It has no effect when you type directly to a host system.

In the GRiD Compass system, each paragraph of text usually ends with a CR-LF (Carriage Return-Line Feed) pair. For the GRiD Compass, a line consists of the characters that fit on one line of the display, plus the characters that you would see if you scrolled the display horizontally. When the paragraph is transmitted to the host system, the CR-LF pair is translated into the line-end or line-turnaround string (see the Properties -- CODE-P in Chapter 5).

On some host systems, a line includes all the text up to the line-end or line-turnaround string. That line corresponds to an entire paragraph (the text up to the CR-LF) in your original GRiD Compass file. Thus, when you send a GRiD Compass text file to a host system, it may try to read each paragraph as a single line. This shouldn't be a problem, but many host systems limit the length of the lines they will accept. Lines that are too long produce errors.

The End Line Automatically option causes line-end or line-turnaround string to be inserted into data transmitted to a host system. The setting for the Display Width option determines where the strings are inserted. If Display Width is set to 80, the additional strings are inserted after every 80 characters. If Display Width is set and Word Wrap is enabled, GRiDTerm performs word wrapping first, then inserts the additional strings. Figure 2-2 illustrates the principle with a 15-character line.

To use the End Line Automatically option when sending a file, find out the maximum line length for the host system. As long as the value for Display Width is smaller than this maximum, line length errors should not occur.

Some host computers might try to read this entire paragraph as a single line. If the line is too long, it causes an error.

Some host computers might try to read this entire paragraph as a single line. If the line is too long, it causes an error.

Some host computers might try to read this entire paragraph as a single line. If the line is too long, it causes an error.

Ordinary Line Ending

Automatic Line Ending without Word Wrapping

Automatic Line Ending with Word Wrapping

Figure 2-2. Ending the Line Automatically

Yes Line-end or line-turnaround strings are automatically inserted after n characters, where n is the setting of Display Width. The strings are inserted after word wrapping occurs. CR-LF pairs are converted into line-end or line-turnaround strings.

No GRiDTerm sends the file without modifying it, except to translate CR-LF pairs into line-end or line-turnaround strings.

### REMOVE CONTROL CHARACTERS

Initial setting is Yes. Choices are: Yes, No, Diagnostic.

The Remove Control Characters option lets you remove control characters from the incoming stream of characters before they are saved in the display buffer. When set to Diagnostic, it allows you to view all characters that GRiDTerm and the host system send to each other.

This option affects recording of data to files. If you set this option to Yes, recording is done after control characters have been removed.

Yes All control characters (ASCII value less than 32) other than Carriage Return (CR), Line Feed (LF), Horizontal Tab (TAB), and Backspace (BS) are removed from the incoming stream of characters. The DEL character is removed as a control character. Lone CR or LF characters are converted to CR-LF pairs. A list of the ASCII characters and their corresponding codes is given at the end of the GRiDTerm section.

Removed control characters are not entered into the display buffer or into any record file.

No Every character received is entered into the display buffer. Lone CR or LF characters are converted to CR-LF pairs. (All control characters are kept, except the BACKSPACE character, CTRL-H).

Diagnostic This setting prevents GRiDTerm from modifying the received characters. No control characters are removed or treated in any special way. Lone CR or LF characters are not converted to CR-LF pairs. In this mode, GRiDTerm interprets only a Line Feed (LF) character as the end-of-line character. For instance, a sequence of CRs (without LFs) would appear on a single line. This setting enables the GRiD Customer Support Center and other technical personnel to diagnose problems.

## RULER

Initial setting is Disabled. Choices are: Enabled, Disabled.

The ruler is a highlighted line at the top of the display (Figure 2-3) which marks the position of the cursor. The Ruler item determines whether the ruler is displayed.

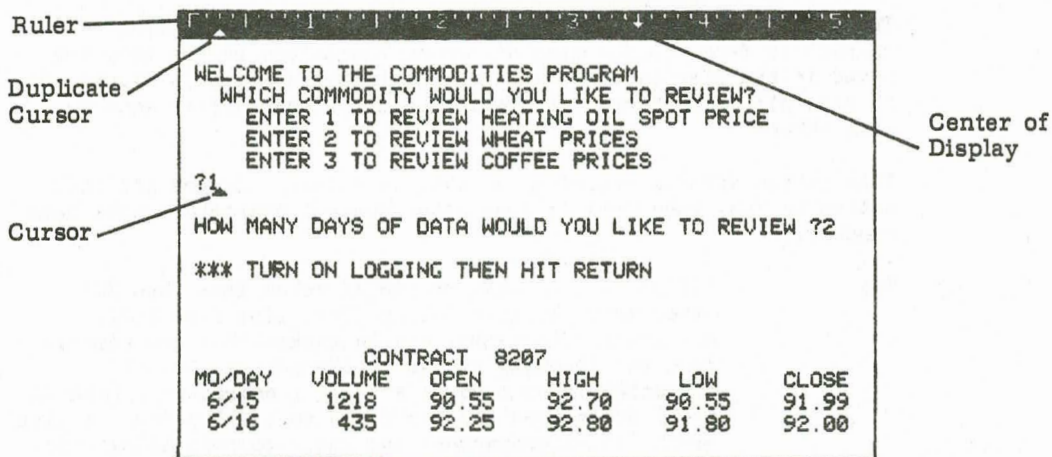


Figure 2-3. The Ruler Display

The ruler is helpful for horizontal scrolling when the display width is wider than the window width. The ruler includes the following features:

- o Tick marks at each column position.
- o An arrow that marks the display's center point, based on the Display Width item. (If the display has an odd-numbered width, then the center point is rounded up.)
- o Left and right margin marks that indicate the width of the display, based on the Display Width item.
- o A column indicator that tracks the column position of the cursor in the display area.

## WORD WRAP

Initial setting is Disabled. Choices are: Enabled, Disabled.

When an incoming line is longer than the display width, GRiDTerm

wraps the additional characters in the incoming line onto the next line. If Word Wrap is set to Disabled, then wrapping occurs one character at a time; in some instances, this allows part of a word to appear on one and the remainder on the next.

Setting Word Wrap to Enabled prevents words from being split between lines. Instead of splitting a word between two lines, GRiDTerm puts the entire word on the next line.

A word is defined as a group of one or more contiguous characters with a space preceding and following the group. The following are treated as three words:

1981 \$29.95 (-47%) magnolia



## CHAPTER 3: THE TRANSFER COMMAND -- CODE-T

The Transfer command (CODE-T) lets you record data as you communicate with the host system, copy data to other files, send a file to a host system, and make copies of your terminal description file. When you press CODE-T, the Transfer menu appears (Figure 3-1).

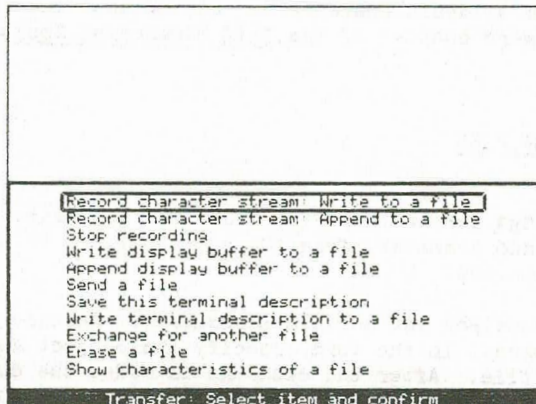


Figure 3-1. The Transfer Menu

The following sections describe the items on the Transfer menu in alphabetical order.

## APPEND DISPLAY BUFFER TO A FILE

The Append Display Buffer to a File item performs the same function as Write Display Buffer To a File except that the data you transfer is appended at the end of any data (if present) in the destination file. See Write Display Buffer To a File later in this chapter.

## ERASE A FILE

Using CODE-T and the Erase a File item lets you delete files as you work within GRiDTerm; you don't have to stop work, save your file, and enter GRiDManager. The Erase a File item is especially useful when you receive the "device full" message and need to create additional space to store your current file.

After you select and confirm Erase a File, the File form appears. You then specify the file you want to erase. After you confirm, the file is erased and you return to your current file.

You may not want to use this item for deleting multiple files. Instead, you should use the Erase Subjects or Files command under GRiDManager together with the Wildcard character when you eliminate numerous files from your devices. See the Erase File or Subjects -- CODE-E and Wildcard Character -- CODE-W sections in the "GRiDManager" chapter of the GRiD Management Tools Reference manual.

## EXCHANGE FOR ANOTHER FILE

The Exchange for Another File item lets you exit, save (at your option), and transfer, from the current file to the destination file you select.

After you select and confirm Exchange for Another File, the File form appears. In the form, specify the Subject and Title of the exchange file. After the exchange is made, the current file, including any changes you've made, is saved, unless you set the Save Changes item in the form to No. In this case, after the exchange is made, any changes made to the current file since it was last saved are lost.

If the file you exchange for is a terminal file, the settings in the new Access, Options, and Properties forms replace those in the current file. The Exchange item lets you dial a second host system rapidly once you finish talking to the first host.

The telephone connection isn't affected. You shouldn't exchange



terminal descriptions while you are logged on to a host system.

#### RECORD CHARACTER STREAM: APPEND TO A FILE

This Record/Append item performs the same function as the Record Character Stream: Write to a File item (below). However, any data where you record the stream won't be overwritten. Instead, the input stream is appended to the end of any data in the file.

You can use this Record/Append item to record several separate portions of a terminal session in a single file.

#### RECORD CHARACTER STREAM: WRITE TO A FILE

This item stores the characters received from a host system or the data that you type in. You can initiate recording at any time during a terminal session.

After selecting this item, the File form appears. Type in the Device, Title, and Kind of the file to receive the recorded data and confirm.

Recording begins after you confirm; characters in the display buffer before you confirm aren't recorded. Any data initially in the file is overwritten by the data you record.

In full-duplex mode and with Host Echo, only the characters sent by the host system are recorded. (Usually the host system echoes the data you enter as well as the responses from the host system.)

**CAUTION:** To avoid losing data, set Display Received Characters to No in the Options form (see Chapter 2) when receiving large files at high line speeds.

#### SAVE THIS TERMINAL DESCRIPTION

The Save This Terminal Description item lets you save the current soft key definitions and settings of the Options, Properties, and Access forms on the external storage device where your current terminal file resides.

## SEND A FILE

The Send a File item lets you efficiently transfer an entire file, one record at a time, to the host system. A record consists of one or more characters that end with CR-LF (Carriage Return-Line Feed) control characters. Any file produced by GRIDFile, GRIDPlan, or GRIDPlot has this format. You may need to reformat a file produced by other applications (a BASIC program, for example); see the Chapter 6 for details.

GRIDTerm transmits records differently for half-duplex and full-duplex modes as described in the following sections.

**NOTE:** When sending a file to another GRID Compass, the Transmission Mode item in the Properties form must be set to Full Duplex.

### **HALF DUPLEX**

When sending a record in half-duplex mode, GRIDTerm sends all the text up to a CR-LF (carriage return-line feed) control characters. It translates the CR-LF control characters into the selected Line Turnaround String Sent to Host, and then sends that string. (If the line-turnaround string is CR-LF, the CR-LF isn't sent.)

After sending each record, GRIDTerm waits for a Line Turnaround String Sent by Host. Once it receives that string, it sends the next record.

In half-duplex mode mode, GRIDTerm displays every character that it transmits to the host.

### **FULL DUPLEX**

When sending a record in full-duplex mode, GRIDTerm sends all the text up to a set of CR-LF control characters. It translates the CR-LF characters into the selected Line End String Sent to Host, and then sends that string to the host. (If the line-end string is CR-LF, the CR-LF isn't sent.) It repeats the process for all records in the file.

If you set XON/XOFF Support to Enabled, GRIDTerm stops transmitting as soon as it receives an XOFF, and resumes when it receives an XON.

Transmitted characters may not be displayed if the Echo Mode property is set to Host Echo.

## HOW TO SEND A FILE

The procedure below gives the steps you should follow when using the Send a File item. Some steps may need to be added or omitted, depending on the host system. For more information, contact your representative at the host system or the GRiD Customer Support Center.

### ▶ TO SEND A FILE

1. Log on to the host system and establish a connection as a terminal.
2. Some computers only accept lines that are less than a maximum length. You may need to change the setting of the Display Width item and choose Yes for End Line Automatically (see the Options -- CODE-O section above).
3. The host system may require you to issue a command before it can receive a file from your computer.
4. You may have to specify a file name that resides at the host system to receive the file.
5. The host system may require you to type in special characters as notification that you're about to send data. (If you include these characters at the beginning of your file, this step becomes unnecessary.)
6. Press CODE-T. The GRiDTerm Transfer menu appears.
7. Select Send a File and confirm.
8. Select the file to be sent and confirm. While the file is being transmitted, the following message appears:

Send file: In progress

Once GRiDTerm finishes sending the file, the following message appears:

Send file: Completed

9. You may have to type in special characters that notify the host system that you've completed data transmission. (If you include these characters at the end of your file, this step becomes unnecessary.)

▶ TO TEMPORARILY STOP SENDING

1. While the file is being sent, the following message appears:

Send: In progress

Press ESC.

2. Press CODE-RETURN to stop sending. To resume sending, press ESC again. When you stop sending, the phone line is still connected.

### SHOW CHARACTERISTICS OF A FILE

The Show Characteristics of a File item displays a report giving you information on a file, such as the size of the file, the creation date, the date of the last modifications, etc. After you select and confirm Show Characteristics of a File, the File form appears. Specify the desired file and then confirm.

### STOP RECORDING

The Stop Recording item turns off recording and closes the current recording file. Recording stops when you select and confirm this item.

### WRITE DISPLAY BUFFER TO A FILE

The Write Display Buffer to a File item lets you write your display buffer to a file. It performs the same function as Write to a File (see the Transfer -- CODE-T section in the "Common Commands" chapter of the GRiD Management Tools Reference manual), except that you aren't allowed to select the portions to be written; you must write the entire buffer.

### WRITE TERMINAL DESCRIPTION TO A FILE

The Write Terminal Description to a File item writes the current soft key definitions and settings of the Options, Properties, and Access forms into a file that you select. This allows you to save a particular terminal description, and then enter GRiDTerm with it

whenever you like. You can store a separate terminal description for each target host system.

If you choose a file that already exists, you can write over it with the new description; or you can press ESC, issue another CODE-T, reselect this item, and specify a different file.

**NOTE:** Before writing your terminal description to a file, you must confirm the Access form both when you fill it out and each time you change it.



## CHAPTER 4: THE DEFINE SOFT KEYS COMMAND -- CODE-?

This chapter provides information necessary to write soft key definitions. The following topics are covered:

- o An overview of the items in the Soft Keys form.
- o General rules that apply to all soft key definitions.
- o A detailed description of each item in the Soft Keys form.
- o Examples of filled-in Soft Keys forms.

See the Automating Keystrokes section in Chapter 1 for a discussion of the purposes and advantages of writing soft key definitions.

### OVERVIEW

When you select and confirm Define Soft Keys in the Commands menu, the Soft Keys form (Figure 4-1) appears.

Enter definition	
Delay between characters	No
Wait for host data	No timelimit
Host data character	1
Keyboard input character	^
Pause character	~
CODE-key character	~
Break key character	~
CODE-1 key	~
CODE-2 key	

Soft keys: Fill in form and confirm

Figure 4-1. The Soft Keys Form

The items in the Soft Keys form are described in detail later in this chapter; the following summarizes the items:

- ① The Delay Between Characters item describes how fast any data generated by the soft key is to be transmitted. The Wait for Host Data item determines how long GRiDTerm waits for a character sequence defined in the soft key definition as an expected message from the host system.
- ② The Host Data, Keyboard Input, Pause, CODE-key, and Break characters are special control characters you intersperse among other characters in the soft key definition. The purpose of these characters is explained in detail in the last section of this chapter. These control characters are already set as indicated in the form, but you can change them if you wish.
- ③ The CODE-1 key, CODE-2 key, etc. items indicate the key combination that, when entered manually at the keyboard, causes GRiDTerm to process your soft key definition. To the right of each CODE-n item is a highlighted box where you enter the soft key definition.
- ④ The area in the highlighted box is where you write the soft key definition. The definition can comprise characters you normally enter from the keyboard (for example, a control function or a response to a prompt), characters you expect from the host system (for example, a prompt), and the control characters listed in the upper portion of the Soft Keys form in Figure 4-1.



## GENERAL RULES

The following general rules apply to soft key definitions you enter in the highlighted box on the Soft Keys form:

- o You can define up to 20 separate soft keys. Each soft key definition can contain up to 200 characters and include any of the 128 ASCII characters.
- o When you save the terminal description file, the current soft key definitions are also saved.
- o You can cancel the processing of a soft key definition by pressing ESC.
- o When processing a soft key definition, GRiDTerm treats uppercase and lowercase letters as different letters. Therefore, the case of the letters you specify as expected messages or prompts from the host system must match the case of those that the host system actually transmits.
- o GRiDTerm removes NUL and DEL characters from messages or prompts sent by the host system; they need not be included in such messages or prompts you write in a soft key definition. However, you must include other control characters as part of such messages or prompts.
- o Keep in mind that GRiDTerm processes the characters you write in soft key definitions as if they were entered directly from the keyboard. For example, when you press RETURN, a carriage return (CR) character is generated. However, GRiDTerm transmits both the CR character and a line feed (LF) character.

## THE SOFT KEYS FORM

The following sections describe in detail the items in the Soft Keys form; the items appear in alphabetical order.

### **BREAK KEY CHARACTER**

Initial setting: \ (press CODE-SHIFT-")

This is a single character you insert into the string of characters that comprise a soft key definition. When GRiDTerm encounters the character, it sends a Break signal to the host system.

Press CODE-SHIFT-"" to enter the break key character (\). You can

designate a different character by simply changing the Break Key item in the Soft Keys form (Figure 4-1).

#### **CODE-n -- CODE-SHIFT-n**

Initial setting: No definition

CODE-n represents CODE-0 through CODE-9; CODE-SHIFT-n represents CODE-SHIFT-0 through CODE-SHIFT-9. These items appear at the bottom of the Soft Keys form. You write the soft key definition in the highlighted box to the right of each item.

You can write approximately 200 characters in each soft key definition. However, you might have to change the Typeface item in the Options form (see Chapter 2) in order to see all the characters on your screen.

#### **CODE-KEY CHARACTER**

Initial setting: ~ (press CODE-;)

This is a single character that designates the next character in the soft key definition as a CODE-key character. In GRiDTerm, it allows you to define the key sequence for confirm (CODE-RETURN) as follows:

```
._cr
```

Press CODE-; to enter the CODE-key character (~). Press CTRL-RETURN then BACKSPACE to enter the CR character.

You can designate a different CODE-key character by simply changing the CODE-key item in the Soft Keys form (Figure 4-1).

#### **DELAY BETWEEN CHARACTERS**

Initial setting: No. Choices are: Yes, No.

When set to Yes, the Delay Between Characters item causes GRiDTerm to pause 15 milliseconds between processing each character in the soft key definition. This allows those host systems unable to receive data at high transmission rates to receive the incoming characters intact.

#### **HOST DATA CHARACTER**

Initial setting: | (press CODE-SHIFT-;)

This host data character delineates a message or prompt expected from the host system. You insert one host data character before

and one after the expected message or prompt. When the message or prompt is received, GRiDTerm processes the next sequence (normally a response or a command) in the definition.

Press CODE-SHIFT-; to enter the host data character shown in the Soft Keys form (Figure 4-1). You can designate a different host data character by simply changing the Host Data Character item in the Soft Keys form.

You can delineate multiple messages or prompts expected from the host in the same definition as shown in the examples at the end of this chapter.

While waiting for the characters from the host system, GRiDTerm displays the message Waiting for characters: xxxxx. The xxxxx characters are replaced by the character string that GRiDTerm is waiting for.

Consider the following portion of a soft key definition:

```
|ENTER PASSWORD|steerforthor|QUERY|
```

When the prompt ENTER PASSWORD is received, the password steerforth and the CR character are processed as keystrokes, causing the password to be transmitted to the host system. GRiDTerm then waits for QUERY from the host system.

**Note:** The CR character in a soft key definition has the same effect as pressing the RETURN key. You enter the CR characters by pressing CTRL-RETURN or CTRL-M, which enters the CR and LF characters; you then erase the LF character by pressing BACKSPACE.

#### **KEYBOARD INPUT CHARACTER**

Initial setting: ^ (press SHIFT-6)

The keyboard input character allows data to be entered manually from the keyboard and be processed as part of the soft key definition. When GRiDTerm finds this character in a soft key definition, it stops processing the definition and awaits data from the keyboard.

The character you insert after the keyboard input character determines when GRiDTerm resumes processing the soft key definition. After halting soft key processing, GRiDTerm displays the message Input characters followed by: xx. The xx characters represent the character inserted after the keyboard input character. When you enter the character indicated in the message, GRiDTerm resumes processing the soft key definition.

Press SHIFT-6 (^) to enter the keyboard input character shown in the Soft Keys form (Figure 4-1). You can designate a different character by simply changing the keyboard input character item in the form.

**NOTE:** The character that restarts the soft key processing can be a CODE-key character (see below). If it is, the characters xx in the message above are replaced with CODE-x where x is the CODE-key character.

Consider the following portion of a soft key definition:

```
|ENTER PASSWORD|^@|QUERY|
```

After receiving ENTER PASSWORD from the host system, GRiDTerm encounters the carat character (^) and stops processing, displaying the following message:

```
Input characters followed by: @
```

The password, followed by @, can now be entered manually from the keyboard. Entering @ causes GRiDTerm to stop processing input from the keyboard and resume processing the next item in the soft key definition. In the above example, GRiDTerm waits for QUERY from the host system.

## PAUSE CHARACTER

Initial setting: . (the period character)

This pause character causes GRiDTerm to stop processing for one second before processing the next character in the soft key definition. GRiDTerm recognizes the character only when transmitting to the host; you can include it in the same soft key definition as part of a message or prompt expected from the host system, and GRiDTerm processes it just as it would any other character. Examples of using the pause character are given at the end of this chapter.

You can designate a different pause character by simply changing the Pause Character item in the Soft Keys form (Figure 4-1).

## WAIT FOR HOST DATA

Initial setting is 0; Choices are a value (expressed in seconds) or No time limit.

This value (expressed in seconds) specifies how long GRiDTerm should wait for a character sequence expected from the host system. If the sequence isn't received within the number of seconds you specify, GRiDTerm stops the processing of the soft key definition.

If you specify No time limit or 0, GRiDTerm waits indefinitely for the arrival of the character sequence or until you press ESC to halt processing.

**EXAMPLE 1:**

The following is a sample soft key definition for logging on to the Dow Jones News Retrieval service and entering into the Historical Quotes Database.

```
|xx|a|log in:|dow1;;CR|#####|^$CR|QUERY|./HQCR|QUERY|
```

Table 4-1 describes the effect of each item in the above soft key definition as GRiDTerm executes it.

Item	GRiDTerm Action
xx	GRiDTerm waits for the host system to send <u>xx</u> .
a	When <u>xx</u> is received, GRiDTerm transmits <u>a</u> .
log in:	GRiDTerm waits for the characters <u>log in:</u> from the host system.
dow1;; <sup>CR</sup>	GRiDTerm sends <u>dow1;;</u> , followed by one carriage return control character (CR) when <u>log in:</u> is received, . Note that GRiDTerm automatically transmits an LF character after CR, even though LF isn't in the definition.
#####	GRiDTerm waits for the characters <u>#####</u> .
^\$ <sup>CR</sup>	After receiving <u>#####</u> , GRiDTerm halts processing upon processing the carat character (^) and waits for the password to be entered manually from the keyboard.  When \$ is entered at the keyboard, GRiDTerm transmits a CR character to the host system.
QUERY	GRiDTerm waits for <u>QUERY</u> from the host system.
./HQ <sup>CR</sup>	After receiving <u>QUERY</u> , GRiDTerm stops processing the soft key for one second and then sends <u>./HQ</u> followed by a CR.
QUERY	After receiving the second <u>QUERY</u> , GRiDTerm stops the soft key definition and awaits data entered manually from the keyboard.
	<sup>1</sup> To enter the CR-LF characters, press CTRL-RETURN; to enter CR, press CTRL-RETURN, then BACKSPACE.

Table 4-1. Explanation of Soft Key Definition for Example 1.

**EXAMPLE 2**

The following is a sample soft key definition for retrieving the price quotation of IBM stock for the previous three periods.

```
IBM P3CR|STOCK IBM|. |crlfcrlf|.IBM P2CR|STOCK IBM|. |crlfcrlf|.IBM P1
```

Table 4-2 describes the effect of each item in the above soft key definition as GRiDTerm executes it.

Item	GRiDTerm Action
IBM P3 <sup>CR</sup>	GRiDTerm transmits <u>IBM P3</u> followed by CR <sup>1</sup> to the host system. This requests IBM stock prices for third most recent period.
STOCK IBM .	GRiDTerm waits for the host system to send <u>STOCK IBM</u> and then pauses one second for the following reasons: <ul style="list-style-type: none"><li>o <u>STOCK IBM</u> indicates the beginning of the stock quotation; it must be in uppercase letters with two spaces between STOCK and IBM. <u>Stock IBM</u>, <u>STOCK IBM</u>, <u>STOCK IBM</u> or other such permutations won't be recognized by GRiDTerm.</li><li>o Dow Jones transmits two sets of CR-LF characters following <u>STOCK IBM</u> before transmitting the stock quotation. The pause character in the definition allows the CR-LF characters to be processed while awaiting the quotation.</li></ul>
crlfcrlf	GRiDTerm waits for two sets of CR-LF <sup>1</sup> characters.
.IBM P2 <sup>CR</sup>	When the CR-LF characters are received, GRiDTerm pauses one second and transmits <u>IBM P2</u> followed by a carriage return.
STOCK IBM .	GRiDTerm waits for the host system to send <u>STOCK IBM</u> and then pauses one second.
crlfcrlf	GRiDTerm waits for two sets of CR-LF characters.
.IBM P1	When the CR-LF characters are received, GRiDTerm pauses one second and then transmits <u>IBM P1</u> followed by a carriage return. Upon receipt of the stock quotation for period 1 (P1), GRiDTerm is ready to accept input from the keyboard.
	<sup>1</sup> To enter the CR-LF characters, press CTRL-RETURN; to enter CR, press CTRL-RETURN, then BACKSPACE.

Table 4-2. Explanation of Soft Key Definition for Example 2.





## CHAPTER 5: SETTING UP GRIDTERM

This chapter provides information on preparing GRiDTerm for installation. The information is intended for a programmer, system technician, or other person familiar with the application and communications conventions at the host system. The following topics are covered:

- o Creating the terminal description file.
- o A description of the Access form and the Properties forms, where you specify information that makes up the terminal description file.

If you know a user with a terminal description file that you can duplicate, skip this chapter and read Chapter 1 instead.

### CREATING A TERMINAL DESCRIPTION FILE

The terminal description file is the file you select to communicate with a host system. It contains information you place in the Access and Properties forms, which must be filled in to match the application and communication protocols at the host system. You obtain most of the information for these forms from the target host system.

The items in the Access form establish a connection between your GRiDTerm terminal and a host system. See the Access -- CODE-A section in this chapter for details about each item in the form. The items in the Properties form describe the telecommunication conventions used at the target host system. See the Properties -- CODE-P section in this chapter for details about each item in the form.

Figure 5-1 shows the Terminal Description form; you can copy this figure and use it as a checklist to gather the information you need for the Access and Properties forms. You should have all the information required by the checklist before you begin the next procedure, Communicating with a Host System.

GRIDTerm Terminal Description Form	
<b>ACCESS FORM (CODE-A)</b>	
Remote System Name:	_____
Phone Number:	_____
Baud Rate (circle one):	300 1200 bits per second
Modem Type:	Internal
Dial Type (circle one):	Pulse Touch-Tone
Voice Before Data (circle one):	Yes No
Wait for Answer:	_____ seconds or 20 seconds
Speaker Volume (circle one):	Off Low Medium High
<b>TOP-LEVEL PROPERTIES FORM (CODE-P)</b>	
Transmission Mode (circle one):	Half Duplex Full Duplex
Backspace Character:	_____ or CTRL-H
Type of Parity Checking (circle one):	Off Odd Even Mark Space
Bits per Character (circle one):	7 8
Number of Stop Bits (circle one):	1 2

Figure 5-1. The Terminal Description Form (Part 1 of 2)

**HALF-DUPLEX PROPERTIES FORM<sup>1</sup>**

Line End Character Sent by Host (One ASCII character): \_\_\_\_\_

Line Turnaround String Sent by Host (circle one or write in choice):

2-Character ASCII String: \_\_\_\_\_ CR LF CTRL-Q CTRL-S EOT

Line Turnaround String Sent to Host (circle one or write in choice):

2-Character ASCII String: \_\_\_\_\_ CR LF CTRL-Q CTRL-S EOT

**FULL-DUPLEX PROPERTIES FORM<sup>1</sup>**

Echo Mode (circle one): Local Echo Host Echo

Line End Character Sent by Host (One ASCII character): \_\_\_\_\_

Line End String Sent to Host (circle one or write in choice):

\_\_\_\_\_ CR LF CR-LF

XON/XOFF Support (circle one): Enabled Disabled

ENQ/ACK Support (circle one): Enabled Disabled

<sup>1</sup> Fill out only one of these two forms. The setting of the Transmission Mode item on the Properties form indicates which form you should complete.

Figure 5-1. The Terminal Description Form (Part 2 of 2)

Here's a procedure you can follow to create a terminal description file.

▶ TO CREATE A TERMINAL DESCRIPTION FILE

1. Create a file with Kind set to Terminal.
2. Select the file just created and confirm.
3. The Access form appears. Press CODE-P (the Properties command).
4. The Top-Level Properties form (Figure 5-3) appears. Fill in the form using the Terminal Description form, if provided, and confirm.
5. The Full-Duplex Properties form (Figure 5-4) or the Half-Duplex Properties form (Figure 5-5) appears. Fill in the form and confirm.
6. Press CODE-A. The Access form appears. Fill in the form using the Terminal Description form, if provided, and confirm.
7. GRiDTerm attempts to connect to the host system you have selected. Repeat steps 4 and 5 as necessary, until you successfully establish a connection.
8. Use the Quit command (CODE-Q) to exit. GRiDTerm automatically saves the Access and Properties forms you completed.

## THE ACCESS COMMAND -- CODE-A

The Access command (CODE-A) invokes the Access form (Figure 5-2).

Phone number	<input type="text"/>
Remote system name	
Baud rate	1200
Modem type	Internal
Dial type	Touch-Tone
Voice before data	No
Wait for answer	20
Speaker Volume	Medium
Access: Fill in form and confirm to dial	

Figure 5-2. The Access Form with Initial Settings

The items in the form are described in alphabetical order below.

### **BAUD RATE**

Initial setting is 1200 bits per second. Choices are: Enter rate, 300, 1200, 2400, 4800, 9600.

The Baud Rate item is the speed at which data is transmitted and received. The host system determines which baud rate you choose. If you select the Enter Rate choice, you then type in the baud rate.

**NOTE:** Some host systems can accommodate more than one baud rate, either on the same telephone number or on different telephone numbers. See the literature provided by the host system or contact a service representative to find out which baud rate to use.

### **DIAL TYPE**

Initial setting is Touch-Tone<sup>TM</sup>. Choices are: Pulse, Touch-Tone.

Indicate whether your telephone system has rotary (or pulse) dialing, or whether it uses Touch-Tone.

## MODEM TYPE

Initial setting is Internal. Choices are: Internal, External.

A modem is the device by which a computer transmits data over phone lines.

**NOTE:** At present, GRiDTerm supports only an internal modem (the Bell 103/212A-compatible modem built into the GRiD Compass).

## PHONE NUMBER

No initial setting

The Phone Number item is the telephone number of the host system that you want to dial.

0-9, *, #	As on your telephone dial.
.	Each period adds a 1-second delay.
^	This character causes a delay of up to 15 seconds for a dial tone (it must wait for a dial tone before dialing).
space, comma, parentheses, hyphen	These characters improve readability. They don't affect dialing.

Examples:

^242

This number waits for a dial tone, then dials extension 242.

..9^555-1212

This number waits two seconds, dials a 9 to reach an outside line, waits for a dial tone, then dials 555-1212.

..9 ^ (408)-555-1212

This number waits two seconds, dials a 9 to reach an outside line, waits for a dial tone, and dials the long-distance number. The parentheses, spaces, and hyphens are for appearance only; they have no effect on dialing speed.

^9^555-1212.....00000 (213)-555-1212

This number is for a long-distance common carrier line (in this example, MCI). The GRiD Compass system waits for an internal dial tone, then dials a 9 to reach an outside line. It waits for an outside dial tone and dials the local number of the common carrier. The system waits 11 seconds while the local number rings, then it dials a five-digit access number followed by the ten-digit long-distance number that you are trying to call. (You must substitute your own access number for the five zeros.)

#### **REMOTE SYSTEM NAME**

No initial setting

The Remote System Name is the name of the system you are dialing. The setting has no effect on GRiDTerm; by providing a name, you have a reminder of the host system for which the form is set.

#### **SPEAKER VOLUME**

Initial setting is Medium. Choices are: Off, Low, Medium, High.

Speaker Volume controls the volume of the speaker within the GRiD Compass. The speaker stays on as the telephone number is dialed and is turned off after entering data mode.

With the speaker on, you can hear whether the line is busy, ringing, or disconnected.

#### **TRY AGAIN**

Initial setting is No. Choices are: Number of Tries, No, Keep Trying.

The Try Again item determines how many times GRiDTerm dials a number before a connection is successfully made. You can cancel the dialing process at any time by pressing CODE-A.

Choices are described below:

Choice	Result
Number of Tries	GRiDTerm tries to dial the number of times you specify, or until a connection is made, pausing five seconds between each dialing sequence.
No	GRiDTerm doesn't attempt to dial again if the first attempt to establish a connection is unsuccessful.
Keep Trying	GRiDTerm repeatedly dials the host system until a successful connection is made.

#### VOICE BEFORE DATA

Initial setting is No. Choices are: Yes, No.

When your GRiD Compass is in voice mode, you can talk to someone over the telephone. When it is in data mode, only data can be transmitted and received. You are always in voice mode while dialing. With this setting, you choose whether to enter data mode immediately after dialing, or to remain in voice mode.

There are several reasons for remaining in voice mode. When making a credit card call, for example, you can dial the number and talk to an operator before entering data mode to start communications. Likewise, when you're calling from a hotel, you can give your room number to an operator, if necessary.

**WARNING:** To converse in voice mode, you must have a special telephone handset available from GRiD Systems. Regular telephone handsets won't operate properly with the GRiD Compass.

Yes You remain in voice mode until you press CODE-RETURN.

No You enter data mode immediately after dialing.

#### WAIT FOR ANSWER

Initial setting is 20 seconds.

After changing from voice mode to data mode, the GRiD Compass system waits for a carrier signal from the host system. Wait for Answer determines how long the system waits for this carrier signal. If there is no signal from the carrier by the end of the period you specify, the system disconnects the line.

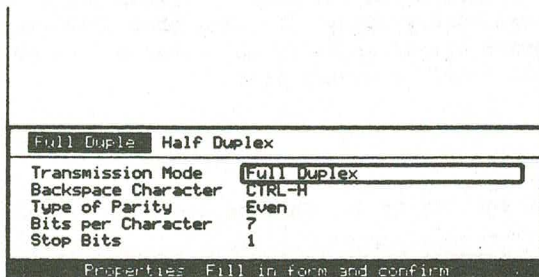


To set Wait for Answer, type an integer representing the maximum number of seconds the system is to wait before disconnecting.

### THE PROPERTIES COMMAND -- CODE-P

Your GRiD Compass and a host system follow a set of rules, or protocol, to govern the transmission of information back and forth. You specify this information in the Properties form. The protocol is determined by the host system, which must furnish you most of the information for this form. See the Preconnection Checklist section in Chapter 1.

Press CODE-P to make the Top-Level Properties form appear (Figure 5-3). Fill in the form and confirm; GRiDTerm then prompts you to fill in the Full-Duplex Properties form (Figure 5-4) or the Half-Duplex Properties form (Figure 5-5), depending on which duplex mode you specified in the Top-Level form.



The screenshot shows a terminal window with a form titled "Properties: Fill in form and confirm". At the top, there are two radio buttons: "Full Duplex" (which is selected) and "Half Duplex". Below this, the following settings are displayed:

Transmission Mode	Full Duplex
Backspace Character	CTRL-H
Type of Parity	Even
Bits per Character	7
Stop Bits	1

Figure 5-3. The Top-Level Properties Form with Initial Settings

Before confirming, you can cancel the command and any settings you've made by pressing the ESC key.

### **THE TOP-LEVEL PROPERTIES FORM**

The following sections describe the items in the Top-Level Properties form (Figure 5-3) in alphabetical order.

#### **Backspace Character**

Initial setting is CTRL-H. Choices are: CTRL-H, or any other ASCII character.

The Backspace Character item lets you designate a control character to send to the host system when you press the BACKSPACE key on your GRiD Compass keyboard. Although you'll normally use the initial setting, CTRL-H, which is the ASCII Backspace character, some host systems require a different ASCII character for backspacing.

GRiDTerm interprets a CTRL-H character received from the host system as the backspace character regardless of this setting.

When a CTRL-H is received, GRiDTerm deletes one character from the display buffer and moves the cursor backward by one space on the display. If Recording is set to On, the backspace character that is received is also recorded, but no characters are deleted on the record file.

### Bits Per Character

Initial setting is 7. Choices are: 5, 6, 7, 8.

The standard ASCII code uses only seven bits per character. If Bits Per Character is set to 8, then GRiDTerm always sets the high-order bit (8th bit) to 0 when transmitting. When receiving, GRiDTerm ignores the high-order bit of an 8-bit character.

**NOTE:** GRiDTerm was designed to transmit and receive ASCII text data, not binary data. The fact that GRiDTerm ignores the high-order bit of an 8-bit character may cause problems when GRiDTerm receives binary data.

### Stop Bits

Initial setting is 1. Choices are: 1, 1.5, 2.

In asynchronous transmission like GRiDTerm's, one or two extra bits, called stop bits, are always placed on the end of each character. These bits let the receiver detect the beginning of the next character. Usually only one stop bit is required, except at a transmission speed of 110 bits per second, which is not supported at present.

### Transmission Mode

Initial setting is Full Duplex. Choices are: Half Duplex, Full Duplex.

The Transmission Mode option determines whether the protocol allows transmission in one direction at a time, or in both directions at once.

**Half Duplex** Sets up a protocol supporting transmission in only one direction at a time.

This transmission protocol requires two specially defined strings called line-turnaround strings to change the direction of transmission between the GRiD Compass and the host system. They are described

later in the Half-Duplex Properties Form section.

**Full Duplex** Sets up a protocol supporting transmission of data in both directions at once.

Line-turnaround strings aren't required for full duplex. However, you can select XON/XOFF in the Full-Duplex Properties form (Figure 5-4) to avoid running out of space in the buffer.

### **Type of Parity**

Initial setting is Even. Choices are listed below.

A parity bit is a bit added to each transmitted character so that the receiver can check the character for accuracy. Set Type of Parity to match the parity expected by the host system.

- |              |  |
|--------------|--|
| <b>Off</b>   | No parity bit is set.  |
| <b>Odd</b>   | The Type of Parity is set to 1 to make the sum of the (binary) digits of the character into an odd number. |
| <b>Even</b>  | Parity is set to 1 to make the sum of the (binary) digits of the character into an even number.            |
| <b>Mark</b>  | Parity is always set to 1.   |
| <b>Space</b> | Parity is always set to 0.   |

## THE FULL-DUPLEX PROPERTIES FORM

If you set Transmission Mode on the Properties form to Full Duplex, then the Full-Duplex Properties form appears (Figure 5-4).

Local echo		Host echo
Echo mode	<input type="text" value="Host echo"/>	
Line end character sent by Host		
Line end string sent to Host	CR	
XON / XOFF support	Disabled	
ENQ / ACK support	Disabled	
Full duplex properties: Fill in form and confirm		

Figure 5-4. The Full-Duplex Properties Form with Initial Settings

After filling in the form, either press CODE-RETURN to confirm the new settings or press ESC to cancel your selections, leaving the form as it was originally.

The following sections describe the items on the Full-Duplex Properties form (Figure 5-4) in alphabetical order.

### Echo Mode

Initial setting is Host Echo. Choices are: Host Echo, Local Echo.

The Echo Mode determines whether or not a character must be sent to and echoed back by the host system before it is displayed. Using Host Echo is a common practice for full-duplex configurations.

**Host Echo** Characters are echoed by the host system before they appear on your terminal's display. When you type a character on the keyboard, that character is transmitted to and echoed back by the host system before appearing on your display. Thus, you always know which characters the host system receives.

**Local Echo** Characters are displayed on the screen as soon as you type them on the keyboard. If the host system is not echoing characters, then set Echo Mode to Local Echo.

If Recording is set to On, characters echoed locally are also recorded.

**NOTE:** In half-duplex mode, the host system doesn't echo characters. Therefore GRiDTerm always sets Echo Mode to Local Echo when the terminal is operating in half-duplex mode.

## **ENQ/ACK Support**

Initial setting is Disabled. Choices are: Disabled, Enabled.

If ENQ/ACK is enabled and if the host system transmits an ENQ control character, the GRiD Compass system responds with an ACK character.

## **Line End Character Sent By Host**

No initial setting. Choices are: Blank, or the ASCII character used by the host system for end-of-line.

To end the line, some host systems use a single CR (carriage return), a single LF (line feed), or some other character. The GRiD Compass requires each text line or record to end with a CR-LF pair. Whenever GRiDTerm receives a single CR or a single LF, it translates it into a CR-LF pair.

If the host system ends a line with a CR, LF, or CR-LF character, leave the Line End Character Sent By Host setting blank. If it uses any other character, type in that character for this setting. Upon receipt, GRiDTerm translates this character, as well as single CR or LF characters, into a CR-LF pair.

GRiDTerm stores the CR-LF pairs when it records data.

## **Line End String Sent To Host**

Initial setting is CR. Choices are: CR, or the ASCII character(s) that the host system recognizes as the line-end string.

When transmitting, you indicate a completed line by pressing the RETURN key. But some host systems don't recognize CR as the line-end string representing the last character of the line.

You must set Line End String Sent To Host to the character string that the host system expects to see at the end of each line. When you press the RETURN key, GRiDTerm translates the CR character into the character string indicated by the setting you type in.

When GRiDTerm sends a file to the host system, it translates all CR-LF pairs in the file into the character string indicated by the setting you type in.

## XON/XOFF Support

Initial setting is Disabled. Choices are: Enabled, Disabled.

The XON/XOFF Support option lets GRiDTerm signal the host system to start or stop transmitting data. When GRiDTerm wishes a host system to stop transmitting, it sends an XOFF character; to start transmitting, it sends an XON character.

Likewise, if the host sends an XOFF character to GRiDTerm, then GRiDTerm stops transmitting until it receives an XON character.

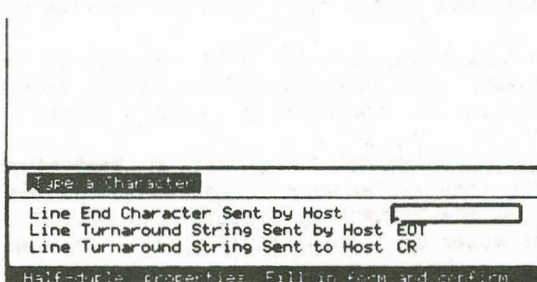
When XON/XOFF Support is set to Enabled, GRiDTerm sends an XOFF character when the display buffer becomes full. When space becomes available, it sends an XON character.

The XON and XOFF characters are hexadecimal 11 (DC1) and hexadecimal 13 (DC3), respectively. The XON/XOFF Support setting is ignored when GRiDTerm operates in half-duplex mode.

You can also send the XON/XOFF characters directly from the keyboard. Press CTRL-Q for XON, and CTRL-S for XOFF. If characters are arriving too quickly, press CTRL-S to stop transmission. Press CTRL-Q to tell the host system to start transmitting again. If you suspect the host is locked into an XOFF state, press CTRL-Q.

## THE HALF-DUPLEX PROPERTIES FORM

If you set Transmission Mode on the Top-Level Properties form to Half Duplex, then the Half-Duplex Properties form appears (Figure 5-5).



The screenshot shows a terminal window with a title bar that says "Type a Character". Below the title bar, there are three lines of text, each followed by a small rectangular input field:

- Line End Character Sent by Host
- Line Turnaround String Sent by Host EDI
- Line Turnaround String Sent to Host CR

At the bottom of the form, there is a footer that reads: "Half-duplex properties. Fill in form and confirm."

Figure 5-5. The Half-Duplex Properties Form with Initial Settings

After filling in the form, either press CODE-RETURN to confirm the new settings or press ESC to cancel your selections, leaving the form as it was originally.

The following sections describe the items in the Half-Duplex Properties form in alphabetical order.

### **Line End Character Sent By Host**

No initial setting. Choices are: Blank, or the ASCII character used by the host system for end-of-line.

To end each line, some host systems use a single CR, a single LF, or some other character. The GRiD Compass requires each text line or record to end with a CR-LF pair. Whenever GRiDTerm receives a single CR or a single LF, it translates it into a CR-LF pair and continues to receive.

The host system sends a line-end character only when sending more than one line.

If the host system ends a line with a CR, LF, or CR-LF character, leave this Line End Character Sent By Host item blank. If it uses any other character, you must type in that character for this setting. Upon receipt, GRiDTerm translates this character, as well as single CR or LF characters, into a CR-LF pair.

GRiDTerm stores the CR-LF pairs while recording data.

### **Line-Turnaround String Sent By Host**

Initial setting is EOT. Choices are: CR, LF, CTRL-Q, CTRL-S, EOT, or any ASCII characters (a maximum of two) that the host system recognizes as the line-turnaround string.

The line-turnaround string tells GRiDTerm that the host system has stopped transmitting and that GRiDTerm is now free to transmit. GRiDTerm translates this line-turnaround string into a CR-LF pair.

**NOTE:** When sending more than one line, the host system separates each line with line-end characters (described above).

### **Line-Turnaround String Sent To Host**

Initial setting is CR. Choices are: CR, LF, CTRL-Q, CTRL-S, EOT, or any ASCII characters (a maximum of two) that the host system recognizes as a line-turnaround string.

The Line-Turnaround String Sent To Host item tells the host system to stop receiving and begin transmitting data.

When you press the RETURN key, GRiDTerm sends the character string indicated by the setting you type in.

When GRiDTerm transmits a file to the host system, it translates all CR-LF pairs in the file into the character string indicated by the setting you type in.





## CHAPTER 6: GRIDREFORMAT

This chapter introduces the GRiDReformat software product, describes its purpose and how to use it, and provides detailed reference information on the available commands.

### PURPOSE

GRiDReformat converts data from a file you specify into a format suitable for GRiDPlot, GRiDPlan, GRiDFile, or any other GRiD application requiring the tabular placement of data. The data you record from a host computer with GRiDTerm or another terminal emulator quite often has the format of a printed report, which is not suitable for processing in a graph, worksheet, or database file.

An overview of the processing steps for reformatting data is shown in Figure 6-1. The text that follows the figure describes this overview.

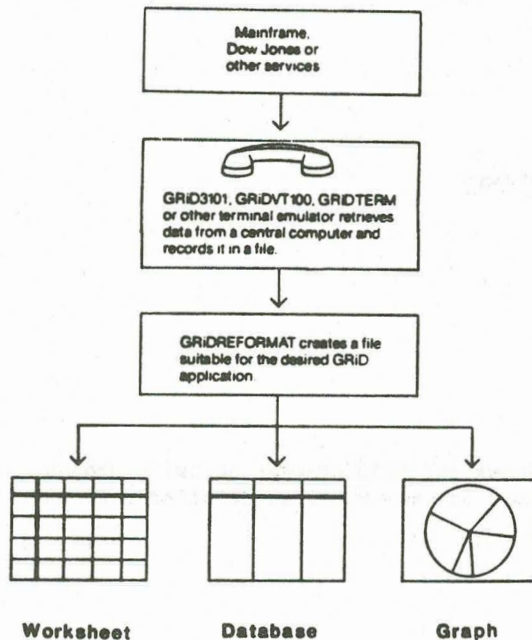


Figure 6-1. Recording and Reformatting Data

The source of the data to be reformatted may be your host system or some other external host system such as Dow Jones.

The data is recorded into a file you designate on the GRID Compass using GRID3101, GRIDVT100, or GRIDTerm.

Then, using either the options you specify or those provided initially by GRIDReformat, you can reformat the data.

The output file you designate for the reformatted can be an existing file or a new file with the Kind of your choice. For example, if after reformatting the data you want to perform calculations using GRIDPlan, you would set Kind for the output file to Worksheet.

You can specify that GRIDReformat treat the rows or columns in your input file as labels or data. Labels are headings and other descriptive information; GRIDReformat can either retain labels in their original format or delete them, as you specify.

Data consists of numbers you want to use in a database, worksheet, or graph file; special characters such as dollar signs, decimal points, and commas may be included. GRiDReformat converts the rows and columns you specify as data into a format acceptable by GRiDFile, GRiDPlan, and GRiDPlot. For example, consider the fictional report in Figure 6-2 recorded from a host system into a file on the GRiD Compass.

```

APPLICATION "UNITS MOVED"

READY  ENTER QUERY

sales march us

SALES FOR MARCH 1983 IN US FOLLOWS

REGION      UNITS      REVENUE      TOTAL SHARE
Chicago     2879      $54,470.68   13 5/100
Houston     3999      $94,581.08   22 2/3
Los Angeles 6684      $126,461.28  30 1/3
New York    7492      $141,748.64  33 9/10
  
```

Figure 6-2. Example of Input File

After processing with GRiDReformat, the same data would appear in the format shown in Figure 6-3.

```

Chicago     2879 54470.68 13.05
Houston     3999 94581.08 22.667
Los Angeles 6684 126461.28 30.333
New York    7492 141748.64 33.9
  
```

Figure 6-3. Example of GRiDReformat Output in a Text File

Comparing the data in Figures 6-2 and 6-3 illustrates some of the functions of GRiDReformat. All of the functions are summarized below.

- o Commas and dollar signs are deleted from the statistical data in the columns. In addition, you can specify other characters or numbers you want deleted.
- o Negative numbers are given a leading minus sign. For example, 999-, (999), and 999CR are converted to -999.
- o The letter K following an integer is replaced with 000; for example, 123K becomes 123000.

- o Fractions, when present with at least one integer, are converted to decimals. You must manually convert fractions without accompanying integers.
- o Columnar spacing is changed to make the format compatible with that required by the GRiD applications: a tab is added between columns of data; the carriage return-line feed (CR-LF) characters are added after the last column in each line.

## SETTING UP A REFORMAT FILE

Here are the steps to follow in creating and using a reformat file.

### ▶ TO CREATE AND USE A REFORMAT FILE

1. Create a file with Kind set to Reformat. See the File Form section in the "System Basics" chapter in the GRiD Management Tools Reference manual for information on creating files.

Type in a Title that describes the input data or the final report. You can create several reformat files for reports you create or one for each set of uniquely formatted input data.

After confirming the File form, the GRiDReformat Commands menu appears (Figure 6-4).

2. Press CODE-T and select Reformat a Data File. You are prompted to specify the file that contains the source data and an output file to contain the reformatted data. You should request that the output file and its application be brought into main memory (RAM) for you to work on when reformatting is complete. See the Transfer -- CODE-T section later in this chapter for information on how to make this request.

Your data is formatted according to the initial settings in the Options form; the initial settings will probably meet the requirements of most of the files you'll need to reformat. Therefore, you should try reformatting the file once before changing them. Then, if the formatted data doesn't suit your needs, adjust the settings in the form (see step 5 below) and try reformatting again.

3. When reformatting is complete, the output file appears on your screen if you requested it in step 2.

If the format of the data in the output file suits your needs, you can proceed with your work.

If you're not satisfied with the reformatted file (for example, if data is missing, or if the file contains excess columns and rows or unwanted characters), go to the next step.

4. Press CODE-T and select Exchange for Another File; specify the Reformat file you created in step 1.
5. When the Commands menu appears, press CODE-O and adjust the settings in the Options form (see the Options (Reformat) -- CODE-O section in this chapter) so that they reflect your needs; then repeat steps 2 and 3 above.

### EXAMPLE

In the example that follows, GRiDReformat is used to reformat a report so that revenue data can be graphed.

REGION	UNITS	REVENUE	TOTAL SHARE
Chicago	2879	\$54,470.68	13 5/100
Houston	3999	\$94,581.08	22 2/3
Los Angeles	6684	\$126,461.28	30 1/3
New York	7492	\$141,748.64	33 9/10

First, Reformat a Data File on the Transfer menu is selected and confirmed. (Because the initial settings of the Options form are used, no changes in the form are necessary.)

In the first File form that appears (shown below), Data from host is specified as the title of the input file.

Convert	Reformat
Data from host	Text
Revenue report	Graph

Device	Hard Disk
Subject	Reports
Title	Data from host
Kind	Text
Password	

Select input file. Fill in form and confirm

In the second File form that appears (shown below), Revenue report is specified as the title of the output file.

Keep current file
Get new file and its application
Get new file only

Device	Hard Disk
Subject	Reports
Title	Revenue report
Kind	Graph
Password	
Next action	Get new file and its application

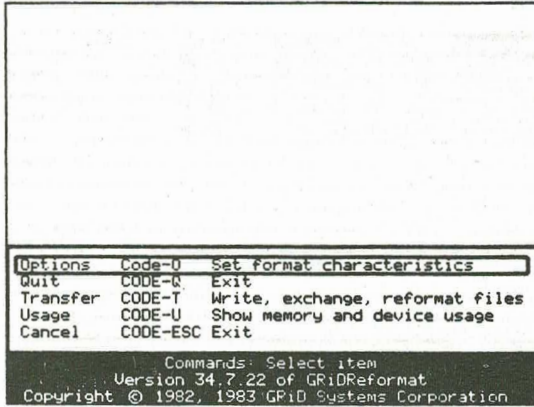
Select output file. Fill in form and confirm

Note that Next Action on the form specifies Get File and Its Application. This setting causes the output file and the GRIDPlot application to be brought into main memory (RAM) when reformatting



## COMMANDS OVERVIEW

The commands available for GRiDReformat are shown in Figure 6-4.



Options	Code-0	Set format characteristics
Quit	Code-Q	Exit
Transfer	Code-T	Write, exchange, reformat files
Usage	Code-U	Show memory and device usage
Cancel	Code-ESC	Exit

Commands: Select item  
Version 34.7.22 of GRiDReformat  
Copyright © 1982, 1983 GRiD Systems Corporation

Figure 6-4. The Commands Menu

The commands are described in alphabetical order in the following sections.

### THE OPTIONS COMMAND -- CODE-0

The Options command (CODE-0) causes the Options form (Figure 6-5) to appear on the screen. The options you select determine how your formatted data appears.



Keyword <b>At the end</b>	
Start formatting	From beginning
End formatting	<b>At the end</b>
Labels: Number of rows	1
Discard rows	No
Number of cols	1
Discard cols	No
Data: Number of rows	To the end
Discard non-data rows	No
Number of cols	To the end
Discard non-data cols	No
Remove special characters	None
Options: Fill in form and confirm	

Figure 6-5. The Options Form with Initial Settings

When you use the initial settings in the Options form, GRiDReformat processes your data as described below.

- o The first row and the first column are treated as labels and are retained in the output. (Labels are described in detail in the Labels section below.)
- o The remaining rows and columns are formatted as data (described in detail under the Data section below) and are retained in the output. GRiDReformat recognizes the first column of data after finding two successive spaces (blanks) starting at the left margin. It recognizes subsequent columns of data after finding one or more spaces.

The following sections describe each of the items on the form. The sections are arranged alphabetically according to the first word in each item.

## DATA

The Data options (described in the subsections that follow) let you control which rows and columns GRiDReformat treats as data. GRiDReformat puts the information in data rows and columns into a format suitable for manipulation in graph, worksheet, and database files. Figure 6-6 gives an example of data before and after reformatting.

Before	After
273-	-273
273CR	-273
(273)	-273
273K	273000
\$273	273
1,273	1273
12 3/4	12.75

Figure 6-6. Data Before and After Reformatting

### Data: Number of Rows

Initial setting is To the End. Choices are: 1-250, To the End.

In Number of Rows, you specify how many rows are to be treated as containing data. GRiDReformat treats the first row following the final row of labels as data.

If you type in a number between 1 and 250, that number of rows following the final row of labels is reformatted. If you specify To the End, all rows after the final row of labels are reformatted.

### Data: Discard Non-Data Rows

Initial setting is No. Choices are: Yes, No.

If you specify Yes for Discard Non-Data Rows, only those fields with numbers are retained. Other characters are replaced with blanks. If an entire row contains non-numeric characters, GRiDReformat deletes the row. If you specify No, all information in the data rows is retained.

### Data: Number of Cols

Initial setting is To the End. Choices are: Number, To the End.

In the Number of Cols item, you specify how many columns, from left to right, are to be treated as data. GRiDReformat treats as data the first column to the right of the final column of labels.

If you change the initial setting in the Options form, a second form appears (Figure 6-7) after you confirm the Options form. You use this form to specify a width for each column you define as data. In the example shown in Figure 6-7, 5 was typed in as the Number of Cols setting.

1-258	Automatic
Column 1	Automatic
Column 2	Automatic
Column 3	Automatic
Column 4	Automatic
Column 5	Automatic

Data column widths: Fill in form and confirm

Figure 6-7. Data Column Width Form

#### **Data: Discard Non-Data Cols**

Initial setting is No. Choices are: Yes, No.

If you specify Yes for Discard Non-Data Cols, fields containing non-numeric characters are filled with spaces. If you specify No, all information in the data columns is retained.

#### **END FORMATTING**

Initial setting is At the End. Choices are: Keyword, At the End.

This option specifies the row where formatting is to stop.

If you specify At the End, GRiDReformat terminates after processing the last row in the input file.

If you specify Keyword, formatting stops at the first occurrence of the keyword.

## **LABELS**

The Labels options (described in the subsections that follow) let you control which rows and columns GRiDReformat treats as labels, and whether it is to retain or delete them for the output file.

The information in the rows and columns treated as labels remains in the same format after the reformatting process. You would typically use this information as labels for graphs, worksheets, or databases.

### **Labels: Number of Rows**

Initial setting is 1. Choices are: Number, None.

In the Number of Rows item, you specify how many rows are to be treated as labels, starting at either the beginning of the input file or the row containing a keyword you specify in the Start Formatting option. The initial setting of this item causes GRiDReformat to treat the first row as labels.

### **Labels: Discard Rows**

Initial setting is No. Choices are: Yes; No.

If you specify Yes for Discard Rows, the rows you specify as labels don't appear in the output file after reformatting. If you specify No, the labels appear in your output file.

### **Labels: Number of Cols**

Initial setting is 1. Choices are: Number, None.

In the Number of Cols item, you specify how many columns, from left to right, are to be treated as labels. The initial setting of this item causes GRiDReformat to treat the first column as labels.

If you change the initial setting in the Options form, a second form appears (Figure 6-8) after you confirm the Options form. You use this form to specify a width for each column you define as containing labels. In the example shown in Figure 6-8, 3 was typed in as the Number of Cols setting.

1-250 Automatic	
Column 1	Automatic
Column 2	Automatic
Column 3	Automatic
Label column widths: Fill in form and confirm	

Figure 6-8. Label Column Width Form

**Labels: Discard Cols**

Initial setting is No. Choices are: Yes, No.

If you specify Yes for Discard Cols, the columns you specify as labels don't appear in the output file after reformatting. If you specify No, the columns with labels appear in your output file.

**REMOVE SPECIAL CHARACTERS**

Initial setting is None. Choices are: List of Chars Separated by Spaces, None.

GRiDReformat automatically removes dollar signs (\$) and commas (,) in columns and rows you define as data. The Remove Special Characters option lets you specify additional characters for GRiDReformat to remove.

You can specify None (for no additional characters) or type in one or more characters, each separated by one space, as the additional characters to be removed.

**START FORMATTING**

Initial setting is From the Beginning. Choices are: Keyword, From the Beginning.

This option specifies the row at which formatting is to start.

If you specify From the Beginning, formatting starts at the first

non-blank row. All preceding spaces in the file are ignored.

If you specify Keyword, the following rules apply:

- o Formatting starts at the first occurrence of the keyword.
- o GRiDReformat doesn't distinguish between uppercase and lowercase characters in the keyword.

## THE TRANSFER COMMAND -- CODE-T

The Transfer command (CODE-T) causes the Transfer menu to appear (Figure 6-9).

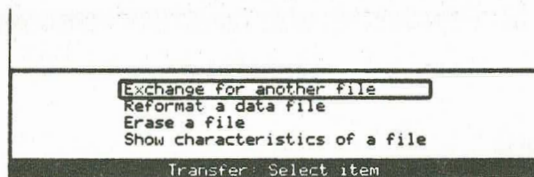


Figure 6-9. The Transfer Menu

All of the items in Figure 6-9, except Reformat a Data File, are described in alphabetical order under the Transfer -- CODE-T section in the "Common Commands" chapter of the GRiD Management Tools Reference manual.

## **REFORMAT A DATA FILE**

The Reformat a Data File item lets you reformat your input data and place it in an output file you specify. For your output file

- o You can specify a new file or an existing file.
- o You can specify any Kind you wish. Your selection depends on how you want to use the output data. For example, for GRiDPlan, you would specify Kind to Worksheet; for GRiDPlot, to Graph; for GRiDFile, to Database; etc.

You can cause the reformatted output file to automatically appear on your screen immediately after reformatting; you can then work with it as your current file. You cause this to happen in the Next Action item on the File form. See Write to a File under the Transfer -- CODE-T section in the "Common Commands" chapter of the GRiD Management Tools Reference manual for details.

## APPENDIX A: TELEPHONE EQUIPMENT

Appendix A provides the following information:

- o A checklist to determine the suitability of your telephone and related equipment for GRiD Compass communications.
- o Information on accessories you may find helpful when you communicate via your telephone connection.

### TELEPHONE EQUIPMENT CHECKLIST

Use this checklist the first time you send and receive data via your telephone equipment.

- o The Federal Communications Commission (FCC) requires that you notify your local telephone company before using telephone lines to transmit data. For details, see the GRiD Compass Owner's Manual.
- o Remember that you can't receive and make telephone calls on the line when you are using it to receive or transmit data.
- o The telephone cord must have an RJ-11 modular plug, a transparent plastic apparatus with four delicate wires. If your telephone cord has a four-pronged round plug instead, obtain an RJ-11 adaptor for it.
- o Your company's Private Branch Exchange (PBX) facilities may not be compatible with the GRiD Compass, even though the physical connectors (RJ-11) are identical. If in doubt, contact the GRiD Customer Support Center for compatibility information.

- o If you have a telephone handset (available from GRiD Systems), you can plug it into the slot marked AUDIO on the rear panel of the GRiD Compass. Regular telephone handsets don't work with the GRiD Compass. You need the handset only if you plan to talk to a telephone operator after dialing.
- o If your telephone has a Call Waiting feature, you may want to disable it (by forwarding all your calls to another extension) or use your computer with a different extension. The Call Waiting signal can disrupt the telephone connection.

## **TELEPHONE COMMUNICATIONS WITH THE GRID COMPASS**

The GRiD Compass uses a built-in modem to transmit data and voice through the phone network. For the modem to operate properly, your phone must have an analog electrical connection and not pass through a digital telephone switching system.

Your Compass may be connected to either a single-line or multiple-line telephone connection. The most common type of connection, the single-line, is discussed in the first section below. The multiple-line connection, encountered more often in office facilities, is discussed in the second section.

### **MODULAR JACKS FOR SINGLE-LINE CONNECTION**

At the back of your GRiD Compass under the label TELEPHONE are two small connector slots marked LINE and AUDIO. The AUDIO port is used for connection to the handset you may have purchased with your computer. The LINE slot is a standard phone-line RJ-11 modular jack connector. Most modern phone systems use these types of connectors and matching male jacks to provide the link between single-line phones and wall-box covers.

The simplest way to connect your Compass to the phone system is to unplug the modular jack from the back of your single-line phone and plug it into the back of your Compass. This technique provides direct dial capabilities for both voice and data transmissions. The following sections discuss situations that require a different type of connection.

### **MODULAR JACK ACCESSORIES**

If you want to provide parallel access to your normal phone along with the GRiD Compass, use the Y-connector provided with your computer. Unplug the line from the back of your phone and plug the Y-connector in its place. Now plug the phone line and a separate modular phone cord for your Compass in the back of the Y-connector.

You now have access to your regular phone for normal operations as well as



GRiD Compass access to the same line for computer-related operations. Other useful accessories (usually available at local electronics stores) include

- o The 25-foot modular telephone extension cable can be used when you want to keep the GRiD Compass distant from your phone.
- o The female-to-female modular phone cord connector (or inline coupler) can be used when you need an extra-long extension.
- o The modular jack adapter with four prongs should be used for the four-prong phone connector.

#### **MODULAR JACKS FOR MULTIPLE-LINE CONNECTION**

In many offices, phones have multiple lines attached to them through a single cord. You can tap into one of these lines for the modular connection into the GRiD Compass.

A pair of long metal connectors, mated together, are usually at the wall connection for a multi-line phone. You can insert an adapter between these connectors to provide access to up to four lines through individual modular jacks. Several models of these adapters, varying from single-line taps to multiple-line taps, are available at local electronics stores.

Once connected to the telephone system, your GRiD Compass is ready for voice and data communications with GRiD Central or other computer sources.

If you use the Y-connector for a parallel connection to both your regular telephone and your GRiD Compass, and wish to dial with your regular telephone, use the following procedure:

- o Activate your Sign-on or terminal description file by filling out the File form and confirming.
- o Enter a period for the telephone number on the Sign-on or Access form.
- o Dial GRiD Central or the source computer on your telephone.
- o When you hear the GRiD Central or source computer signal on your receiver, gently (to avoid breaking the signal) hang up the telephone and confirm the Sign-on or Access form.



## APPENDIX B: REFORMATTING WITH GRIDWRITE

This appendix explains how to convert data into a format suitable for GRIDPlan, GRIDPlot, GRIDFile, and the other GRID management tools. This format is called the interchange format, because it is interchangeable among the management tools.

You can also use GRIDReformat, a software product that automatically converts data files into the interchange format. For more information, see Chapter 6.

### EXAMPLE OF INTERCHANGE FORMAT FILE

Figure B-1 compares a file in text format with a file in interchange format. Note that the interchange format requires that (1) each column of data be separated with a horizontal tab and (2) each line of data end with CR-LF (carriage return-line feed) control characters.

Market...Share.....1977-1979...↵	Market...Share▶1977-1979↵
↵.....1977.....1978.....1979↵	▶1977▶1978▶1979↵
Corn.....20.....25.....22↵	Corn▶20▶25▶22↵
Wheat.....41.....44.....39↵	Wheat▶41▶44▶39↵
Soy..Beans.....14.....19.....24↵	Soy..Beans▶14▶19▶24↵

ORIGINAL TEXT

INTERCHANGE FORMAT

Figure B-1. Interchange File Format (Sample)

Interchange files are needed primarily for the tabular or "cell-based" tools, such as GRIDPlan, GRIDFile, and GRIDPlot. Figure B-2 shows the interchange file of Figure B-1 as it would appear in a database file (GRIDFile) and a worksheet file (GRIDPlan). Compare Figures B-1 and B-2, noting the following:

- o A Horizontal Tab causes the data after it to appear in the next column. In Figure B-2, the extra Horizontal Tab before 1977 causes an empty column to appear.
- o A CR-LF causes the data after it to appear in the next row, starting at the first column.
- o A CR-LF without any preceding text causes an empty row to appear.

A	B	C	D	E
Market Share	1977-1979			
	1977	1978	1979	
Corn	20	25	22	
Wheat	41	44	39	
Soy Beans	14	19	24	

A	B	C	D	E
1 Market Share	1977-1979			
2				
3		1977.00	1978.00	1979.00
4	Corn	20.00	25.00	22.00
5	Wheat	41.00	44.00	39.00
6	Soy Beans	14.00	19.00	24.00
7				
8				
9				
10				
11				
12				
13				
14				
15				

A8

Figure B-2. Interchange Files in GRIDFile (left) and GRIDPlan (right)

You can convert your recorded files to the interchange format automatically with GRIDReformat or manually with GRIDWrite, as discussed in the following sections.

If you don't find conversion with either GRIDReformat or GRIDWrite satisfactory, the program at the central computer that sends the data may have to be rewritten. Contact the GRID Customer Support Center.

### REFORMAT PROCEDURE

Using GRIDWrite, you manually delete data and insert the required tab and CR-LF characters to create a file in the interchange format.

GRIDWrite ordinarily inserts the CR-LF control characters at the end

of each line. However, you'll probably have to manually insert tabs between each column. Here's a procedure you can use:

▶ TO INSERT TABS MANUALLY

1. Select the text file (the snapshot file, for example) that contains the data to be converted, and confirm.
2. Press CODE-0 to see the GRiDWrite Options form. Set the items for Display Format Characters and for Automatic Tab Insertion to Enabled.
3. Move the cursor to each column where you want a Horizontal Tab character to appear, and press CODE-TAB. A highlighted Horizontal Tab character appears on the ruler.
4. Delete and change any other data as necessary. For example, you might need to change fractions to decimal format. This can be done quickly with the Substitute (CODE-S) command. For example, to change 10 3/4 to 10.75, substitute every occurrence of 3/4 with .75.
5. Press CODE-T to see the GRiDWrite Transfer menu. Write the contents of this file to another file, specifying the appropriate Kind item. For example, specify a Kind of Worksheet for GRiDPlan, Graph for GRiDPlot, Database for GRiDFile, etc.



## APPENDIX C: ASCII CHARACTERS

GRIDTERM and the GRiD Compass system support the ASCII (American Standard Code for Information Interchange) character set (Table C-1). The column headings in the table are described below.

DEC	The decimal code for the character.
HEX	The hexadecimal (base 16) code for the character.
GRPH	The graphical representation of the character on the GRiD Compass screen. Some of these graphic characters are not supported by printers.
ABBR	The ASCII abbreviation for the character's name.
NAME	The name of the character.
PRESS	The keys that you press to produce the character, if not obvious from the labeling of the keyboard.

GRiDTerm sometimes requires that you distinguish between the RETURN key and the actual Carriage Return character (CR) that it generates. This manual uses RETURN to symbolize the key that you press, and CR to represent the character that is generated. CR is often used with the Line Feed character (LF), resulting in a CR-LF pair.

Because GRiDTerm displays control characters exactly as they are received, it displays CR-LF pairs differently from than does GRiDWrite.

Two special key sequences do not produce any visible character, nor do they have an ASCII code associated with them:

Break            CTRL-ESC. Causes a break signal to be sent to the host, which

allows you to interrupt the host as it processes or transmits data. For instance, pressing the break key sequence could halt a program or stop a data base query. GRiDTerm sends space bits for 500 milliseconds as a break signal.

Break works in both full-duplex and half-duplex modes, even if the terminal is receiving data.

Some hosts may recognize a specific ASCII character for break. To send this break character, press the key directly.

**Shift Lock**

SHIFT-ESC. Causes the GRiD Compass to display all alphabetic characters on the keyboard in upper case. Press SHIFT-ESC again to resume regular shifting. Numerals and punctuation are not shift-locked.



DEC	HEX	GRPH	ABBR	NAME	PRESS
00	00	N	NUL	null	CTRL-SHIFT-2
01	01	h	SOH	start of heading	CTRL-A
02	02	S	STX	start of text	CTRL-B
03	03	E	ETX	end of text	CTRL-C
04	04	T	EOT	end of transmission	CTRL-D
05	05	h	ENQ	enquiry	CTRL-E
06	06	A	ACK	acknowledge	CTRL-F
07	07	B	BEL	bell	CTRL-G
08	08	h	BS	backspace	CTRL-H
09	09	H	HT	horizontal tab	CTRL-I, TAB
10	0A	L	LF	linefeed	CTRL-J
11	0B	V	VT	vertical tab	CTRL-K
12	0C	F	FF	form feed	CTRL-L
13	0D	C	CR	carriage return	CTRL-M
14	0E	S	SO	shift out	CTRL-N
15	0F	S	SI	shift in	CTRL-O
16	10	D	DLE	data link escape	CTRL-P
17	11	D	DC1	device control 1(XON)	CTRL-Q
18	12	D	DC2	device control 2	CTRL-R
19	13	D	DC3	device control 3(XOFF)	CTRL-S
20	14	D	DC4	device control 4	CTRL-T
21	15	N	NAK	negative ack	CTRL-U
22	16	S	SYN	synchronous idle	CTRL-V
23	17	E	ETB	end trans. block	CTRL-W
24	18	C	CAN	cancel	CTRL-X
25	19	E	EM	end medium	CTRL-Y
26	1A	S	SUB	substitute	CTRL-Z
27	1B	E	ESC	escape	CTRL-;
28	1C	E	FS	file separator	CTRL-SHIFT-,
29	1D	S	GS	group separator	CTRL==
30	1E	S	RS	record separator	CTRL-SHIFT-.
31	1F	S	US	unit separator	CTRL-SHIFT-hyphen
32	20		SP	space	
33	21	!		exclamation	
34	22	"		quotation marks	
35	23	#		number sign	
36	24	\$		dollar sign	
37	25	%		percent sign	
38	26	&		ampersand	
39	27	'		apostrophe	
40	28	(		opening parenthesis	
41	29	)		closing parenthesis	
42	2A	*		asterisk	
43	2B	+		plus	
44	2C	,		comma	
45	2D	-		hyphen	
46	2E	.		period	
47	2F	/		slash	
48	30	0			
49	31	1			
50	32	2			
51	33	3			
52	34	4			
53	35	5			
54	36	6			
55	37	7			
56	38	8			
57	39	9			
58	3A	:		colon	
59	3B	;		semicolon	
60	3C	<		less than	
61	3D	=		equal to	
62	3E	>		greater than	
63	3F	?			
64	40	@		commerical at sign	

DEC	HEX	GRPH	ABBR	NAME	PRESS
65	41	A			
66	42	B			
67	43	C			
68	44	D			
69	45	E			
70	46	F			
71	47	G			
72	48	H			
73	49	I			
74	4A	J			
75	4B	K			
76	4C	L			
77	4D	M			
78	4E	N			
79	4F	O			
80	50	P			
81	51	Q			
82	52	R			
83	53	S			
84	54	T			
85	55	U			
86	56	V			
87	57	W			
88	58	X			
89	59	Y			
90	5A	Z			
91	5B	[		opening bracket	CODE-,
92	5C	\		backslash	CODE-SHIFT-,
93	5D	]		closing bracket	CODE-.
94	5E	^		circumflex	
95	5F	_		underline	
96	60	`		back quote	CODE-'
97	61	a			
98	62	b			
99	63	c			
100	64	d			
101	65	e			
102	66	f			
103	67	g			
104	68	h			
105	69	i			
106	6A	j			
107	6B	k			
108	6C	l			
109	6D	m			
110	6E	n			
111	6F	o			
112	70	p			
113	71	q			
114	72	r			
115	73	s			
116	74	t			
117	75	u			
118	76	v			
119	77	w			
120	78	x			
121	79	y			
122	7A	z			
123	7B	{		left curly bracket	CODE-SHIFT-,
124	7C			vertical line	CODE-SHIFT-;
125	7D	}		right curly bracket	CODE-SHIFT-.
126	7E	~		tilde	CODE-,
127	7F	■	DEL	delete	CODE-SHIFT-hyphen

## APPENDIX D: ERROR MESSAGES

This appendix contains explanations of the error messages that you may receive while using GRiDTerm.

### **10700: Terminal description file is invalid**

**What happened** GRiDTERM failed when trying to read a terminal description file either because the Kind item for the file isn't set to Terminal, or because the file is damaged.

**What to do** Make sure that the Kind item in the File form for the terminal description file is set to Terminal. If you suspect that the storage medium is damaged, you'll have to create a new terminal description file.

**10701: Phone number must not be blank**

What happened The Phone Number item in the Access form is blank.

What to do Type in the correct phone number (or, when using an external modem, any single character) and try connecting again.

**10702: Baud rate is invalid**

What happened The value specified in the Baud Rate item in the Access form was not within the range 50 to 32767.

What to do Enter a value within the range.

**10703: Internal modem may not use editable rates**

What happened In the Access form, the Modem Type item is set to Internal and the Baud Rate item is set to an editable value.

What to do Change the Baud Rate item to 300 or 1200 bps, or, if applicable, change the Modem Type to External.

**10704: Internal Modem supports only 300 or 1200 bps**

What happened In the Access form, the Modem Type item is set to Internal and the Baud Rate is set to a rate other than 300 or 1200 bits per second.

What to do Change the Baud Rate item to 300 or 1200 bps, or, if applicable, change the Modem Type to External.

**10705: Wait for answer value is invalid**

What happened The value specified in the Wait for Answer item in the Access form (CODE-A) was not within the range 1 to 32767.

What to do Enter a value within the range.

**10706: Modem cannot be activated**

- What happened Either the Modem file isn't in the Programs subject, the modem isn't connected, or the hardware isn't operating properly.
- What to do Make sure that the the Modem file is in the Programs subject; get a copy if it isn't. Restart the computer, and try GRiDTerm again. If this doesn't work, contact the GRiD Customer Support Center.

**10707: Serial cannot be activated**

- What happened Either the Serial file isn't in the Programs subject or the hardware isn't operating properly.
- What to do Make sure that the the Serial file is in the Programs subject; get a copy if it isn't. Restart the computer, and try GRiDTerm again. If this doesn't work, contact the GRiD Customer Support Center.

**10708: Receive FIFO allocation error**

- What happened The Access command (CODE-A) has been issued to establish a connection with the host system. GRiDTerm unsuccessfully attempted to allocate space in main memory to receive data from the host system.
- What to do If possible, reduce the value set for the Baud Rate item in the Access form, stop recording, or restart your system.

**10709: Display width value is invalid**

- What happened The value specified in the Display Width item in the Options form wasn't within the range 2 to 32767.
- What to do Reset the Display Width item within the proper range.

**10710: Invalid line end string to host**

- What happened The Line End String Sent to Host item in the Properties form is blank or has an invalid setting.
- What to do The Line End String Sent to Host item must contain at least one character. CR is a typical setting.

**10711: ENQ/ACK & XON/XOFF cannot both be enabled**

What happened Both the ENQ/ACK and the XON/XOFF items in the Full-Duplex Properties form are set to Enabled.

What to do Set either the ENQ/ACK or the XON/XOFF item to Disabled.

**10712: Invalid line turnaround string**

What happened The Line Turnaround String item in the Properties form is blank or has an invalid setting.

What to do The Line Turnaround String item must contain at least one character. CR is a typical setting.

**10713: Blank entry is invalid**

What happened This message appears when you try to confirm a form when an item requiring a setting is blank.

What to do Type in or choose a setting for the required items in the form.

**10714: Wait for host data time limit exceeded**

What happened The time limit specified for the Wait For Host Data item on the Soft Keys form ran out.

What to do Check the characters you specified in the soft keys definition and make sure that they exactly match the characters sent from the host system. Some of the characters actually sent by the host system may not be displayed on your screen. You can view these characters as they are received by setting the Remove Control Characters item (described in Chapter 2) in the Options form to Diagnostic.

If the characters match, increase the time limit for the Wait For Host Data item in the Soft Keys form.

**10715: Invalid CODE-key designation encountered**

**What happened** A CODE-key character in a soft key definition didn't represent a number, a SHIFT-number sequence, or RETURN.

**What to do** Enter the correct characters in the soft key definition and try again.

**10716: Invalid external modem configuration**

**What happened** The Modem Type item in the Access form is set to External and, in the Full-Duplex Properties form, the Type of Parity item is set to Mark or Space, and the Bits Per Character item to 8.

**What to do** The external modem doesn't support eight data bits and Mark or Space parity. If possible, either set the Modem Type item in the Access form to Internal, or the Bits Per Character item in the Properties form to 7.





## APPENDIX E: GLOSSARY

**ASCII.** American Standard Code for Information Interchange. A code consisting of control characters and graphic characters used for information interchange among data processing systems, data communication systems, and associated equipment. See Appendix C.

**asynchronous** A signaling technique in which each operation starts after either (1) a signal that a previous operation has been completed or (2) a part of the computer system or other resource is now available for the next operation. Asynchronous operations do not require a clock signal. GRiDTerm is an asynchronous terminal emulator. Contrast with synchronous.

**bit.** A binary digit, it is the smallest amount of information that the computer can process. Each bit is represented in the computer as a 1 or a 0. Each ASCII character has a seven-bit code associated with it.

**baud rate.** The rate at which a modem transmits or receives digital data; the faster the modem, the higher the baud rate. A baud can equal one-half dot cycle per second in Morse code, one bit per second in a series of binary signals, or one 3-bit value per second in a series of signals each of which can assume one of eight different states.

**break key** A key that interrupts the host system. Press the break key (CTRL-ESC) to stop the host from processing or transmitting data. Known as the ATTN or Attention key in some systems. Some hosts use a different ASCII character to signal a break.

**carrier.** A signal that the modem changes, or modulates, in order to transmit data. If the carrier is lost, then the modem can no longer transmit or receive data.

**character stream** A group of characters transmitted one at a time in a sequential stream.

**CODE.** A key on the GRiD Compass keyboard that alters the operation of other keys. It is used to give commands to GRiD Compass application programs, such as GRiDTerm. The specific operation of the CODE key is unique to the GRiD Compass system; even though other computer keyboards may have a CODE key, they will operate differently.

**control character** A character that controls the transmission or display of data. Control characters are part of the standard ASCII character set, though not one of the standard alphabetic, numeric, or special characters used in data. A control character may or many not be visible on your screen.

**CTRL.** A key on the GRiD Compass keyboard that alters the operation of other keys. It is a standard key, and not unique to GRiD Compass applications.

**cursor.** The blinking triangle that indicates where the next character will appear, whether typed by you or transmitted by the host.

**display buffer** An area in main memory that temporarily stores data you type in and data received while communicating with a host system. The data is deleted when you exit from GRiDTerm.

**echoing.** The display of characters on a screen as they are entered at the keyboard. In local echoing, GRiDTerm sends the character to the screen, and a copy to the host system. In host echoing, GRiDTerm sends a character to the host, and waits for the host to echo it before displaying it on the screen.

**emulator.** See terminal emulator.

**full-duplex circuit** A communication circuit that allows both ends of a communication link to transmit data at the same time. A full-duplex circuit can accomodate both full-duplex and half-duplex protocols.

**full-duplex protocol** A set of communication conventions that allow both ends to transmit data at the same time. Full-duplex protocols operate only on full-duplex circuits.

**half-duplex circuit** A communication circuit that allows only one end of a communication link to transmit at once. The receiving end must wait for the transmitting end to relinquish the line before it can transmit.

**half-duplex protocol** A set of communications conventions that allow only one end of a communication link to transmit at once. Half-duplex protocols can operate on both full and half-duplex circuits.

**handshake** A sequence of predetermined signals or control characters exchanged by the modems or data communication software of two data processing systems. The sequence establishes the initial connection between the two systems.

**host system** A remote computer system that you can access over telephone lines. It is usually a large computer with a great deal of storage and processing power, although a minicomputer or a personal computer can operate

as a host. Often, several terminals share the use of one host system. The Dow Jones News Retrieval service is provided by a host system.

**line end string** A character or string of characters that indicates the end of a line of text.

**line turnaround string** A character or string of characters required in half-duplex mode to tell the remote computer that it can begin transmitting. It causes the line to "turn around", i.e., the end that received now transmits, and vice versa.

**log on.** A procedure, usually associated with an identification and password, which a user follows to gain access to a host system. Logging on is required for accounting purposes and the security of the host system.

**log off.** A standard procedure that a user follows in terminating communications with a host system or other remote computer. For example, entering logoff terminates communications for some systems.

**message line** The highlighted line at the bottom of the GRiD Compass display. Only messages from GRiD Compass application programs appear here. In telecommunications, messages from the host system or remote computer appear elsewhere, depending on the system.

**modem.** An acronym for MODulator-DEModulator. It translates the computer's digital data into audible tones for transmission and reception over telephone lines.

**parity bit** A check bit added to each character (for example, in a data transmission) that makes the sum of all the binary one digits, including the check bit, either odd or even. The sender adds a parity bit to ensure that the sum of each character is even (in an even parity system) or odd (in an odd parity system). The receiver checks whether the bit count is either odd or even (depending on the system). If the bit count is not the odd or even count expected, the receiver assumes that an error occurred during transmission.

**private branch exchange** Also called PBX or PABX. A private telephone switching center that allows telephones on the exchange to connect to one another or to the local public telephone exchange.

**protocol.** In telecommunications, an arbitrary convention for communicating between a host system and a remote terminal or another host system. The protocol is implemented in the hardware and software at the two computer systems to coordinate and control data transfer and other operations between them.

**pulse dialing** Also known as rotary dialing. Dialing each number sends a sequence of pulses down the line. Contrast with touch-tone dialing.

**record.** A unit of data to be stored or processed. Each record can be broken into smaller pieces of information. In the GRiD Compass, a record consists of data followed by a CR-LF pair. Each record corresponds to one row in the cell-based applications, such as GRiDPLAN.

**RJ-11.** A modular connector for telephone lines specified by the telephone company. It is a transparent plastic plug with four delicate, golden wires. It replaces the older connector, a thick round plug with four prongs.

**soft key** A key whose function can be defined by the user. See soft key definition.

**soft key definition.** The commands and messages that are executed when an operator presses a specific key or combination of keys on the GRiD Compass keyboard. The GRiD Compass user either writes the definition or modifies an existing definition supplied by GRiD Systems.

**start bit** A bit that is added to the beginning of each character, used to indicate the beginning of transmission. Needed only for asynchronous transmission.

**stop bit.** A bit added to the end of each character, used to indicate the end of transmission. Needed only for asynchronous transmission.

**synchronous** A signaling technique in which all operations or events are controlled with regular or predictable time relationships, often with an internal clock. Contrast with asynchronous.

**terminal description file** A file that contains the settings of the GRiDTerm Access, Options, Properties, and Soft Keys forms. Selecting the terminal description file permits communications with the host system or remote computer designated in the Access form in the file.

**terminal emulator** A computer program, such that allows one computer or terminal to mimic another terminal. GRiDTerm, GRiD3101, and GRiDVT100 are examples of emulator programs. GRiDTerm emulates a variety of asynchronous terminals; GRiD3101 emulates an IBM 3101 display terminal; and GRiDVT100 emulates the DEC VT100, VT101, and VT102 display terminals.

**timeout.** A time interval during which a certain operation must take place, for example, connecting to a host system once having dialed it.

**time sharing** A method that enables several users to interact the same applications at a host system at the same time.

**touch-tone dialing** A dialing system that uses audible tones rather than pulses. It is faster than pulse dialing, and has been installed in many recent telephone exchanges.

## COMMAND SUMMARY

### ACCESS

(CODE-A). Automatically dials and connects to the host system or another GRiD Compass when you confirm the Access form. Also disconnects from a host system.

#### ACCESS FORM

Phone number	Number of the remote system you want to access.
Remote System Name	Name of the system you are dialing. Setting has no effect on GRiDTerm. Used as a reminder of the host system for which the form is set.
Baud Rate	Speed at which data is transmitted and received.  Choices are: Enter Rate (type in your own baud rate), 300, and *1200 for internal modems; 2400, 4800 and 9600 for external modems.
Modem Type	Determines whether modem is internal (built into computer) or external (connected to computer).  Choices are: *Internal, External.
Dial Type	Indicates whether your telephone system is rotary or pulse dialing, or whether it uses Touch-Tone™ dialing.  Pulse            Used for older, non-digital equipment.
	*Touch-Tone      Used for most modern, digital telephone installations.

\*Indicates initial setting



**DEFINE SOFT KEYS**

(CODE-?) Lets you automate a multi-key interactive sequence between GRiDTerm and the host system. By pressing a specified key sequence, the interactive sequence is initiated.

Delay Between Characters	When set to Yes, causes GRiDTerm to pause 15 milliseconds between processing each character in the soft key definition.  Choices are: Yes, *No.
Wait for Host Data	Specifies how many seconds GRiDTerm should wait for a character sequence expected from the host system.
Host Data Character	Delineates a message or prompt expected from the host system. Insert one host data character before and one after the expected message or prompt. When the message or prompt is received, GRiDTerm processes the next sequence (normally a response or a command) in the definition. Initial setting is   (press CODE-SHIFT-;) or type in a different character.
Keyboard Input Character	Allows data to be entered manually from the keyboard and be processed as part of the soft key definition. When GRiDTerm finds this character in a soft key definition, it stops processing the definition and awaits data from the keyboard. Initial setting is ^ (press SHIFT-6) or type in a different character.
Pause Character	Causes GRiDTerm to stop processing for one second before processing the next character in the soft key definition. GRiDTerm recognizes the character only when transmitting to the host. Initial setting is . (period) or type in a different character.
CODE-key Character	Designates the next character in the soft key definition as a CODE-key character. Initial setting is " (press CODE-;) or type in a different character.
Break Key Character	This is a single character you insert into the string of characters that comprise a soft key definition. When GRiDTerm encounters the character, it sends a Break signal to the host system. Initial setting is \ (press CODE-SHIFT-") or type in a different character.
CODE-n -- CODE-SHIFT-n	CODE-n represents CODE-0 through CODE-9; CODE-SHIFT-n represents CODE-SHIFT-0 through CODE-SHIFT-9. They indicate the key combination that, when entered manually at the keyboard, causes GRiDTerm to process your soft key definition. To the right of each CODE-n item is a highlighted box where you enter the definition.

\*Indicates initial setting.

**EDIT ACCESS FORM**

Lets you enter or change information in the Access form without actually initiating a connection to a host system.

**ERASE**

(CODE-E) Deletes the entire contents of the display buffer. You cannot erase only a portion of the buffer.

OPTIONS

(CODE-0) Changes the manner in which data is displayed on your GRiDTerm screen.

OPTIONS FORM

<p>Display Width</p>	<p>Defines the maximum length of a single line on the display. Also determines where line-end or line-turnaround strings are inserted (see the End Line Automatically item below).</p> <p>*80            Sets the right margin at 80.</p> <p>1-250        Allows you to type to a right margin setting between 1 and 250. If you type a number larger than 52, the text may no longer fit horizontally on the screen.</p> <p>Window Width        Sets the right margin at 52, the standard right margin of the GRiD Compass screen.</p>
<p>Word Wrap</p>	<p>When an incoming line is longer than the display width, the line must be "wrapped," with additional characters appearing on the next line.</p> <p>Enabled        Prevents words from being split between lines. Instead of splitting a word between two lines, GRiDTerm puts the entire word on the next line.</p> <p>*Disabled      Wrapping occurs one character at a time. In some instances, this allows part of a word to appear on one line and the remainder on the next.</p>
<p>Ruler</p>	<p>Determines whether the ruler (a highlighted line at the top of the screen) is displayed.</p> <p>Choices are: Enabled, *Disabled.</p>
<p>Remove Control Characters</p>	<p>Lets you remove control characters from the incoming stream of characters before they are saved in the display characters buffer.</p> <p>*Yes            All control characters (ASCII value less than 32 with the exceptions of RETURN, Line Feed, TAB, and BACKSPACE) are removed from the incoming stream of characters.</p> <p>No              Every character received is entered into the display buffer.</p> <p>Diagnostic     This setting prevents GRiDTerm from modifying the received characters, allowing the GRiD Customer Support Center to analyze the characters coming from the host system. No control characters are removed or treated in any special way.</p>
<p>Display Control Characters</p>	<p>Determines whether the control characters in the display buffer are displayed on the screen.</p> <p>Choices are: Yes, *No.</p>
	<p>*Indicates initial setting.</p>



OPTIONS FORM (continued)

<p>Display Received Characters</p>	<p>Determines whether the characters received from the host are displayed on your screen.</p> <p>Choices are: *Yes, No.</p>
<p>End Line Automatically</p>	<p>This item applies only when using the Transfer (CODE-T) command to send files. This option causes line-end or line-turnaround strings to be inserted into data transmitted to the host system. The setting for the Display Width option determines where the strings are inserted.</p> <p>*Yes      Line-end or line-turnaround strings are automatically inserted after <u>n</u> characters, where <u>n</u> is the setting of the display width. The strings are inserted after word-wrapping occurs. CR-LF pairs are converted into line-end or line-turnaround strings.</p> <p>No         GRiDTerm sends the file without modifying it, except to translate CR-LF pairs into line-end or line-urnaround strings.</p>
<p>Current Typeface</p>	<p>Changes the size of the display characters. Lets you increase or decrease the number of characters that appear on your screen.</p> <p>*System-wide      This setting is the same as the Typeface setting in the Options form of GRiDManager.</p> <p>Built-in 53      Displays 53 columns of data. This setting provides the most efficient use of main memory (RAM) and is the same as GRiD 53.</p> <p>GRiD 53      Displays 53 columns of data.</p> <p>GRiD 64      Displays 64 columns of data.</p> <p>GRiD 80      Displays 80 columns of data.</p> <p><b>NOTE:</b> If you have other type fonts stored on your disk or in bubble memory, they will also appear on the screen.</p>
	<p>*Indicates initial setting.</p>

PROPERTIES

(CODE-P) Sets the communication protocol between the GRiD Compass and the host system through the Top-Level Properties form.

TOP-LEVEL PROPERTIES FORM

<p>Transmission Mode</p>	<p>Determines whether the protocol allows transmission in one direction at a time, or in both directions at once.</p> <p>*Full Duplex      Sets a protocol supporting transmission of data in both directions at once. If you choose this setting, the Full-Duplex Properties form appears (see below).</p> <p>Half Duplex      Sets a protocol supporting transmission in only one direction at a time. If you choose this setting, the Half-Duplex Properties form appears (see below).</p>
<p>Backspace Character</p>	<p>Lets you designate a control character to send to the host system when you press the BACKSPACE key on your keyboard. You'll normally set it to CTRL-H, the ASCII BACKSPACE character, although some systems require a different ASCII character.</p> <p>When CTRL-H is received, GRiDTerm deletes one character from the display buffer and moves the cursor backward one space on the display.</p> <p>Choices are: Type a Character, *CTRL-H.</p>
<p>Type of Parity</p>	<p>Parity is a bit that is added to each character transmitted so that the character can be checked for accuracy by the receiver. You set parity to match the parity expected by the host system.</p> <p>Off              No parity bit is sent.</p> <p>Odd              The parity bit is set to 1 to make the sum of the (binary) digits of the character into an odd number.</p> <p>*Even            The parity bit is set to 1 to make the sum of the (binary) digits of the character into an even number.</p> <p>Mark             The parity bit is always set to 1.</p> <p>Space            The parity bit is always set to 0.</p>
<p>Bits Per Character</p>	<p>Sets the number of bits used to represent the ASCII characters.</p> <p>5                Sets five bits per character.</p> <p>6                Sets six bits per character.</p> <p>*7                Sets seven bits per character. The standard ASCII code uses only seven bits per character.</p> <p>8                Sets eight bits per character, with the high-order bit (8th bit) set to 0 when transmitting and ignored when receiving.</p>
<p>Stop Bits</p>	<p>Sets the number of extra bits placed at the end of each character. The extra bits let the receiver detect the beginning of the next character.</p> <p>Choices are: *1, 1.5, 2.</p>

\*Indicates initial setting.

**FULL-DUPLEX PROPERTIES FORM**

<p>Echo Mode</p>	<p>Determines whether a character must be sent to and echoed back by the host system before it is displayed.</p> <p>Local Echo Characters are displayed on the screen as soon as they are typed on the keyboard. If the host system is not echoing characters, then set Echo Mode to Local Echo.</p> <p>*Host Echo Characters are echoed by the host system before they appear on the terminal's display. This setting is a common practice for full-duplex configurations.</p>
<p>Line End Character Sent By Host</p>	<p>Specifies the ASCII character(s) used by the host system for an end-of-line if it is something other than CR, LF or CR-LF characters.</p>
<p>Line End String Sent To Host</p>	<p>Specifies the ASCII character(s) that the host system recognizes as the line end string when transmitting data.</p> <p>Choices are: *CR, LF, CR-LF.</p>
<p>XON/XOFF Support</p>	<p>Lets GRiDTerm signal the host system to start or stop transmitting data. When GRiDTerm wishes a host system to stop transmitting, it sends an XOFF character; to start transmitting, it sends an XON character. Similarly, the host system can signal GRiDTerm to start or stop transmitting data.</p> <p>Choices are: Enabled, *Disabled.</p>
<p>ENQ/ACK Support</p>	<p>Enabling ENQ/ACK lets the GRiD Compass respond with an ACK character when the host system transmits an ENQ control character.</p> <p>Choices are: Enabled, *Disabled.</p>
	<p>*Indicates initial setting.</p>

**HALF-DUPLEX PROPERTIES FORM**

<p>Line End Character Sent By Host</p>	<p>Specifies the ASCII characters used by the host system for an end-of-line if it is something other than CR, LF, or CR-LF.</p>
<p>Line-Turnaround String Sent By Host</p>	<p>Tells GRiDTerm that the host system has stopped transmitting and that GRiDTerm can begin transmitting. GRiDTerm translates the line-turnaround string into a CR-LF pair.</p> <p>Choices are: CR, LF, CTRL-Q, CTRL-S, *EOT, or any ASCII characters (no more than two) that the host system recognizes as the line-turnaround string.</p>
<p>Line Turnaround String Sent to Host</p>	<p>Tells the host system that it can stop receiving and begin transmitting. When GRiDTerm transmits a file to the host system, it translates all CR-LF pairs in the file into the character string indicated by the setting you type in.</p> <p>Choices are: *CR, LF, CTRL-Q, CTRL-S, EOT, or any ASCII character (no more than two) that the host system recognizes as a line-turnaround string.</p>
	<p>*Indicates initial setting.</p>

QUIT (CODE-Q) Ends current GRiDTerm session and returns you to Subjects and Titles level. Save all changes to current terminal description.

**TRANSFER**

(CODE-T) Records data, copies or exchanges terminal descriptions, erases or sends files, and show characteristics of files, as described in detail in the menu below.

**TRANSFER MENU**

Record Character Stream: Write to a File	Stores either the characters received from a host system or the data that you type in. Any data initially in the file is overwritten by the data you record.
Record Character Stream: Append to a File	Stores either the characters received from a host system or the data that you type in. Any data in the file you specify for saving the input stream won't be overwritten. Instead, the input stream is appended to the end of any data in the file.
Stop Recording	Turns off recording and closes the current recording file. Recording stops when you select and confirm this item.
Write Display Buffer to a File	Writes your display buffer to a file. You must write the entire buffer.
Append Display Buffer to a File	Writes all or part of the current display buffer to any destination file you specify.
Send a File	Transfers an entire file, one record at a time, to the host system.
Save This Terminal Description	Saves the current settings of the Options, Properties, and Access forms on the external storage device where your current terminal file resides.
Write Terminal Description to a File	Writes the current settings of the Options, Properties, and Access forms into a file you select.
Exchange for Another File	Exits; saves the current file; retrieves the destination file and application you select.
Erase a File	Lets you delete files.
Show Characteristics of a File	Displays a report that gives the following characteristics of a file you specify: Device, Subject, Title, Kind, version number, length of file, date file was created, and date file was last modified.

**USAGE**

(CODE-U) Shows the usage of main memory and storage available to your GRiD Compass.

**WAIT FOR CALL FROM HOST**

Enables a host system or another GRiD Compass to initiate a call to you.



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