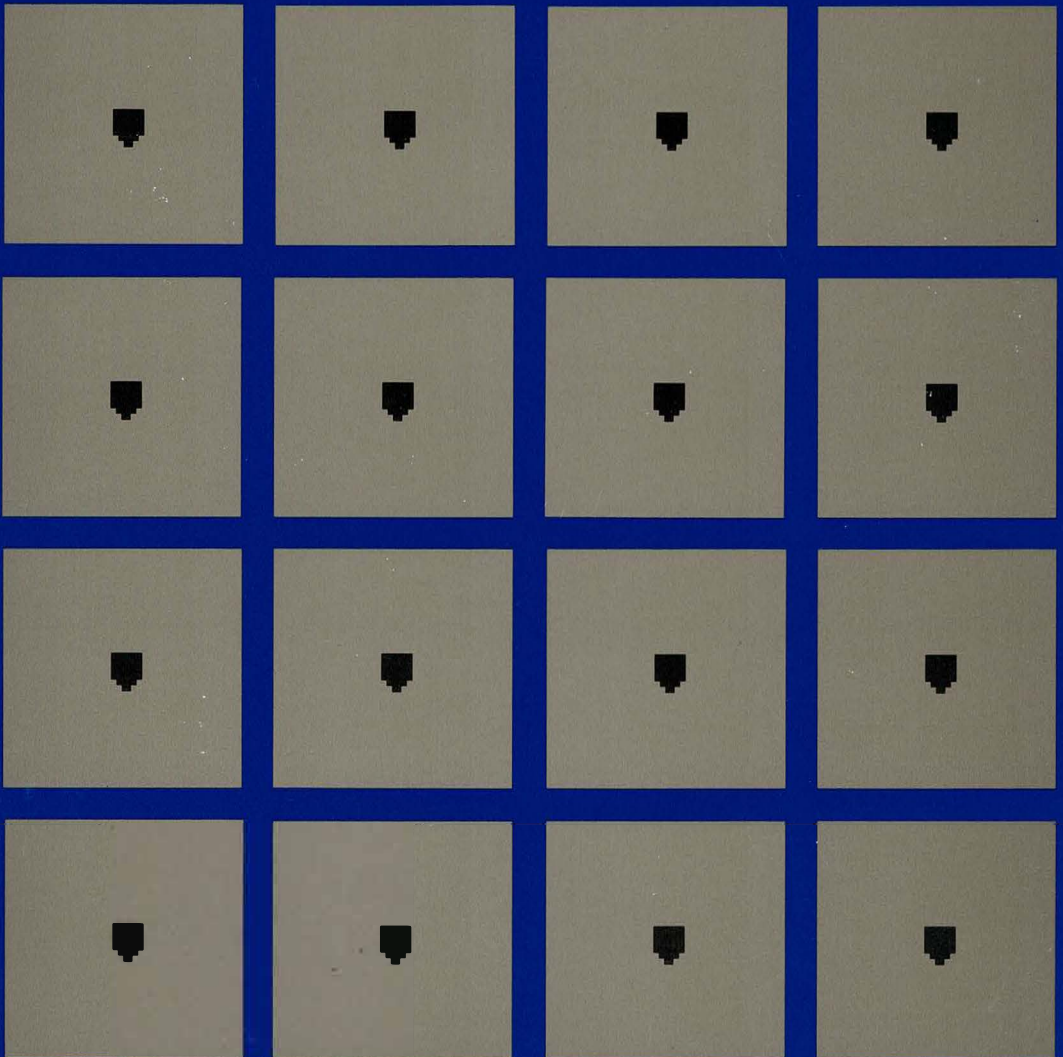


# GRiDTerm and GRiDReformat User's Guide



**GRiDTerm and GRiDReformat  
User's Guide**

**September 1987**

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## ABOUT THIS BOOK

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This manual explains how to set up and use GRiDTerm and GRiDReformat, GRiD<sup>®</sup> Systems software products designed to run on your computer.

---

### WHAT IS GRIDTERM?

GRiDTerm is an emulator program that transforms your computer 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.

---

### WHAT IS GRIDREFORMAT?

GRiDReformat converts data you receive via GRiDTerm into a format suitable for GRiDPlot, GRiDPlan II, 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 8 of this guide.

---

### WHO SHOULD USE THIS MANUAL

This manual 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.

---

## HOW TO USE THIS MANUAL

The information in this manual is organized as follows:

Chapter 1 explains how to install GRiDTerm on your system and describes the concepts and procedures you need to know in order to communicate with a host system. Read this chapter first if you are a new GRiDTerm user. Where necessary, this chapter refers you to other parts of the book for detailed information on how to use certain GRiDTerm facilities.

Chapter 2 provides the information necessary to write soft key definitions.

Chapter 3 describes how to record data, including how to receive a file with a communications protocol.

Chapter 4 describes how to send a file.

Chapter 5 describes how to use GRiDTerm conversationally, with a user at another computer.

Chapter 6 describes the items on the Transfer menu, which includes saving the terminal description file and printing the display buffer.

Chapter 7 describes how to set up GRiDTerm by creating a terminal description file. All of the technical communication properties are fully explained. Read this chapter if you are the person responsible for setting up GRiDTerm.

Chapter 8 describes how to use the GRiDReformat application to reformat data captured from a host system.

The appendixes provide supplementary information including how to reformat a file using GRiDWrite, how to install the Xmodem file under InteGRiD, a table of ASCII characters, a guide to GRiDTerm error messages, and a description of the GRiDTerm library provided for use with GRiDTask. A glossary follows the appendixes.

A postage paid customer response form is included at the end of this manual. Readers are encouraged to use the form to comment on the usefulness and readability of this manual.

---

## BEFORE USING THIS GUIDE

If you are responsible for setting up GRiDTerm, you must be aware of the communication protocols, or conventions, 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:

- You must have the GRiDTerm program under the Programs subject and, optionally, a GRiDTerm terminal description file on a storage device available to your computer.
- 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.
- You must be familiar with the GRiD menus and forms, file creation procedures, and file handling commands as described in the *Getting Started* tutorial, the *InteGRiD Software* manual, or the *GRiD Software* manual.

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.

---

## RELATED PUBLICATIONS

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

- *Getting Started*, a tutorial that includes step-by-step instructions on using GRiD software.
- *InteGRiD Software* manual or *GRiD Software* manual, for detailed reference information on the basics of using the InteGRiD or GRiD-OS operating environment.

---

## 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 a special typeface and are spelled exactly as they appear on your keyboard. Thus, when you see the symbol **Return**, you should press the key labeled **Return** rather than typing the word "Return" letter by letter.

**NOTE:** The keycaps referred to in this manual are those found on the GRiDCase Plus™ keyboard. Your keycap labels may differ if you are using a different computer.

### 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 computer 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**.

**NOTE:** On the GRiD286™ and other AT-style keyboards, you can press **SysReq** when instructed to confirm. Additionally, on the GRiD286 and any other IBM PC style keyboard, you can press **Alt-Return** to confirm and you should use **Alt** whenever any other **Code** keys are required.

---

# CHAPTER 1: INSTALLATION AND INTRODUCTION

---

This chapter explains how to install GRiDTerm on your system and acquaints you with concepts and procedures you need to know in order to communicate with a host system. Where applicable, the chapter refers you to other parts of this manual for technical and implementation details. Topics in this introduction include

- Installing GRiDTerm on your system.
- The preconnection checklist, a list of items you should read before communicating with a host system for the first time.
- The terminal description file, which controls connecting to and communicating with the host system.
- Connecting to the host system or another computer using GRiDTerm.
- Automating keystrokes with soft keys, which let you press a single key to enter a series of commands or keystrokes you would otherwise enter manually at the keyboard.
- The display buffer, which temporarily holds the data you receive from a host system.
- Sending and receiving files and recording data.
- A summary of the GRiDTerm commands available to you while communicating with the host system.



---

## INSTALLING GRIDTERM

On your GRiDTerm diskette, you'll find the GRiDTerm program, the GRiDTerm library for use with GRiDTask, the Xmodem protocol file, a new system errors file and several modem and serial drivers. Before doing anything, you should make a backup copy of the GRiDTerm diskette and store the original in a safe place.

To install GRiDTerm on your system, do the following:

1. Copy the GRiDTerm program, the Xmodem protocol file, the system errors file, and the appropriate modem and serial drivers for your computer to the Programs subject on your permanent storage device.
2. Start the GRiDManager application and select the command Update Options Form Choices. This makes your system aware of the new Xmodem protocol file and any new device drivers you have added.

**NOTE:** If you are running InteGRiD version 3.2.0 or 103.2.0, see Appendix B for additional information on installing the Xmodem protocol file.

3. If you have an old modem or serial driver file in ROM that has the same name as one of the new drivers, you'll need to disable the old ROM file. This is because the system will look in ROM first, before it checks the disk, when it needs a driver file.

To disable a ROM file, run the program Disable ROM Files (DisableR under InteGRiD) supplied in ROM or on your system diskette. Select the command Disable a ROM File, and then select the file you want to disable from the displayed list. If you don't have a hard disk, be sure that the diskette with your User file is in the disk drive so that this information is recorded in the User file. (The User file has a Kind of Pro under InteGRiD and Profile under GRiD-OS).

---

## PRECONNECTION CHECKLIST

Check the following items before connecting to a host system:

- Ensure that you have the proper telephone line or serial connections available. Refer to your computer or modem Owner's Guide for this information.
- Know the requirements of 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 or from the data center with which you want to communicate.

- Ensure that you have the GRiDTerm program and the applicable modem driver available in the Programs subject of your computer. You must also have the appropriate serial driver for your computer in the Programs subject, regardless of whether you have an internal or external modem. (For all GRiD supported modems except the GRiD Compass computer<sup>®</sup> internal modem, the modem driver also uses the serial driver.)
- Ensure that the appropriate modem and serial drivers for your computer and modem are specified in the Current Modem and Current Serial items in the GRiDManager Options form.
- If you intend to use the Xmodem file transfer protocol, ensure that you have the file Xmodem under the Programs subject of your computer. You must execute the GRiDManager command Update Options Form Choices after you add the Xmodem file to your Programs subject.
- Ensure that you have a valid terminal description file (described in the next section) on a storage device available to your computer.

---

## 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 and Options 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 2) you may have written.

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

If a valid terminal description file isn't available, read Chapter 7 before continuing with this chapter.

---

## MAKING A CONNECTION

Follow the four steps below to connect with a host system or another computer.

1. Connect your computer to the telephone line and turn it on. Refer to the Owner's Manual for specific instructions. Start the InteGRiD or GRiD-OS operating environment.
2. The File form appears. Select 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 computer, make sure that the Access form is filled in correctly. Confirm to start dialing.

If you are awaiting a call from the host system or another computer, press **Code-?**; then select Wait for Call from Host and confirm. Then, make sure that the Access form is correct and confirm again to await the call.

Press **Esc** or **Code-A** to stop dialing or waiting for a call before a connection is established. After a connection is established, you can disconnect by pressing **Code-A**.

**NOTE:** In communications between two computers using GRiDTerm, 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 using the Wait for Call from Host item in the Commands menu.

4. Once connected, data communications can begin. If the Voice Before Data item in the Access form is set to Yes (see Chapter 7), you can talk to the operator first through a telephone attached via a T-connector. On completing the conversation, confirm to start data communications.

Once the computer 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 Appendix D and take the appropriate action.

---

## AUTOMATING KEYSTROKES

GRiDTerm lets you, by pressing only one key, 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 soft key, 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:

- 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.
- You can define a period of time that GRiDTerm should wait for a message from the host system before it cancels the soft key.
- You can intermix keystrokes you manually enter from the keyboard with those keystrokes that GRiDTerm processes as part of the soft key definition.

- 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.

For example, 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 2 for details on how to define soft keys 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—for example, 400 lines of 80 characters each—depending on the amount of RAM available. When the buffer is full, older data is removed to make room for newer data as it arrives.

```
please enter your id:74920,13525
password:xxxxxxxxxxxxx

you are logged on at 10:45:32, Friday, August 28, 1987

COMPANY ABSTRACT SEARCH SERVICE
=====
MAIN MENU
1 Search by company name
2 Search by stock symbol
3 Search by product name
4 Search by competitor's name

Choice? ^

80 Characters
```

400  
Lines

*Figure 1-1. Display Buffer*

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

Optionally, using the View command (Code-V), you can separate the display into two buffers: a receive buffer and a send buffer. Each buffer can contain up to 32,000 characters, depending on the amount of RAM available, and can be manipulated independently. Splitting the display into separate receive and send buffers is primarily useful when using GRiDTerm "conversationally" to communicate with another computer user. See Chapter 5 for more information about conversational operation.

---

## RECEIVING AND SENDING DATA

GRiDTerm can receive data by simply recording it to a file or printer, or it can receive a file with the Xmodem error correction protocol. See chapter 3 for details on receiving data.

Once the data is received, you may need to change its format for use as source data in GRiDPlan II, 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 8; conversion with GRiDWrite is discussed in Appendix A.

GRiDTerm can also send a file using the Xmodem error correction protocol. See Chapter 4 for details on sending a file.

## COMMANDS AVAILABLE

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

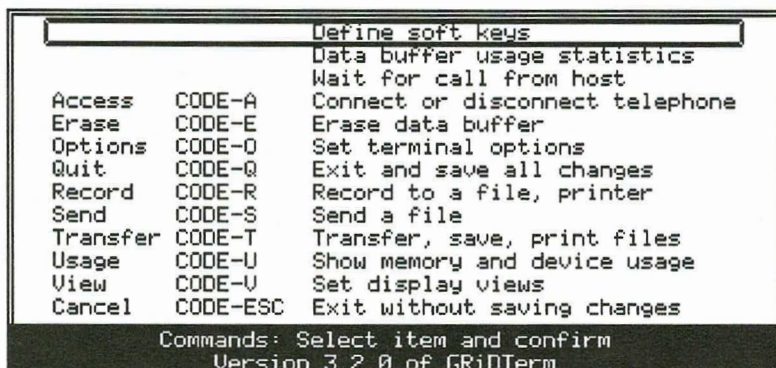


Figure 1-2. Commands Menu

The following sections list the commands in the order they appear on the menu and briefly describe the purpose of each command and, if applicable, where you can find more information about it.

## Define Soft Keys – Code-?

The Define Soft Keys command lets you automate a multikey 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 2 for details.

## 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. If you have split the display buffer into separate send and receive buffers, the percentage full of each of the buffers is shown.

## Wait for Call from Host – Code-?

The Wait for Call from Host command enables a host system or another computer using GRiDTerm to initiate a call to you. You can cancel the Wait for Call from Host command at any time by pressing **Code-A** or **Esc**.

The following steps describe how to receive a call from a host system or another computer using a terminal emulator.

1. Make sure that the entries in the Options forms are set correctly to allow communication with the host system.
2. Move the outline until it surrounds the Wait for Call from Host command and confirm.
3. The Access form appears. Only the following items on this form must be filled in: Baud Rate, Modem, Serial, Modem Type, Wait for Answer, and Voice Before Data. Confirm this form.
4. GRiDTerm displays the message "Waiting for Call" until the connection is made.



When communications are between two computers using GRiD terminal emulators, note the following:

- Each computer 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.
- Both computers should be set up for local echo. In GRiDTerm, you'll find the Echo Mode item in the Full Duplex Properties form after you confirm the Communication Line Properties form with Full Duplex set.
- When sending a file to another computer using a GRiD terminal emulator, the Transmission Mode item in the Communication Line Properties form of the computer sending the file must be set to Full Duplex.

### Access – Code-A

The Access command (Code-A) displays the Access form; by filling in and confirming the form, you initiate a 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 7 for information on filling in the form.

To stop dialing or to disconnect before a connection is established with the host system, press **Code-A** or **Esc**. After a connection is established, press **Code-A** to disconnect.

### Erase – Code-E

The Erase command (Code-E) erases the entire contents of the display buffer. You cannot erase just a portion of the buffer. If you have split the display buffer into separate send and receive buffers, an additional menu appears from which you can select to erase either the receive buffer, the send buffer, or both.

## Options – Code-O

The Options command (Code-O) allows you to edit the Access form, change the manner in which data is displayed on your GRiDTerm screen, and set GRiDTerm communications properties for a particular host.

See Chapter 7 for details on the options available and how you select them.

## Quit – Code-Q

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

## Record – Code-R

The Record command (Code-R) lets you capture data you receive from a host system. You can record data to a file or the printer. Additionally, you can receive a file with the Xmodem error correction protocol. See Chapter 3 for details.

## Send – Code-S

The Send command (Code-S) lets you send a file to a host system or another computer. You can send a file either with or without the Xmodem error correction protocol. See chapter 4 for details.

## Transfer – Code-T

The Transfer command (Code-T) saves your terminal description file onto a storage device, records or prints the display buffer, and performs a variety of other data transfer functions. See Chapter 6 for details.

## Usage – Code-U

The Usage command (Code-U) shows how the main memory (RAM) in your computer is being used, the amount of space being used, and the amount of space available on your external storage devices.

## View – Code-V

The View command (Code-V) lets you split the display into separate send and receive buffers. When you execute the View command, a bar across the screen marks where the display is to be split; the upper portion is the receive buffer and the lower portion is the send buffer. You can adjust the bar to vary the portion of the display allotted for sending and receiving. The size of the display does not affect the size of the buffer.

Separate buffers are allocated to hold sent and received data. Up to 32,000 characters are allocated for each buffer, depending on the amount of RAM available.

Use **Ctrl-↑** and **Ctrl-↓** to move between the two portions of the display. A frame indicates which portion of the display is selected for scrolling.

To reset the display to a single view, choose the View command again, and select **Show Only One View**. Resetting the display also clears the send and receive buffers and allocates a single display buffer.

**NOTE:** The display view can be split or reset only when no data connection is established. No view changes are allowed once connected.

## Cancel – Code-Esc

The Cancel command (Code-Esc) lets you exit GRiDTerm without saving any changes you've made to the Access, Display Characteristics, Communication Properties, or other GRiDTerm forms. The forms remain exactly as they were when you last saved them.

## Esc

To stop dialing or to disconnect before a connection is established with the host system, press **Code-A** or **Esc**.

When sending a file to a host system, and you wish to temporarily stop sending, press **Esc**. To resume sending, confirm.

**Esc** is also used to cancel an operation or exit a form or menu without confirming.

## 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 of 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 signal other than Ctrl-Esc. If so, determine the correct key sequence from your host system; then turn to Appendix C for the corresponding key sequence to use on your computer.

---

## CHAPTER 2: DEFINE SOFT KEYS – CODE-?

---

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

- An overview of the items in the Soft Keys form
- General rules that apply to all soft key definitions
- A detailed description of each item in the Soft Keys form
- 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 2-1) appears. 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 **F1** key, **F2** 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 Function key 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 2-1.

Enter definition	
Delay between characters	No
Wait for host data	No time limit
Host data character	
Keyboard input character	^
Pause character	~
CODE-key character	\
Break key character	^
F1 or CODE-1	

Soft keys: Fill in form and confirm

Figure 2-1. Soft Keys Form

## GENERAL RULES

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

- 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.
- When you save the terminal description file, the current soft key definitions are also saved.
- You can cancel the processing of a soft key definition by pressing **Esc**.

- 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.
- 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.
- 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 could transmit both the CR character and a line feed (LF) character, if that is what is set as the line end character in the Full Duplex Properties form.

---

## THE SOFT KEYS FORM

The following sections describe in detail the items in the Soft Keys form; the items appear in the order they are listed on the form.

### Delay Between Characters

Initial setting is 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.

### Wait for Host Data

Initial setting is No Time Limit. 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, GRiDTerm waits indefinitely for the arrival of the character sequence or until you press **Esc** to halt processing.

## Host Data Character

Initial setting is | (on the Compass computer, 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.

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: xxxx". The xxxx characters are replaced by the character string that GRiDTerm is waiting for.

Consider the following portion of a soft key definition:

```
|ENTER PASSWORD|steerforthcr|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 is `^`.

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 2-1). 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 **Code-Key Character**, 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 is . (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 2-1).

## Code-Key Character

Initial setting is ~ (on the Compass computer, 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:

~<sub>CR</sub>

To enter the CR character, press **Ctrl-Return** or **Ctrl-M**, then **Backspace** to erase the LF character.

You can designate a different Code-key character by simply changing the Code-key item in the Soft Keys form (Figure 2-1).

**NOTE:** Code-number keys (and therefore Function keys) cannot be invoked by using this procedure.

## Break Character Key

Initial setting is \ (on the Compass computer, 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.

You can designate a different character by simply changing the Break Key item in the Soft Keys form (Figure 2-1).

## F1 – Shift-F10

Initial setting is No Definition.

These items represent the numbered Function keys and Shift-Function keys (Code-1 through Code-0 and Code-Shift-1 through Code-Shift-0 on keyboards that don't have Function keys).

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 Current Typeface item in the Display Characteristics form (see Chapter 7) in order to see all the characters on your screen.

---

## EXAMPLE 1

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

```
|xx|a|log in:|dow1;;cR|@@@@@|^ $cR|QUERY|./HQCR|QUERY|
```

Table 2-1 describes the effect of each item in the above soft key definition as GRiDTerm executes it.

Table 2-1. Explanation of Soft Key Definition for Example 1

Item	GRiDTerm Action
xx	GRiDTerm waits for the host system to send <i>xx</i> .
a	When <i>xx</i> is received, GRiDTerm transmits <i>a</i> .
log in:	GRiDTerm waits for the characters <i>log in:</i> from the host system.
dowl;;c <sub>R</sub>	GRiDTerm sends <i>dowl;;</i> , followed by one carriage return control character (CR*) when <i>log in:</i> is received. Note that GRiDTerm automatically transmits a LF character after CR, even though LF isn't in the definition.
@@@@@@@@	GRiDTerm waits for the characters @@@@@@@@.
^\$c <sub>R</sub>	After receiving @@@@@@@@, GRiDTerm suspends 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 <i>QUERY</i> from the host system.
./HQc <sub>R</sub>	After receiving <i>QUERY</i> , GRiDTerm stops processing the soft key for one second and then sends <i>./HQ</i> followed by a CR.
QUERY	After receiving the second <i>QUERY</i> , GRiDTerm stops the soft key definition and awaits data entered manually from the keyboard.

\*To enter the CR-LF characters, press Ctrl-Return; to enter CR, press Ctrl-Return, then Backspace.

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

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

Item	GRiDTerm Action
IBM P3c <sub>R</sub>	GRiDTerm transmits <i>IBM P3</i> followed by CR* to the host system. This requests IBM stock prices for the third most recent period.
STOCK IBM .	GRiDTerm waits for the host system to send <i>STOCK IBM</i> and then pauses one second. Note the following: <ul style="list-style-type: none"> <li>• STOCK IBM indicates the beginning of the stock quotation; it must be in uppercase letters with two spaces between STOCK and IBM. <i>Stock IBM</i>, <i>STOCK IBM</i>, <i>STOCK IBM</i> or other such permutations won't be recognized by GRiDTerm.</li> <li>• Dow Jones transmits two sets of CR-LF characters following <i>STOCK IBM</i> 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>
c <sub>R</sub> L <sub>F</sub> c <sub>R</sub> L <sub>F</sub>	GRiDTerm waits for two sets of CR-LF* characters.
.IBM P2c <sub>R</sub>	When the CR-LF characters are received, GRiDTerm pauses one second and transmits <i>IBM P2</i> followed by a carriage return.

---

Item	GRiDTerm Action
STOCK IBM .	GRiDTerm waits for the host system to send <i>STOCK IBM</i> and then pauses one second.
CR <sup>LF</sup> CR <sup>LF</sup>	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 <i>IBM P1</i> followed by a carriage return. Upon receipt of the stock quotation for period 1 (P1), GRiDTerm is ready to accept input from the keyboard.

---

\*To enter the CR-LF characters, press Ctrl-Return; to enter CR, press Ctrl-Return, then Backspace.

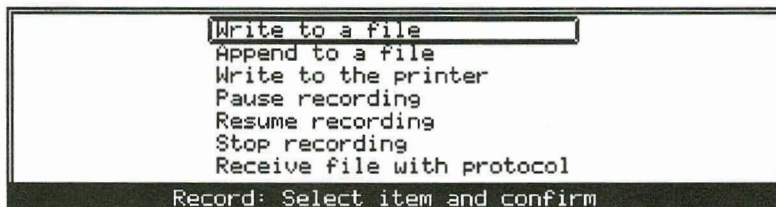
---

## CHAPTER 3: RECEIVING DATA

---

This chapter describes how to receive data using the Record command (Code-R). The Record command allows you to capture data from a host system by recording it to a file or the printer. Additionally, you can receive a file with the Xmodem error correction protocol.

When you press **Code-R** to invoke the Record command, the Record menu appears (Figure 3-1).



*Figure 3-1. Record Menu*

The following sections describe the items on the Record menu in the order that they appear on the menu.

---

### WRITE TO A FILE

This item records the characters received from a host system and, if local echo is enabled, the data that you type in. You can initiate recording at any time during a terminal session.

If you have split the display view, an additional menu allows you to record from the Receive, Send, or both display buffers.

After selecting this item, the File form appears. Type in the Device, Subject, Title, and Kind of the file to receive the recorded data and confirm. If the file already exists, you can confirm again to overwrite the file, or press **Esc** and select another file.

Recording begins after you confirm; characters that are already in the display buffer before you confirm aren't recorded.

In full duplex mode and with Host Echo, only the characters received from a host system are recorded. (Although usually the host system echoes the data you enter as well.)

**CAUTION:**

To avoid losing data when receiving large files at high line speeds, set Display Received Characters to No in the Display Characteristics form (under the Options command, see Chapter 7). Alternately, you can use some form of handshaking, such as XON/XOFF.

To temporarily stop recording to a file, confirm Pause Recording; to resume recording, confirm Resume Recording. To stop recording to a file and close the file, confirm Stop Recording.

---

## APPEND TO A FILE

This item performs the same function as the Write to a File item (above). However, any data in the file to which you are recording won't be overwritten. Instead, the recorded characters are appended to the end of any data in the file.

To pause or stop recording, use the same commands as for Write to a File.



## WRITE TO THE PRINTER

This item prints characters received from a host system and, if local echo is enabled, the data that you type in. After confirming this command, your printer will skip to the top of a new page, depending on the setting of the Print Options. 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.

If you have split the display view, an additional menu allows you to choose whether to print from the Receive or the Send display buffer.

To temporarily stop recording to the printer, confirm Pause Recording; to resume printing, confirm Resume Recording. To stop recording to the printer, confirm Stop Recording.

You can set the top and bottom margins and specify whether or not form feeds are inserted before and after printing by using the Print Options command. The default top and bottom margins are set at 5 and 57, respectively, and, by default, form feeds are inserted before and after printing. The Print Options command is available on the Transfer (Code-T) menu.

You may record to the printer at the same time that you are recording to a file.

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

---

## PAUSE RECORDING

This item temporarily pauses recording to a file or a printer. If you are recording to both a file and a printer, a menu is displayed asking which method of recording you want to pause.

After you pause recording, you can resume recording by confirming Resume Recording. When recording to a file, this is the easiest way of recording several separate portions of a terminal session in a single file. The file stays open, so that when you resume recording, you don't have to fill in another File form with the name of the file.

---

## RESUME RECORDING

This item resumes recording to a file or printer after recording has been paused by Pause Recording. If you have paused recording to both a file and a printer, a menu is displayed asking which method of recording you want to resume.

---

## STOP RECORDING

The Stop Recording item stops recording and closes the current recording file. If you are recording to both a file and a printer, a menu is displayed asking which method of recording you want to stop.

When you stop recording to the printer, GRiDTerm sends a form feed to the printer to advance the paper to the top of the next page.

---

## RECEIVE FILE WITH PROTOCOL

This item allows you to receive a file with the Xmodem error correction protocol. The Xmodem protocol allows dissimilar computers to exchange data, regardless of the type of hardware or communications software being used. The Xmodem protocol was designed to ensure that a file is received without errors.

Because all computer systems vary in how they implement the Xmodem file transfer procedure, it is difficult to explain exactly how to use it to receive a file. Normally, you first connect to the host system and instruct it to send a file. Then you instruct GRiDTerm to receive a file using Xmodem.

To instruct GRiDTerm to receive a file with a protocol, follow the steps listed below.

1. Press **Code-R** and select and confirm the item Receive File with Protocol.
2. The Receive File with Protocol form is displayed (Figure 3-2), asking you to select the file transfer protocol to use. Select Xmodem and confirm. (At the time of this manual printing, Xmodem is the only file transfer protocol supplied by GRiD.)

<input checked="" type="radio"/> Xmodem
Type of protocol <input type="text" value="Xmodem"/>
Receive file: Fill in form and confirm

Figure 3-2. Receive File with Protocol Form

- The next form displayed (Figure 3-3) asks if the host is GRiD compatible. Select Yes or No and confirm. In most cases, select No, the default. Select Yes only if the host computer is sending a GRiD format file. A GRiD format file is a file created under InteGRiD or GRiD-OS; it contains a special properties record that holds information used by GRiD applications. The Yes choice applies only if you are transferring GRiD application data files, applications, or system files between two computers.

<input checked="" type="radio"/> Yes <input type="radio"/> No
Host is GRiD compatible <input type="text" value="No"/>
Receive file properties: Fill in form and confirm

Figure 3-3. GRiD Compatible Host Form

- The File form is displayed. Fill it in with the name of the file that you want to hold the received data. Confirm this form to begin the file transfer.

GRiDTerm signals the host that it is ready to receive the file. The host then starts sending the file. The file is transmitted in blocks of 128 bytes each. The message line displays the number of blocks received, until the file transfer is complete.

If you have obtained an additional file transfer protocol file from GRiD that you want to use to receive a file, you must copy it to the Programs subject of an available storage device. Also, be sure to execute the GRiDManager Update Options Form Choices command. When the Protocol form is displayed, the new protocol file will be listed along with Xmodem as a choice.

---

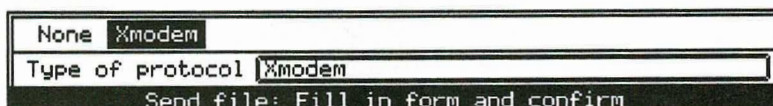
## CHAPTER 4: SENDING A FILE

---

This chapter describes how to send a file using the Send command (Code-S). The Send command allows you to send a file to a host or another GRiDTerm user; you have the option of sending the file either with or without the Xmodem error correction protocol. You should generally use an error correction protocol when transferring files.

When you press **Code-S** to invoke the Send command, the Send Protocol form appears (Figure 4-1). Note that the Send command can only be used while you are connected to a host or another computer.

**NOTE:** If you don't get the Send Protocol form when you press **Code-S**, be sure that you have the Xmodem file in the Programs subject of an attached storage device and that you've executed the GRiDManager command Update Options Form Choices.



None Xmodem  
Type of protocol Xmodem  
Send file: Fill in form and confirm

*Figure 4-1. Send Protocol Form*

The Send Protocol form lets you specify what kind of file transfer protocol you want to use to send a file. You can choose Xmodem or None. The following two sections in this chapter discuss sending a file with the Xmodem protocol or with no protocol.

---

## SENDING A FILE WITH XMODEM

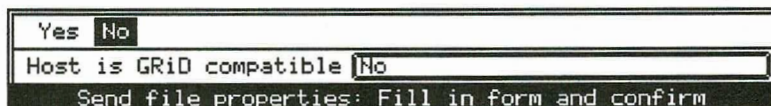
The Xmodem protocol allows dissimilar computers to exchange data, regardless of the type of hardware or communications software being used. Many other popular communication software products use the Xmodem protocol. The Xmodem protocol ensures that a file is sent without errors.

Because all computer systems vary in how they implement the Xmodem file transfer procedure, it is difficult to explain exactly how to use it to send a file. Normally, you first connect to the host system and instruct it to receive a file. Then you instruct GRiDTerm to send a file using Xmodem.

**NOTE:** When sending a file using Xmodem to another GRiDTerm user, the sender should prepare to send the file first using the Send a File command, then the receiver should execute the Receive a File with Protocol command.

To instruct GRiDTerm to send a file with a protocol, follow the steps listed below.

1. Press **Code-S**, select Xmodem on the Send Protocol form, and confirm. (At the time of this manual printing, Xmodem is the only file transfer protocol supplied by GRiD.)
2. The next form displayed (Figure 4-2) asks if the host is GRiD compatible. Select Yes or No and confirm. In most cases, select No, the default. Select Yes only if the host computer is able to receive a GRiD format file. A GRiD format file is a file created under InteGRiD or GRiD-OS; it contains a special properties record that holds information used by GRiD applications. The Yes choice applies only if you are transferring GRiD application data files, applications, or system files between two computers.



```
Yes No
Host is GRiD compatible No
Send file properties: Fill in form and confirm
```

Figure 4-2. GRiD Compatible Host Form

3. The File form is displayed, for you to fill in with the name of the file that you want to send. Confirm this form to begin the file transfer.

GRiDTerm signals the host that it is ready to send the file. The file is transmitted in blocks of 128 bytes each.

As the file is being sent, the message line shows the percentage that has been sent.

To temporarily stop sending the file press **Esc**. To resume sending, confirm, or to permanently stop sending, press **Esc** again.

If you have obtained an additional file transfer protocol file from GRiD that you want to use to send a file, you must copy it to the Programs subject of an available storage device. Also, be sure to execute the GRiDManager Update Options Form Choices command. When the Send Protocol form is displayed, the new protocol file will be listed along with Xmodem and None as a choice.

---

## SENDING A FILE WITH NO PROTOCOL

To send a file without using the Xmodem error correction protocol, select the choice None on the Send Protocol form.

In general, it is always better to send a file with a protocol. The None choice should only be used when the host system doesn't support the Xmodem file transfer protocol. When sending a file without a protocol, there is a high risk that the received file will contain errors. Such errors are caused by noise and interference on the phone line.

When you choose to send a file without a protocol, an additional form is displayed, the Send File Properties form (Figure 4-3). Fill in and confirm the Send File Properties form and continue as described above with steps 2 and 3.

To temporarily stop sending a file press **Esc**. To resume sending, confirm, or to permanently stop sending, press **Esc** again.

Text Binary	
Type of data to send	Text
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 4-3. Send File Properties Form

The following subsections describe each of the items on the Send File Properties form.

## Type of Data to Send

Initial setting is Text. Choices are Text, Binary.

This item specifies the type of data you are sending to the host system. The following two subsections describe the choices in detail.

### Text

Select Text when you want to send only the data in the file usually visible to the user. GRiDTerm deletes the file properties (explained next under Binary) before transferring the file.

The file is sent 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 II, GRiDPlot, and GRiDWrite has this format. The file records are transmitted differently depending on whether you are using full duplex or half duplex mode; these differences are discussed in the following paragraphs.

**NOTE:** Some computers only accept lines that are less than a certain length. You may need to change the setting of the Display Width item and choose Yes for End Line Automatically on the Display Characteristics form. See Chapter 7 for details on the Display Characteristics form.

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. 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. If this is the case, and you wish to see the data, set the Echo Mode to Local Echo.

When sending a record in half duplex mode, GRiDTerm sends all the text up to a set of CR-LF control characters. It translates the CR-LF control characters into the selected Line Turnaround String Sent to Host, and then sends that string.

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, GRiDTerm displays every character that it transmits to the host.

**NOTE:** When sending a file to another computer using GRiDTerm, the Transmission Mode item in the Communication Properties form must be set to Full Duplex.

## Binary

Select Binary when you want to transmit the entire file, including file properties, as it exists on your storage device. Depending on the type of file being sent, file properties can contain the following information:

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



You would typically use the Binary 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 Communication Properties form to 8. Note that GRiDTerm ignores the settings of the items on the following forms: The End Line Automatically and Word Wrap on the Display Characteristics form, and the Interline Delay and Line Prompt from Host item on the Send File Properties form.

**NOTE:** Do not choose the Binary setting when communicating with another computer that is also using GRiDTerm. GRiDTerm has no facility for recording binary data unless a protocol is used. If you want to send binary data between two computers using GRiDTerm, send the file using the Xmodem protocol.

## Intercharacter Delay

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

This item specifies how long GRiDTerm pauses after transmitting each character.

Use a setting other than None when the receiving computer cannot process the data as fast as your computer sends it. Increase the delay period until the data can be received and processed successfully by the remote computer.

**NOTE:** Because changing the Intercharacter Delay item from None significantly slows down the rate at which data is transmitted, you should use it only after trying unsuccessfully to solve the problem by using the Interline Delay item (described below).

## Interline Delay

Initial setting is None. Choices are Seconds, None.

This item specifies how many seconds GRiDTerm should pause after transmitting each line.

Leave the setting at None unless GRiDTerm is sending data too quickly to the host system; this is apparent if the file sent to the host system is missing characters. You may also want to use a delay if the host system prompts you before each line of text is sent.

If setting this item doesn't solve the problem, you should try changing the setting of the Intercharacter Delay item.

## 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.

## 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 the 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.

---

## CHAPTER 5: CONVERSATIONAL OPERATION

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This chapter describes how to use GRiDTerm conversationally. Conversational operation means communicating with another personal computer user who is also running GRiDTerm, or some other GRiD terminal emulator program such as GRiDVT100 or GRiD3101.

To facilitate conversational operation, GRiDTerm allows you to split the display into separate send and receive views (Code-V). Whatever you type is displayed in the Send view (the lower portion of the screen), and whatever the other user types is displayed in the Receive view of your screen (the upper portion). Because sent and received characters are separated on the screen, you and the other user can type simultaneously without confusion.

Conversational operation is similar to communicating with a host system, but there are some important differences; these are explained in the following sections.

---

### SETTING UP THE SYSTEMS

Prior to establishing communication between two computers, they must be set up correctly. Set up the computers as follows:

- Both computers should be set for full duplex communication. This is set in the Transmission Mode item of the Communication Properties form.
- Both computers should be set for local echo mode. This is set in the Full Duplex Properties form (this form follows the Communication Properties form when Full Duplex is set). Note that local echo is set automatically when the display view is split.

- Set up separate send and receive views before establishing communication; the views cannot be changed once you are connected. To set up separate views, use the View command (Code-V), and confirm Split Display Views.
- Both computers should be set for the same baud rate. This is set on the Access form (Code-A).

---

## ESTABLISHING A CONNECTION

To establish a connection, one computer must be designated as the calling system and the other as the receiving system. The receiving system should select the command Wait for Call From Host from the Commands menu. The Access form is displayed and must be filled in and confirmed to wait for a call. The following items in the Access form are required (the other items are not used or optional when waiting for a call):

- **Baud Rate:** Set the same baud rate as the calling system.
- **Modem:** Set to the name of the modem driver you want to use, or System-wide to use the modem driver specified in the Current Modem item of the GRiDManager Options form.
- **Serial:** Set to the name of the serial driver you want to use, or System-wide to use the serial driver specified in the Current Serial item of the GRiDManager Options form. Note that this item must be filled in whether or not you are using a modem connected to the serial port.
- **Modem Type:** Set to Auto-dial if you have an auto-dialing modem for which GRiD provides a modem driver. (All GRiD computer internal modems are auto-dialing.) Set to Manual-dial if you have a modem for which you must dial manually, or if you are using a direct serial connection.
- **Voice Before Data:** Set to Yes or No depending on whether or not you want to talk over the telephone line before beginning data communication. If you select Yes, simply confirm to enter data mode when you are finished talking. Note that a T-connector may be required to connect both your computer and a telephone to the phone line in order to use voice mode.

- **Wait for Answer:** The default of 30 seconds is generally sufficient in most cases. When waiting for a call, this item determines the amount of time GRiDTerm waits for a data connection to be established after it detects a carrier from the calling computer. If you receive error 400, you should increase the waiting time.

The items listed above are explained in more detail in the Access Parameters section of Chapter 7.

After filling in and confirming the Access form on the receiving computer, it waits for a call from the calling computer. At this time, the user of the calling computer must press **Code-A**, fill in the Access form, and confirm to make the call. Note that you can press **Esc** at the receiving computer to stop waiting for a call.

The message "Data mode established" signals that the connection has been made. Simply begin typing to communicate. If the characters you type don't appear on your screen, check that the Echo Mode item in the Full Duplex Properties form is set to Local Echo.

While in conversational operation, you can use all of the normal features of GRiDTerm such as sending a file using the Xmodem protocol. This feature is useful for exchanging GRiD application files between two remote systems. See chapters 3 and 4 for information on receiving and sending files.

**NOTE:** When sending a file using Xmodem to another GRiDTerm user, the sender should prepare to send the file first using the Send a File command, then the receiver should execute the Receive a File with Protocol command.

**NOTE:** When sending a file without a protocol to another GRiDTerm user, the receiver may find that lines are broken in unexpected places, especially if the screen widths of the communicating computers are different. This is caused because the sending computer is automatically inserting line end characters whenever a line wraps on its screen. To correct this situation, the sender should set the End Line Automatically item to No. This item is found on the Display Characteristics form under the Options command.

---

## DIRECT CONNECTION

Sometimes, two computers are connected directly using a "null modem" serial cable. A null modem cable is a serial cable that eliminates the need for a modem when connecting two computers. If you have the GRiD Model 6201 PCMASTER/PCSLAVE Serial Cable, you can use that null modem cable.

To connect the computers, simply connect their serial ports using the null modem cable. To establish communication, proceed as follows:

1. Set up the systems as explained in the first section in this chapter, **SETTING UP THE SYSTEMS**.
2. Press **Code-A** on both computers and fill in the Access form. Only the items listed below are required:
  - **Baud Rate:** Set the same baud rate for both computers.
  - **Serial:** Set to the name of the serial driver you want to use, or System-wide to use the serial driver specified in the Current Serial item of the GRiDManager Options form.
  - **Dial Method:** Set to Manual Dial for both computers.
  - **Voice Before Date:** Set to No for both computers.

Confirm the Access form on both computers once it is filled in correctly.

3. The message "Confirm when connection established" is displayed on each computer. Simply confirm on each computer once the two computers are connected with the null modem cable.

The message "Data mode established" indicates that the connection is successful. If you get an error instead, your cable may not be a null modem cable – use the GRiD model 6201 cable, if possible.

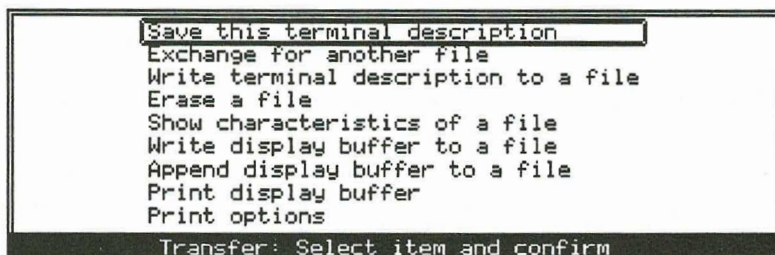
If the characters you type don't appear on your screen, check that the Echo Mode item in the Full Duplex Properties form is set to Local Echo.

---

## CHAPTER 6: TRANSFER – CODE-T

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The Transfer command (Code-T) lets you write or append the display buffer to a file, print the display buffer, erase or show characteristics of files, and make copies of your terminal description file. When you press **Code-T**, the Transfer menu appears (Figure 6-1).



*Figure 6-1. Transfer Menu*

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

---

### SAVE THIS TERMINAL DESCRIPTION

The Save This Terminal Description item saves your current terminal description file. The terminal description file includes all the soft key definitions and the settings of the Access form, Display Characteristics form, Communication Properties form, and all other forms used in GRiDTerm. Any changes you have made to these forms are written over your existing terminal description file. To save changes in a different terminal description file, without writing over the existing file, use the command Write Terminal Description to a File.



---

## EXCHANGE FOR ANOTHER FILE

The Exchange for Another File item lets you exit, optionally save, 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. Specify the file you want to exchange for. 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 GRiDTerm terminal description file, the settings in the new Access, Display Characteristics, Communication Properties, and all other 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.

If you are connected when you choose Exchange for Another File, you are prompted to confirm to disconnect before you are allowed to exchange files.

---

## WRITE TERMINAL DESCRIPTION TO A FILE

The Write Terminal Description to a File item writes your current terminal description file to another file that you select. This allows you to save a modified terminal description file, and then use 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 your current terminal description over it; or you can press **Esc**, issue another **Code-T**, reselect this item, and specify a different file.

**NOTE:** If you changed any GRiDTerm forms, such as the Access or Communication Line Properties forms, without confirming them (pressing **Code-Return**), the changes are not saved. If you change any form, you must confirm it for the changes to take effect.

---

## 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 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 cannot use this item for deleting multiple files at one time. Instead, you should use the Erase Subjects or Files command under GRiDManager together with the Wildcard character.

---

## 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 this item, the File form appears. Specify the desired file and then confirm.

---

## WRITE DISPLAY BUFFER TO A FILE

The Write Display Buffer to a File item writes the entire contents of the display buffer to a file. After you select and confirm this item, the File form appears. Specify the file you want to hold the contents of the display buffer and then confirm.

If you have separate send and receive display buffers, an additional menu appears before the File form, asking you to specify whether to write the Receive, Send, or both display buffers to a file.

---

## 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.

---

## PRINT DISPLAY BUFFER

The Print Display Buffer item prints the contents of your display buffer. The display buffer contains the data received from the host system and, if local echo is enabled, the characters that you type. The maximum length of each printed line is determined by the Display Width setting on the Options form. You can specify whether or not form feeds are automatically inserted by using the Print Options command; the default setting is to automatically insert a form feed at the end of every page.

Once printing has begun, GRiDTerm cannot receive any more data until printing finishes or you press **Esc**. You may stop the printing at any time by pressing **Esc** and confirming.

If you have separate send and receive display buffers, an additional menu appears, asking you to specify whether to print the Receive, Send, or both display buffers.

---

## PRINT OPTIONS

The Print Options item determines whether or not form feeds are automatically inserted when you print the display buffer using the Print Display Buffer command (Code-T) or record to the printer using the Write to the Printer command (Code-R). When you confirm Print Options, the Print Options form is displayed (Figure 6-2).

Yes	No
Insert form feeds	Yes
Top margin	5
Bottom margin	57
Print options: Fill in form and confirm	

Figure 6-2. *Print Options Form*

The Print Options items are explained in the following subsections.

## Insert Form Feeds

Initial setting is Yes. Choices are Yes, No.

The Insert Form Feeds item determines whether or not form feeds are automatically inserted when you print the display buffer. When set to Yes, form feeds are automatically inserted at the end of every page so that the printed lines skip over the break between pages. A form feed also occurs after the final line is printed. The top and bottom margins are set by the Top Margin and Bottom Margin items.

When set to No, form feeds are not inserted when printing the display buffer. Form feeds occur only if they exist in the display buffer itself. The Top Margin and Bottom Margin settings are ignored since they apply only when form feeds are inserted.

## Top Margin

Initial setting is 5. Choices are 1-250.

The Top Margin item sets the number of lines from the top of the page where you want the first line on each page to be printed. Note that this item applies only if Insert Form Feeds is set to Yes.

## Bottom Margin

Initial setting is 57. Choices are 1-250.

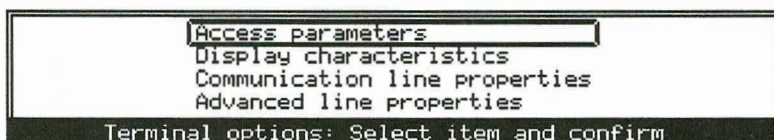
The Bottom Margin item sets the line number of the last line to be printed on each page; a form feed occurs after the specified line. Note that this item applies only if Insert Form Feeds is set to Yes.

---

## CHAPTER 7: SETTING UP GRIDTERM – OPTIONS

---

This chapter provides information on setting up GRiDTerm using the Options command (Code-O). When you press **Code-O**, the Options menu appears (Figure 7-1).



*Figure 7-1. Options Menu*

Of the four Options items on the menu, most users will be concerned with Access Parameters and Display Characteristics. The Communication Line Properties and Advanced Line Properties are intended for the person responsible for setting up a terminal description for a particular host. This person must be familiar with the application and communication conventions at the host system. The functions of the four Options items are summarized below.

- The Access Parameters item allows you to edit the information in the Access form without actually connecting to a host. For example, you can change the phone number or the baud rate using this item.
- The Display Characteristics item allows you to set how GRiDTerm displays data it receives. For example, you can change the display width, turn the ruler on, and set what types of characters are displayed.
- The Communication Line Properties item allows you to set the communication protocol used for communicating with a particular host. For example, you can change the type of parity used, the bits per character, and the number of stop bits.

- The Advanced Line Properties allows you to display the status of individual interface lines and change how they operate. These properties generally don't need to be changed; this capability is only provided for connecting to external devices that require special line protocols.

The following section describes how to set up a new terminal description file. If you know a user with a terminal description file that you can use, it would be easier to do that instead of creating a new one. The remainder of this chapter gives a detailed description of each of the four Options items.

---

## 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 Communication Line Properties forms, which must be filled in to match the application and communication protocols at the host system. You must obtain most of the information for these forms from the host system.

The items in the Access form establish a connection between your GRiDTerm terminal and a host system. See the Access Parameters section in this chapter for details about each item in the form. The items in the Communication Line Properties form describe the communication conventions used at the host system. See the Communication Line Properties section in this chapter for details about each item in the form.

Figure 7-2 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 Communication Line Properties forms. You should have all the information required by the checklist before filling in the forms.

**ACCESS FORM**

Phone Number: \_\_\_\_\_

Remote System Name: \_\_\_\_\_

Baud Rate (circle one): 300 1200 2400 or \_\_\_\_\_

Modem: System-wide or \_\_\_\_\_

Serial: System-wide or \_\_\_\_\_

Modem Type (circle one): Auto-dial Manual-dial

Dial Type (circle one): Pulse Touch-Tone

Voice Before Data (circle one): Yes No

Wait for Answer: 30 seconds or \_\_\_\_\_ seconds

Speaker Volume (circle one): On Off

**COMMUNICATION LINE PROPERTIES FORM**

Transmission Mode (circle one): Half Duplex Full Duplex

Backspace Character: CTRL-H or \_\_\_\_\_

Type of Parity (circle one): Off Odd Even Mark Space

Bits per Character (circle one): 5 6 7 8

Stop Bits (circle one): 1 1.5 2

Character set (circle one): ASCII Baudot

Answerback: Disabled or \_\_\_\_\_

*Figure 7-2. Terminal Description Form (Part 1 of 2)*



<b>FULL DUPLEX PROPERTIES FORM</b>	
Echo Mode (circle one):	Local Echo    Host Echo
Host line end translation:	
_____	Allow extra CR    Remove extra CR    None
Line End String Sent to Host (1-3 character ASCII string):	
_____	CR    LF    CR-LF    CR-CR-LF
XON / XOFF Support (circle one):	Enabled    Disabled
ENQ / ACK Support (circle one):	Enabled    Disabled
<b>HALF DUPLEX PROPERTIES FORM</b>	
Host line end translation:	
_____	Allow extra CR    Remove extra CR    None
Line Turnaround String Sent by Host (1-2 character ASCII string):	
_____	CR    LF    CTRL-Q    CTRL-S    EOT
Line Turnaround String Sent to Host (1-2 character ASCII string):	
_____	CR    LF    CTRL-Q    CTRL-S    EOT

*Figure 7-2. Terminal Description Form (Part 2 of 2)*

You only need to fill in either the Full Duplex or the Half Duplex Properties form. The setting of the Transmission Mode item on the Communication Line Properties form indicates which form you should complete.

Use the following procedure to create a terminal description file. Refer to the forms you've completed above for required information.

1. Fill in the File form with the name of a new file whose Kind is set to "Tml" under InteGRiD ("Terminal" under GRiD-OS) and then confirm twice to create the file.
2. The GRiDTerm Commands menu appears. Press **Code-O** (Options) and confirm the Communication Line Properties item.
3. The Communication Line Properties form (Figure 7-7) appears. Fill in the form and confirm.
4. The Full Duplex Properties form (Figure 7-8) or the Half Duplex Properties form (Figure 7-9) appears. Fill in the form and confirm.
5. Press **Code-A**. The Access form appears. Fill in the form and confirm.
6. GRiDTerm attempts to connect to the host system. Repeat steps 2 through 5 as necessary, until you establish a connection.
7. Use the Quit command (Code-Q) to exit. GRiDTerm automatically saves all of the forms you completed.

---

## ACCESS PARAMETERS

The Access Parameters item allows you to edit the Access form (Figure 7-3) without actually connecting to a host system when you confirm the form. The same Access form is displayed when you press **Code-A**, though if you confirm that form, GRiDTerm will attempt to make a connection to the host system.

The items in the form are described in the following subsections.

Phone number	<input type="text"/>
Remote system name	
Baud rate	1200
Modem	System-wide
Serial	System-wide
Modem type	Auto-dial
Dial type	Touch-tone
Voice before data	No
Wait for answer	30
Speaker volume	On
Try again	No

Access: Fill in form and confirm to dial

Figure 7-3. Access Form with Initial Settings

## Phone Number

No initial setting.

The correct setting is the telephone number of the host system to which you want to connect. The characters that are valid in a phone number are listed in Table 7-1, along with their functions.

Table 7-1. Valid Phone Number Characters

Character	Function
0-9, *, #	These characters perform the same functions as those on your telephone.
^, period, comma	These characters cause a one second delay during dialing. With the Compass computer internal modem, the carat (^) causes the modem to wait for a dial tone before dialing.

Character	Function
\$	This character causes the computer to interrupt the dialing sequence and display the message, "Confirm to continue dialing." When you confirm, the message is cleared and the computer resumes dialing. You might use this feature when you dial an initial phone number and need to wait for a special tone, and then dial additional numbers.
W	This character causes the modem to wait for a dial tone before continuing dialing. This is useful when you have to dial 9 and wait for an outside line or when you're placing a call through a long-distance carrier service.*
@	This character causes the modem to wait for one or more rings followed within 30 seconds by 5 seconds of silence before continuing dialing. This is useful for accessing a system that answers with a special tone or taped message, after which you must enter an access code.*
space, parentheses, hyphen	You can use any of these characters for readability. They do not affect dialing.

\*This character is only valid if 1) you are using a modem driver dated 1987 or later, and 2) you are using a GRiD 2400 baud internal modem or an external modem that supports the Hayes extended command set.

**NOTE:** All GRiD internal modems, except the Compass computer internal modem, automatically wait for a dial tone before dialing. With the Compass computer internal modem, you should precede the phone number with ^ to cause the modem to wait for a dial tone before dialing.

Examples:

242

The computer waits for a dial tone, then dials extension 242.

9.....(408)-555-1212

The computer waits for a dial tone, dials 9 for an outside line, waits five seconds, then dials the long-distance number.

9 W 555-1212 @ 00000 (213)-555-1212

The computer waits for a dial tone, dials 9 for an outside line, waits for another dial tone, then dials 555-1212. The system then waits for some rings, followed by five seconds of silence, then dials an access code (00000 in this example), followed by a ten-digit long-distance number. This example typifies the procedure for placing a call from the computer through a long-distance carrier service.

## 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.

## Baud Rate

Initial setting is 1200 bits per second. Choices are Enter Rate, 45.5, 300, 1200, 2400, 4800, 7200, 9600, 19200, External Clocking.

The baud rate 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. External clocking is only used in special situations where your computer is connected to an external device that provides clocking signals.

All GRiD supplied modem drivers support automatic baud rate fall back. Automatic baud rate fall back causes the modem driver to fall back to a lower baud rate if the answering modem at the host system is operating at a lower baud rate than is set in the Baud Rate item. For example, if you set the baud

rate to 2400 and the answering modem can only operate at 1200 baud, the connection is still established, but at 1200 baud instead of 2400 baud. Automatic baud rate fall back works only from 2400 to 1200 or 300 baud, or from 1200 to 300 baud.

## Modem

Initial setting is System-wide. Choices are System-wide and all modem drivers available in the Programs subject.

The Modem item lets you specify a modem driver different from the system-wide modem driver specified in the Current Modem item of the GRiDManager Options form. This item is for your convenience when you want to use a different modem driver than you normally use for communications.

Leave this item set to System-wide to use the modem driver you've specified in the GRiDManger Options form.

**NOTE:** If you select a modem driver other than System-wide, the modem driver selected must be a version dated 1987 or later. Updated modem drivers are included on your GRiDTerm diskette.

## Serial

Initial setting is System-wide. Choices are System-wide and all serial drivers available in the Programs subject.

The Serial item lets you specify a serial driver different from the system-wide serial driver specified in the Current Serial item of the GRiDManager Options form. This item is for your convenience when you want to use a different serial driver than you normally use for communications.

Leave this item set to System-wide to use the serial driver you've specified in the GRiDManger Options form.

**NOTE:** If you select a serial driver other than System-wide and Modem Type is set to Auto-dial, the modem driver you specify must be a version dated 1987 or later. Updated modem drivers are included on your GRiDTerm diskette.

## Modem Type

Initial setting is Auto-dial. Choices are Auto-dial, Manual-dial.

Select Auto-dial if you are using a modem that the computer can dial automatically (any internal modem, or any "smart" external modem). You must have the correct modem driver set in the Modem item, and the correct serial driver set in the Serial item.

Select Manual-dial if you are using an external manual dial modem connected through the serial port, or a serial direct connection. You must have the correct serial driver set in the Serial item.

## Dial Type

Initial setting is Touch-Tone. Choices are Pulse, Touch-Tone.

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

## Voice Before Data

Initial setting is No. Choices are Yes, No.

When your computer 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.

Select Yes to remain in voice mode until you confirm. Select No to enter data mode immediately after dialing.

**NOTE:** To talk to someone over the telephone in voice mode, you may be required to use a T-connector so that you can plug both your computer and a telephone into the telephone line.

## Wait for Answer

Initial setting is 30 Seconds.

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

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

## Speaker Volume

Initial setting is On. Choices are Off, On.

When set to On, the computer speaker stays on until a connection is established; this allows you to hear what's happening on the line while GRiDTerm is attempting to connect. For example, you can hear if you reach a wrong number or if the line is busy.

When set to Off, the computer speaker is never turned on.



## 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** or **Esc**.

When you select Number of Tries and type in a number, GRiDTerm tries to dial the number of times you specify, or until a connection is made, pausing five seconds between each dialing sequence.

Select No to prevent GRiDTerm from attempting to dial again if the first attempt to establish a connection is unsuccessful.

Select Keep Trying to cause GRiDTerm to repeatedly dial the host system until a successful connection is made.

---

## DISPLAY CHARACTERISTICS

The Display Characteristics item allows you to set the display characteristics such as the display width, if control characters are displayed, and the typeface used to display characters. When you select the Display Characteristics item, the Display Characteristics form is displayed (Figure 7-4).

2-250 Window width	
Display width	Window width
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
Display characteristics: Fill in form and confirm	

Figure 7-4. Display Characteristics Form with Initial Settings

After filling in the form, either 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 Display Characteristics form in the order they appear in the form.

## Display Width

Initial setting is Window Width. 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        | Sets the right margin between 2 and 250. If you specify more than the number of characters that fit on the screen, the rightmost text will not appear on the screen. To see the additional text, scroll the display horizontally using the Arrow keys. |
| Window Width | Sets the right margin to the width of your GRiDTerm window. Each line can contain up to the number of characters that fit in the window.   |

## 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 line and the remainder on the next line.

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 blank character or line-feed control character preceding and following the group. The following are treated as four words:

1981    \$29.95    (-47%)    magnolia

If you change the Word Wrap setting after you have already received data, all data in the display buffer is redrawn with the new setting.

## Ruler

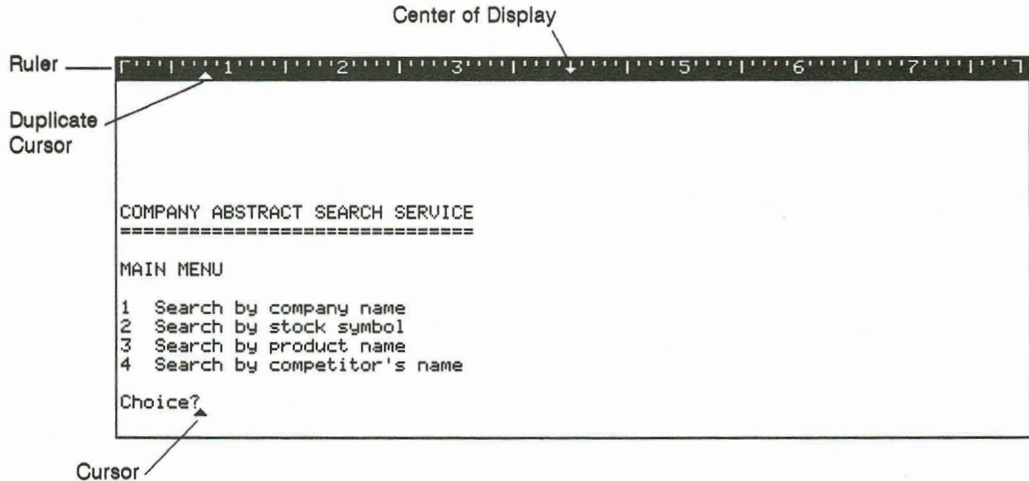
Initial setting is Disabled. Choices are Enabled, Disabled.

The ruler is a highlighted line at the top of the display (Figure 7-5) which marks the position of the cursor. The Ruler item determines whether or not the ruler is displayed.

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

- Tick marks at each column position.
- 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.)

- Left and right margin marks that indicate the width of the display, based on the Display Width item.
- A column indicator that tracks the column position of the cursor in the display area.



*Figure 7-5. Ruler Display*

## 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 also affects recording of data from the display buffer 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, depending on the setting of the Host Line End Translation item. A list of the ASCII characters and their corresponding codes is given in Appendix C.
- 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, depending on the setting of the Host Line End Translation item. (All control characters are kept, except the Backspace character).
- 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 Resource Center and other technical personnel to diagnose problems.

## 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 not displayed.

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 8 and Appendix A.

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.

## End Line Automatically

Initial setting is Yes. Choices are Yes, No.

The End Line Automatically item applies only when you type directly to a host system or use the Send a File command (Code-S) to send a file without using a protocol. It has no effect when you send a file using the Xmodem protocol.

- |     |  |
|-----|--|
| Yes | Line-end or line-turnaround strings are automatically inserted in the data so that each line doesn't exceed $n$ characters, where $n$ is the setting of Display Width. The strings are inserted after word wrapping occurs. CR-LF pairs are converted into the line-end or line-turnaround strings specified in the Full or Half Duplex Properties form. |
| No  | GRiDTerm sends the file without modifying it, except to translate CR-LF pairs into line-end or line-turnaround strings.  |

Usually, we think of a line as all the text that fits on one line of the display. When GRiDTerm is sending a file, however, a line consists of all the characters up to a CR-LF (carriage return-line feed) pair. In data files that you send, lines may range from a few characters to a whole paragraph.

Some host systems limit the length of lines they can accept. This could be a problem if you are sending a text file and each paragraph is being sent as a single line.

The End Line Automatically option causes line-end or line-turnaround strings to be inserted into data transmitted to a host system. The setting for the Display Width option determines where the strings are inserted. For example, if Display Width is set to 80, the additional strings are inserted so that the total length of each line is 80 characters. If Display Width is set and Word Wrap is enabled, GRiDTerm performs word wrapping first, then inserts the additional strings. Figure 7-6 illustrates the principle with a 15-character line.

To use the End Line Automatically option, find out the maximum line length for the host system. As long as the value for Display Width is equal to or less than this maximum, line length errors should not occur.

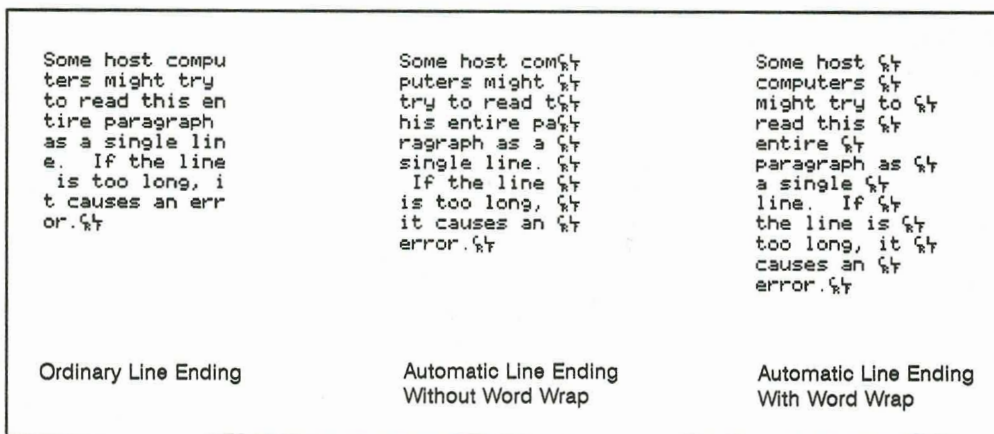


Figure 7-6. Ending the Line Automatically

## Current Typeface

Initial setting is System-wide. Choices are System-wide, Built-in, and the names of other typeface files in the Programs subject.

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

Select System-wide to use the System-wide setting for Typeface set in the GRiDManager Options form.

Select Built-in to use the built-in typeface for your computer. This setting provides the most efficient use of RAM.

Select the name of a typeface file to use a different typeface.

## COMMUNICATION LINE PROPERTIES

Your computer 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 Communication Line Properties form. The protocol is determined by the host system, which must furnish the information for this form.

When you select the Communication Line Properties item, the Communication Line Properties form appears (Figure 7-7). Fill in the form and confirm; GRiDTerm then prompts you to fill in the Full Duplex Properties form (Figure 7-8) or the Half Duplex Properties form (Figure 7-9), depending on which transmission mode you specified in the Communication Line Properties form.

Full duplex		Half duplex
Transmission mode	Full duplex	
Backspace character	CTRL-H	
Type of parity	Even	
Bits per character	7	
Stop bits	1	
Character set	ASCII	
Answerback	Disabled	
Communication properties: Fill in form and confirm		

Figure 7-7. Communication Line Properties Form with Initial Settings

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

### The Communication Line Properties Form

The following subsections describe the items in the Communication Line Properties form (Figure 7-7) in the order in which they appear on the form.



## Transmission Mode

Initial setting is Full Duplex. Choices are Full Duplex, Half 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 your computer and the host system. See 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. If supported by the host system, select XON/XOFF in the Full Duplex Properties form (Figure 7-8) to avoid running out of space in GRiDTerm's internal receive FIFO buffer. When communicating with another GRiDTerm user, use Full Duplex.

## 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 keyboard. Although you'll normally use the initial setting — Ctrl-H, which is the ASCII backspace character — some hosts require a different ASCII character.

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 you are recording data to a file, the backspace character that is received is also recorded, but no characters are deleted from the record file.

## 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; this is a limited form of error detection. Set Type of Parity to match the parity expected by the host system.

Off	No parity bit is set.
Odd	The parity bit is set to 1 or 0 to make the sum of the (binary) digits of the character into an odd number.
Even	The parity bit is set to 1 or 0 to make the sum of the (binary) digits of the character into an even number.
Mark	The parity bit is always set to 1.
Space	The parity bit is always set to 0.

## Bits Per Character

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

The standard ASCII code uses only 7 bits per character. If Bits Per Character is set to 8 and Remove Control Characters is set to Diagnostic, all data bits are received by GRiDTerm; non-ASCII characters can't be displayed, but they can be recorded to a file.

The 5 and 6 bits per character settings should not normally be used for ASCII data.

## Stop Bits

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

In asynchronous transmissions like GRiDTerm's, 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.

## Character Set

Initial setting is ASCII. Choices are ASCII, Baudot.

The Character Set item determines how characters are represented when they are sent and received. The standard character code is ASCII. Baudot is a special character code that is only rarely used. If Baudot is selected, the following other conditions are also automatically set:

- Parity is set to Off.
- Bits Per Character is set to 5.
- Stop Bits is set to 1.5.

Although the above parameters are automatically set if Baudot is selected, they can be changed after the Baudot choice is confirmed.

## Answerback

Initial setting is Disabled. Choices are Type a String, Disabled.

Some host computer systems and networks require that all terminals calling into the system be equipped with an answerback. An answerback is an identifier code that identifies your terminal to the host system. When a connection is established with such a system, the host sends an ENQ character (ASCII 5) and expects the calling terminal to reply with its unique answerback.

To use the answerback feature, choose Type a String, and enter the answerback code you have been assigned by the host system. Your answerback code automatically will be sent to the host system when it is requested.

## The Full Duplex Properties Form

If you set Transmission Mode on the Communication Line Properties form to Full Duplex, then the Full Duplex Properties form appears (Figure 7-8).

Local echo	Host echo
Echo mode	Host echo
Host line end translation	Allow extra CR
Line end string sent to host	CR
XON / XOFF support	Disabled
ENQ / ACK support	Disabled
Full duplex properties: Fill in form and confirm	

Figure 7-8. Full Duplex Properties Form with Initial Settings

After filling in the form, either confirm the new settings or press **Esc** to cancel your selections, leaving the form as it was.

The following sections describe the items on the Full Duplex Properties form in the order they appear on the form.

## 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.

**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. When communicating with another GRiDTerm user, use this setting.

If you are recording, characters echoed locally are also recorded, unless the displays are split and you are only recording the receive display.

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

## Host Line End Translation

Initial setting is Allow Extra CR. Choices are Type a Character, Allow Extra CR, Remove Extra CR, None.

The Host Line End Translation item determines how GRiDTerm translates the line end characters sent by the host system. Different host systems often use different line end characters. For example, some host systems use a single CR (carriage return), some use a single LF (line feed), and some use other characters.

GRiD applications requires each text line or record to end with a CR-LF pair; thus, in many cases, the host line end character must be translated when data is to be recorded for use by a GRiD application.

Type a Character	If the host system uses a special line end character, use this choice to enter that character; GRiDTerm translates the specified line end character and any single CR or LF characters into a CR-LF.
Allow Extra CR	If the host line end character is a CR, a LF, or a CR-LF pair, select this choice to translate the line end to a CR-LF pair. If the host sends two or more CRs in a row, GRiDTerm does not remove the extra CRs.
Remove Extra CR	This choice works exactly like Allow Extra CR, except that GRiDTerm removes extra CRs if two or more occur in a row. For example, CR-CR-LF is translated to CR-LF.
None	GRiDTerm performs no translation of host line end characters.

## Line End String Sent to Host

Initial setting is CR. Choices are Type a String, CR, LF, CR-LF, CR-CR-LF.

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.

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 without a protocol to the host system, it translates all CR-LF pairs in the file into the character string indicated by the setting you type in here.

## 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 (assuming the host system also supports XON/XOFF). 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 internal FIFO 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**.

## 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, GRiDTerm responds with an ACK character when it is ready to receive more data.

## The Half Duplex Properties Form

If you set Transmission Mode on the Communication Line Properties form to Half Duplex, then the Half Duplex Properties form appears (Figure 7-9).

The screenshot shows a terminal window with the following text:

```

Type a character Allow extra CR Remove extra CR No →
Host line end translation Allow extra CR
Line turnaround string sent by host EOT
Line turnaround string sent to host CR
Half duplex properties: Fill in form and confirm
  
```

*Figure 7-9. Half Duplex Properties Form with Initial Settings*

After filling in the form, either confirm the new settings or press **Esc** to cancel your selections, leaving the form as it was.

The following subsections describe the items in the Half Duplex Properties form.

### Host Line End Translation

Initial setting is Allow Extra CR. Choices are Type a Character, Allow Extra CR, Remove Extra CR, None.

The Host Line End Translation item determines how GRiDTerm translates the line end characters sent by the host system. Different host systems often use different line end characters. For example, some host systems use a single CR (carriage return), some use a single LF (line feed), and some use other characters.

GRiD applications requires each text line or record to end with a CR-LF pair; thus, in many cases, the host line end character must be translated when data is to be recorded for use by a GRiD application.

Type a Character	If the host system uses a special line end character use this choice to enter that character; GRiDTerm translates the specified line end character and any single CR or LF characters into a CR-LF.
Allow Extra CR	If the host line end character is a CR, a LF, or a CR-LF pair, select this choice to translate the line end to a CR-LF pair. If the host sends two or more CRs in a row, GRiDTerm does not remove the extra CRs.
Remove Extra CR	This choice works exactly like Allow Extra CR, except that GRiDTerm removes extra CRs if two or more occur in a row. For example, CR-CR-LF is translated to CR-LF.
None	GRiDTerm performs no translation of host line end characters.

### Line-Turnaround String Sent by Host

Initial setting is EOT. Choices are Type a String (2 characters maximum), CR, LF, CTRL-Q, CTRL-S, EOT.

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 Type a String (2 characters maximum), CR, LF, CTRL-Q, CTRL-S, EOT.

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.

When GRiDTerm transmits a file to the host system (without a protocol), it translates all CR-LF pairs in the file into the character string indicated by the setting you type.

## ADVANCED LINE PROPERTIES

The Advanced Line Properties item allows you to display and control individual interface signals for connecting to external devices that require special line protocols. Most GRiDTerm users don't ever need to use the Advanced Line Properties item.

**NOTE:** Use of the Advanced Line Properties items requires versions of the modem and/or serial drivers dated 1987 or later. These updated drivers are included on your GRiDTerm diskette.

When you select the Advanced Line Properties item, the Advanced Line Properties form is displayed (Figure 7-10).

Yes	No (default)
	Display line status <b>No (default)</b>
	Wait for CTS Required for connect (default)
	Wait for DCD Required for connect (default)
	RTS active Always (default)
	Delay after RTS None (default)
	DTR/DSR handshake No (default)
	DTR active state High (default)
	RTS active state High (default)
	CTS active state High (default)
	DSR active state High (default)
	DCD active state High (default)

Advanced properties: Fill in form and confirm

Figure 7-10. *Advanced Line Properties Form with Initial Settings*

After filling in the form, either confirm the new settings or press **Esc** to cancel your selections, leaving the form as it was.

The following sections describe the items in the Advanced Line Properties form in the order they appear in the form.

## Display Line Status

Initial setting is No. Choices are Yes, No.

The Display Line Status item causes the line status display to appear at the bottom of the GRiDTerm screen (Figure 7-11). The line status display shows the state (high or low) of the following interface lines: DTR (Data Terminal Ready), RTS (Request-To-Send), CTS (Clear-To-Send), DSR (Data Set Ready), and DCD (Data Carrier Detect).

A  $\uparrow$  indicates that the line voltage is high and a  $\downarrow$  indicates that the line voltage is low. The line status is updated when **Code-A** is pressed, during line status changes, or otherwise approximately every two seconds. This display may be useful for diagnostic purposes when connecting to special external devices.

**NOTE:** On the GRiDCase 25-pin serial port (8250), all of the displayed control signals are initially low when not connected. On the Compass computer 19-pin serial port (8274), all of the control signals are high when not connected.

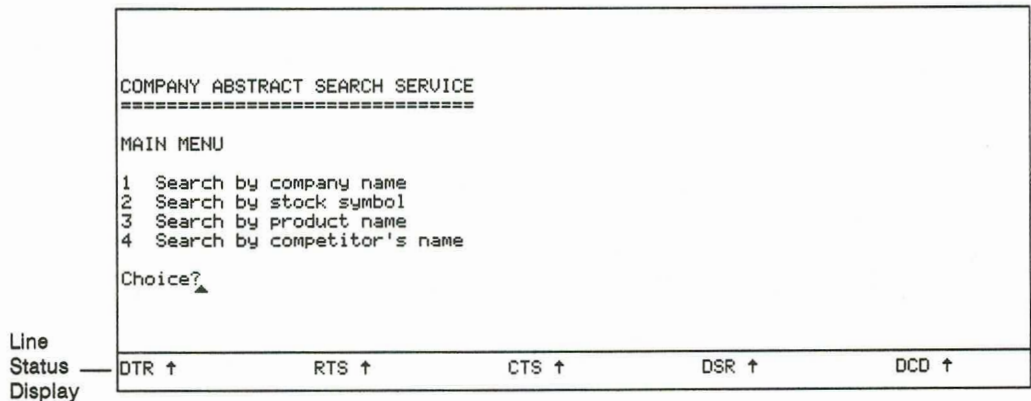


Figure 7-11. Line Status Display

## Wait for CTS

Initial setting is Required for Connect. Choices are Hundreth(s) of a second, Required for Connect, Forever, Ignore.

The Wait for CTS item specifies the status of the CTS line required to make and maintain a connection and to send data.

Required for Connect	The CTS line must be active to establish and maintain a data connection, whether or not data is being sent. If this line becomes inactive, the connection is broken.
Hundreth(s) of a Second	<p>RTS/CTS handshaking mode is enabled. The CTS active signal isn't needed to establish or maintain a connection, but only to send data. When GRiDTerm is ready to send data, it waits the specified amount of time for the CTS signal to become active. If the signal doesn't become active within the specified time, GRiDTerm drops the connection.</p> <p>During sending, if the CTS signal becomes inactive, GRiDTerm stops sending and waits the specified amount of time for the CTS signal to become active again. If the signal doesn't become active within the specified time, GRiDTerm drops the connection.</p>
Forever	Same as Hundreth(s) of a Second setting, except that GRiDTerm waits forever for the CTS line to become active when it is ready to send data. This prevents the line from being dropped if CTS doesn't become active within a short period.
Ignore	The state of the CTS line is ignored.

## Wait for DCD

Initial setting is Required for Connect. Choices are Hundreth(s) of a Second, Required for Connect, Forever, Ignore.

The Wait for DCD item specifies the status of the DCD line required to make and maintain a connection and send data.

Required for Connect	The DCD line must be active to establish and maintain a data connection, whether or not data is being sent. If this line becomes inactive, the connection is broken.
Hundreth(s) of a Second	<p>DCD handshaking mode is enabled; this can only be enabled if the RTS Active item is set to Only While Sending. The DCD signal isn't needed to establish or maintain a connection, but only to send data.</p> <p>When GRiDTerm is ready to send data, it deactivates the RTS signal and waits the specified amount of time for the DCD signal to become inactive. When DCD becomes inactive, GRiDTerm raises the RTS signal and begins sending. If the DCD signal doesn't become inactive within the specified time, GRiDTerm drops the connection.</p> <p>During sending, if the DCD signal becomes active, GRiDTerm stops sending, deactivates the RTS signal, and waits the specified amount of time for the DCD signal to become inactive again. If the signal doesn't become inactive within the specified time, GRiDTerm drops the connection.</p>
Forever	Same as Hundreth(s) of a Second setting, except that GRiDTerm waits forever for the DCD line to become inactive when it is ready to send data. This prevents the line from being dropped if DCD doesn't become inactive within a short period.
Ignore	The state of the DCD line is ignored.

## RTS Active

Initial setting is Always. Choices are Always, Only While Sending.

The RTS Active item specifies when GRiDTerm activates the RTS signal.

Always	The RTS line is set active after establishing a data connection and remains active throughout the connection.
--------	---

**Only While  
Sending**

The RTS line is set active only while data is being sent; when GRiDTerm is not sending data, it sets RTS inactive. This mode is used to turn the line around in a half duplex connection. Note that data is sent only after a carriage return or every 128 characters; this minimizes transmission time, allowing the communication line to be used for other purposes.

**Delay After RTS**

Initial setting is None. Choices are Hundreth(s) of a Second, None.

The Delay After RTS item applies only if the previous item, RTS Active, is set to Only While Sending. This item specifies how long GRiDTerm should delay after changing the state of the RTS line (setting it either active or inactive) before proceeding with its next action, for example, sending data.

**DTR/DSR Handshake**

Initial setting is No. Choices are Yes, No.

The DTR/DSR Handshake item specifies whether or not GRiDTerm should use DTR/DSR handshaking.

When set to Yes, the DSR line must be active in order to send data, otherwise, GRiDTerm drops data. The DTR line is set active when data can be received and set inactive when data cannot be received. For example, when the receive FIFO buffer is nearing capacity, the DTR line is set inactive until the buffer has been emptied enough to accomodate more data.

**DTR Active State**

Initial setting is High. Choices are Low, High.

This item specifies whether the active state of the DTR signal is a high or low voltage.

### **RTS Active State**

Initial setting is High. Choices are Low, High.

This item specifies whether the active state of the RTS signal is a high or low voltage.

### **CTS Active State**

Initial setting is High. Choices are Low, High.

This item specifies whether the active state of the CTS signal is a high or low voltage.

### **DSR Active State**

Initial setting is High. Choices are Low, High.

This item specifies whether the active state of the DSR signal is a high or low voltage.

### **DCD Active State**

Initial setting is High. Choices are Low, High.

This item specifies whether the active state of the DCD signal is a high or low voltage.

---

## CHAPTER 8: GRIDREFORMAT

---

This chapter introduces the GRiDReformat software product, describes its purpose and use, 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 II, 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.

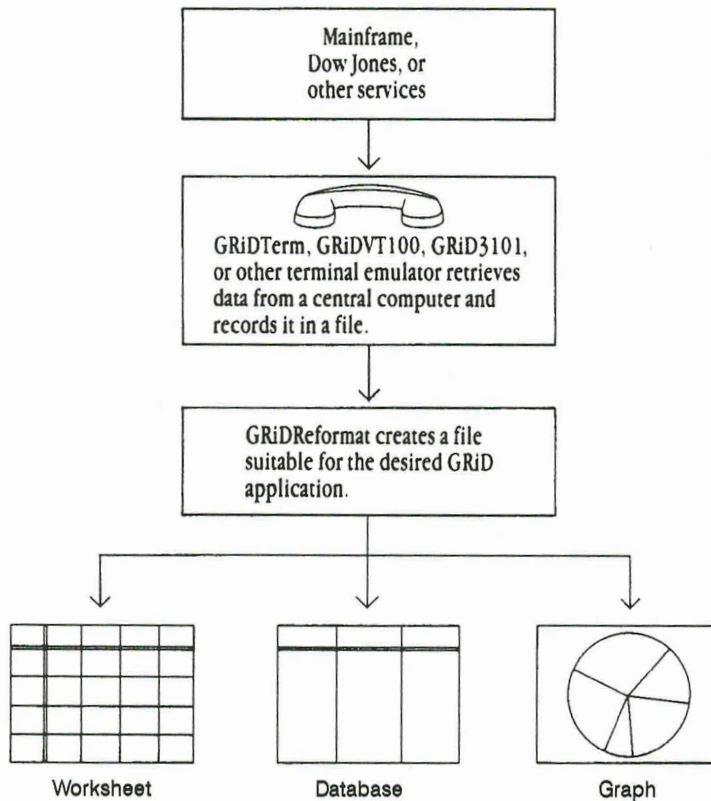
An overview of the processing steps for reformatting data is shown in Figure 8-1. The text that follows the figure describes this overview.

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 your computer using GRiDTerm, GRiDVT100, or GRiD3101.

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 data 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 II, you would set Kind for the output file to Wks under InteGRiD (Worksheet under GRiD-OS).



*Figure 8-1. Recording and Reformatting Data*

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 II, and GRiDPlot. For example, consider the fictional report in Figure 8-2 recorded from a host system into a file on your computer.



```

APPLICATION "UNITS MOVED"
READY ENTER QUERY
sales march us

SALES FOR MARCH 1987 IN US:
REGION          UNITS          REVENUE          TOTAL SHARE
Chicago         2879           $54,470.68      13 5/100
Houston         3999           $94,581.08      22 2/3
San Francisco   6684           $126,461.28     30 1/3
New York        7492           $141,748.64     33 9/10

```

*Figure 8-2. Example of Input File*

After processing with GRiDReformat, the same data would appear in the format shown in Figure 8-3.

```

Chicago      2879 54470.68 13.05
Houston     3999 94581.08 22.67
San Francisco 6684 126461.28 30.33
New York    7492 141748.64 33.9

```

*Figure 8-3. Example of GRiDReformat Output in a Text File*

Comparing the data in Figures 8-2 and 8-3 illustrates some of the functions of GRiDReformat. All of the functions are summarized below.

- 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.
- Negative numbers are given a leading minus sign. For example, 999-, (999), and 999CR are converted to -999.
- The letter "K" following an integer is replaced with 000; for example, 123K becomes 123000.

- Fractions, when present with at least one integer, are converted to decimals. You must manually convert fractions without accompanying integers.
- 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 on each line.

---

## SETTING UP A REFORMAT FILE

Follow the steps below to create and use a reformat file.

1. Create a file with Kind set to Rfm under InteGRiD (Reformat under GRiD-OS). Refer to the "System Basics" chapter in your InteGRiD or GRiD-OS Software manual for more 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 8-4).

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 COMMAND – 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 the following 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
San Francisco	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), "Session2" is specified as the title of the input file.

Session1	Txt
Session2	Txt
Session3	Txt

Device	Hard Disk C
Subject	Data
Title	Session2
Kind	Txt
Password	

Select input file: Fill in form and confirm

In the second File form that appears (shown below), "Revenue" 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 C
Subject	Data
Title	Revenue
Kind	Grf
Password	
Next action	Get new file and its application

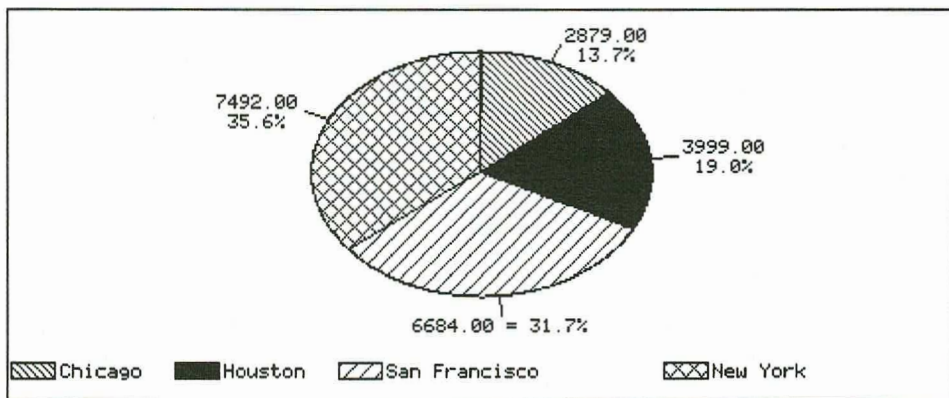
Select output file: Fill in form and confirm

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 is complete.

After reformatting, the graph table shown below appears on the screen.

REGION	UNITS	REVENUE	TOTAL
Chicago	2879.00	54470.68	13.05
Houston	3999.00	94581.08	22.67
San Fran	6684.00	126461.28	30.33
New York	7492.00	141748.64	33.90
Version 3.1.5 of GRiDPlot Copyright © 1982, 1983, 1984, 1985 GRiD Systems Corporation			

Using the Graph command (Code-G), GRiDPlot creates the following pie chart on the display screen.



---

## COMMANDS OVERVIEW

The commands available for GRiDReformat are shown in Figure 8-4.

Options	Code-O	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 and confirm  
Version 103.1.4 of GRiDReformat  
Copyright © 1982, 1983, 1984  
GRiD Systems Corporation

Figure 8-4. GRiDReformat Commands Menu

The commands are described in the following sections in the order that they appear on the Commands menu.

---

## THE OPTIONS COMMAND – CODE-O

The Options command (Code-O) causes the Options form (Figure 8-5) to appear on the screen. The options you select determine how your formatted data appears.

Keyword	From beginning
Start formatting	From beginning
End formatting	At the end
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 8-5. Options Form with Initial Settings

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

- 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.)
- 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 subsections describe each of the items on the form. The subsections are arranged in the order that the items appear on the form.

## 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:

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

## 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 8-6) 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 8-6, "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 8-6. 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.

## 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 8-7 gives an example of data before and after reformatting.

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

*Figure 8-7. 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 8-8) 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 8-8, "5" was typed in as the Number of Cols setting.

Column	Width
Column 1	Automatic
Column 2	Automatic
Column 3	Automatic
Column 4	Automatic
Column 5	Automatic

Data column widths: Fill in form and confirm

Figure 8-8. 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.

## 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.

---

## THE TRANSFER COMMAND – CODE-T

The Transfer command (Code-T) causes the Transfer menu to appear (Figure 8-9).



*Figure 8-9. Transfer Menu*

All of the items in Figure 8-9, except Reformat a Data File, are described in chapter 6 of this 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

- You can specify a new file or an existing file.
- You can specify any Kind you wish. Your selection depends on how you want to use the output data. For example, for GRiDPlan II, you would specify a Kind of Wks under InteGRiD (Worksheet under GRiD-OS).

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 by setting the Next Action item on the Output File form to Get New File and its Application.

---

## APPENDIX A: REFORMATTING WITH GRIDWRITE

---

This appendix explains how to convert data into a format suitable for GRiDPlan II, GRiDPlot, GRiDFile, and other GRiD applications. This format is called the interchange format, because it is interchangeable among applications.

You can also use GRiDReformat, a software product that automatically converts data files into the interchange format. For more information, see Chapter 8.

---

### EXAMPLE OF INTERCHANGE FORMAT FILE

Figure A-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.

<pre>Market_Share#####1977-1979↵ ↵ #####1977#####1978#####1979↵ Corn#####20#####25#####22↵ Wheat#####41#####44#####39↵ Soy_Beans#####14#####19#####24↵ ※</pre>	<pre>Market_Share↵ 1977↵ 1978↵ 1979↵ ↵ 1977↵ 1978↵ 1979↵ Corn↵ 20↵ 25↵ 22↵ Wheat↵ 41↵ 44↵ 39↵ Soy_Beans↵ 14↵ 19↵ 24↵ ※</pre>
Original Text	Interchange Format

Figure A-1. Interchange File Format (Sample)

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

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

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

	A	B	C	D
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				

A12

Figure A-2. Interchange Files in GRiDFile (left) and GRiDPlan II (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 host computer that sends the data may have to be rewritten. Contact the GRiD Resource Center for assistance.

---

## REFORMAT PROCEDURE

Using GRiDWrite, you must 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 that contains the data to be converted, and confirm.
2. Press **Code-O** 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 Wks under InteGRiD (Worksheet under GRiD-OS) for GRiDPlan II.

---

## **APPENDIX B: INSTALLING A PROTOCOL FILE UNDER INTEGRiD**

---

If you are running under version 3.2.0 or 103.2.0 of the InteGRiD operating environment you must use an additional procedure to install the Xmodem protocol file on your system. Later versions of InteGRiD don't require you to use this additional procedure, you can skip this appendix.

To install the Xmodem protocol file on your InteGRiD system proceed as follows:

1. Copy the file "Protocol" of Kind "Ins" to the Programs subject of your permanent storage device. Ensure that you also have the Install program on this device. (The Install program is supplied on your InteGRiD diskette.)
2. Select and confirm the Install program using the File form. The Install program updates your User.Pro file with the information included in the Protocol file.
3. Start the GRiDManager application and select the command Update Options Form Choices. You can now use the Xmodem protocol file to send or receive a file in GRiDTerm.



---

## APPENDIX C: ASCII CHARACTERS

---

GRiDTerm and all other GRiD applications 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 computer 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 than does GRiDWrite.

Note that the Break signal is sent by a special key sequence that does not produce any visible character, nor does it have an ASCII code associated with it.

Press **Ctrl-Esc** to cause 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 different specific ASCII character for break. To send this break character, press the key directly.

*Table C-1. ASCII Table*

DEC	HEX	GRPH	ABBR	NAME	PRESS
00	00		NUL	null	Ctrl-Shift-2
01	01		SOH	start of heading	Ctrl-A
02	02		STX	start of text	Ctrl-B
03	03		ETX	end of text	Ctrl-C
04	04		EOT	end of transmission	Ctrl-D
05	05		ENQ	enquiry	Ctrl-E
06	06		ACK	acknowledge	Ctrl-F
07	07		BEL	bell	Ctrl-G
08	08		BS	backspace	Ctrl-H
09	09		HT	horizontal tab	Ctrl-I, Tab
10	0A		LF	linefeed	Ctrl-J
11	0B		VT	vertical tab	Ctrl-K
12	0C		FF	form feed	Ctrl-L
13	0D		CR	carriage return	Ctrl-M
14	0E		SO	shift out	Ctrl-N
15	0F		SI	shift in	Ctrl-O
16	10		DLE	data link escape	Ctrl-P
17	11		DC1	device control 1	Ctrl-Q
18	12		DC2	device control 2	Ctrl-R
19	13		DC3	device control 3	Ctrl-S
20	14		DC4	device control 4	Ctrl-T
21	15		NAK	negative ack	Ctrl-U
22	16		SYN	synchronous idle	Ctrl-V
23	17		ETB	end trans. block	Ctrl-W
24	18		CAN	cancel	Ctrl-X
25	19		EM	end medium	Ctrl-Y
26	1A		SUB	substitute	Ctrl-Z
27	1B		ESC	escape	Esc or Ctrl-;
28	1C		FS	file separator	Ctrl-Shift-,

DEC	HEX	GRPH	ABBR	NAME	PRESS
29	1D		GS	group separator	Ctrl- =
30	1E		RS	record separator	Ctrl-Shift-.
31	1F		US	unit separator	Ctrl-Shift-hyphen
32	20		SP	space	
33	21	!		exclamation point	
34	22	"		quotation mark	
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	@		commercial at sign	
65	41	A			

DEC	HEX	GRPH	ABBR	NAME	PRESS
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	Fn-[
92	5C	\		backslash	
93	5D	]		closing bracket	Fn-]
94	5E	^		circumflex	
95	5F	_		underline	
96	60	`		back quote	Fn-`
97	61	a			
98	62	b			
99	63	c			
100	64	d			
101	65	e			
102	66	f			

DEC	HEX	GRPH	ABBR	NAME	PRESS
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	Fn-Shift-{
124	7C			vertical line	
125	7D	}		right curly bracket	Fn-Shift-}
126	7E	~		tilde	Fn-Shift-~
127	7F	■	DEL	delete	Code-Shift-hyphen

---

## APPENDIX D: ERROR MESSAGES

---

This appendix contains explanations of the error messages that you might receive while using GRiDTerm. Refer to the *InteGRiD Software* or *GRiD Software* manual for error messages that aren't listed here.

### 12: Version incompatibility

**What happened:** GRiDTerm was not the current application window when you installed the GRiDTask/GRiDTerm interface library, or you are using a version of GRiDTerm that does not support the GRiDTask interface library.

**What to do:** Ensure that GRiDTerm is the current application window when you install and initialize the GRiDTask interface library. You must use a version of GRiDTerm dated 1987 or later in order to use the GRiDTask interface library.

### 35: Request not supported

**What happened:** You've requested an operation that is not supported by the device driver involved. You may have tried to set one of the advanced line properties, but weren't using the latest modem and/or serial driver.

**What to do:** Ensure that you have copied the latest modem (and/or modem) driver to your working disk from the GRiDTerm disk. Don't forget to Update Options Form Choices from within GRiDManager. Select the correct drivers for your computer in the GRiDTerm Access form. If you have old drivers with the same names in ROM, you'll need to disable them; see INSTALLING GRIDTERM in Chapter 1.

**40: File or device can't be shared**

**What happened:** You tried to write to a file or device that was already in use by another application. For example, the modem or serial driver that GRiDTerm tried to activate was already in use by GRiDLink or PhoneLink.

**What to do:** Check that you have specified the correct modem and/or serial driver in the GRiDTerm Access form and that you have the correct cable plugged into the serial or phone port. You may have to break your GRiDLink or PhoneLink connection to use GRiDTerm.

**231: Device not responding**

**What happened:** The carrier signal has ceased to exist and the connection has been lost.

**What to do:** Take the corrective action recommended for error 402.

**400: Modem did not answer**

**What happened:** If you are making a call, the receiving modem did not answer within the specified amount of time. If you are waiting for a call, the calling system did not complete the data connection within the time allowed.

**What to do:** Increase the amount of time in the Wait for Answer item of the Access form and set the Speaker Volume to On so that you can hear what is happening on the phone line. Ensure that you are dialing the correct phone number. Also, check that the phone line is properly connected. If you are using a direct connection, you may not have a proper null modem cable, or it may be defective.

## 402: Modem lost carrier

**What happened:** The carrier signal has ceased to exist and the connection has been lost.

**What to do:** These factors could cause loss of the carrier:

- Someone has picked up an extension phone and spoken into it. See that the extension is free and dial again.
- The phone line has been disconnected either from your computer or from the wall jack. Check both connections.
- A call waiting signal to your phone interfered with the modem carrier. Switch to a phone without call waiting, or disable the call waiting feature on your phone.
- Excessive noise on the phone line caused the connection to be lost. You may need to try a different phone line.
- The host system disconnected you or shut off its modem.

## 403: Parity errors in received data

**What happened:** GRiDTerm has detected parity errors in the data received from the host. Some of the data you've received could be corrupted.

**What to do:** Ensure that the parity you've set in the Type of Parity item in the Communication Line Properties form matches the type of parity used by the host system. If this is the case, then you may be getting the parity errors because of a noisy phone line; try disconnecting and connecting again or try a different phone line.



If you're setting up an Xmodem file transfer, you can receive this error if the receiving side is set up before the sending side; in this case, simply set up the sending side and continue.

#### **406: Invalid phone number--reenter number**

**What happened:** The phone number you entered in the Access form contained an invalid character.

**What to do:** Check the phone number and reenter it. The valid characters in phone numbers are the numerals 0 through 9, asterisk (\*), number sign (#), carat (^), period (.), comma (,), dollar sign (\$), hyphen (-), parentheses, and space. In addition, if you are using a modem driver dated 1987 or later and a GRiD 2400 baud internal modem or an external modem that supports the Hayes extended command set, you can use the at sign (@) and W.

#### **408: Received data lost due to overrun**

**What happened:** Data has been lost because the data rate is too high.

**What to do:** Quit or Cancel applications you have running in other windows, or decrease the baud rate or the data transfer rate.

#### **409: No dial tone detected**

**What happened:** GRiDTerm could not begin dialing the phone number because it never detected a dial tone on the line.

**What to do:** Check that the telephone line is plugged into the computer's LINE jack and into the wall jack. Ensure that your telephone line is in working order.

**410: Phone line is busy**

**What happened:** GRiDTerm dialed the phone number and detected a busy signal.

**What to do:** Try making a connection later, or if the host has multiple phone numbers, try a different number.

**411: Break detected**

**What happened:** GRiDTerm detected a Break signal sent by the host. A Break signal is 500 milliseconds of space bits.

**What to do:** This is an informational message only; no action is required. If a break is not expected, it could mean that you have received corrupted data.

**412: Received data lost due to FIFO overflow**

**What happened:** You have lost data because the data rate is too high.

**What to do:** Quit or Cancel applications you have running in other windows, or decrease the baud rate or the data transfer rate. Try using some kind of handshaking such as XON/XOFF or ENQ/ACK.

**413: Framing error in received data**

**What happened:** A data framing error has been detected in the data received from the host. Some of the data you've received could be corrupted.

**What to do:** Ensure that the parity, bits per character, and stop bits that are set in the Communication Line Properties form match the values used by the host system. If this is the case, then you may be getting this error because of a noisy phone line; try disconnecting and connecting again or try a different phone line.

If you get this error when you first connect to a host, it may be because the host has sent the initial prompt at a baud rate other than what you have set. For example, some hosts always send the initial prompt at 300 baud, even though they support higher baud rates. In this situation, simply continue to log onto the host, following the instructions provided by the host data center; the host automatically adjusts its baud rate to match yours.

#### **414: Voice detected**

**What happened:** GRiDTerm dialed the phone number and a person or tape recording answered.

**What to do:** You may have dialed a wrong number. Check that the phone number in the Access form is correct. Alternately, you may have not set Voice Before Data correctly if you intended to speak first.

#### **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 Tml under InteGRiD (Terminal under GRiD-OS), 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 Tml (Terminal under GRiD-OS). If you suspect that the storage medium is damaged, you'll have to create a new terminal description file.

GRiDTerm may have been partially initialized with bad values while attempting to read the invalid terminal description file. You should exit GRiDTerm before proceeding.

**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 and try connecting again.

**10702: Invalid baud rate**

What happened: The value specified in the Baud Rate item in the Access form is invalid.

What to do: Select or enter a baud rate between 1 and 32767 that is valid for the modem you are using.

**10703: Try again value is invalid**

What happened: The value specified in the Try Again item in the Access form is not within the range 1 to 32767.

What to do: Enter a value within the range.

**10704: Wait for answer value is invalid**

What happened: The value specified in the Wait for Answer item in the Access form is not within the range 1 to 32767.

What to do: Enter a value within the range.

### 10705: Modem cannot be activated

**What happened:** Either the modem driver file isn't in the Programs subject, you need a newer version of the modem driver, the modem isn't connected, or the hardware isn't operating properly.

**What to do:** Make sure that the modem driver is in the Programs subject; copies of the latest modem drivers are supplied on your GRiDTerm diskette. If you are using a new modem driver, don't forget to use the Update Options Form Choices command from within GRiDManager. If you have an old modem driver of the same name in ROM, you must disable it using the Disable ROM Files program (see INSTALLING GRiDTERM in Chapter 1).

If you are using a modem driver dated previous to 1987 and you don't wish to update to the latest modem driver, set the Modem item in the Access form to System-wide.

Restart the computer and try GRiDTerm again. If this doesn't work, contact the GRiD Resource Center.

### 10706: Serial cannot be activated

**What happened:** Either the serial driver file isn't in the Programs subject, you need a newest version of the serial driver, or the hardware isn't operating properly.

**What to do:** Make sure that the the serial driver file is in the Programs subject; copies of the newest serial drivers are supplied on your GRiDTerm diskette. If you are using a new serial driver, don't forget to use the Update Options Form Choices command from within GRiDManager. If you have an old serial driver of the same name in ROM, you must disable it using the Disable ROM Files program (see INSTALLING GRiDTERM in Chapter 1).

If you are using a serial driver dated previous to 1987 and you don't wish to update to the latest serial driver, set the Serial item in the Access form to System-wide.

Restart the computer and try GRiDTerm again. If this doesn't work, contact the GRiD Resource Center.

### **10707: 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 the required space in main memory to receive data from the host system. Some buffer space was allocated, but a greatly reduced amount; data could be lost.

**What to do:** Quit or Cancel any other open windows, if possible, reduce the value set for the Baud Rate item in the Access form, stop recording, or restart your system.

### **10708: Already connected to host**

**What happened:** You selected Wait for Call From Host and you were already connected to a host or another computer.

**What to do:** You must disconnect before you can wait for a call. Press **Code-A** to disconnect.

### **10710: Changes not allowed while connected**

**What happened:** You attempted to split or reset the display view(s) while connected.

**What to do:** You can change the state of the display view(s) only when you are not connected to a host or other computer.

### **10711: Display view not large enough to split**

**What happened:** You attempted to split the display into two views, but your GRiDTerm window wasn't large enough to allow this.

**What to do:** Increase the size of the GRiDTerm window by moving other windows off screen (Code-Ctrl-M) or zooming the GRiDTerm window (Code-Ctrl-Z).

### **10712: 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 250.

**What to do:** Reset the Display Width item within the proper range.

### **10713: Backspace character may not be blank**

**What happened:** The Backspace Character item in the Communication Line Properties form is set to Type a Character, but it is blank.

**What to do:** Set this item to CTRL-H or type a character.

### **10714: Invalid communication line properties**

**What happened:** In the Communication Line Properties form, the Type of Parity item is set to Mark or Space, and the Bits Per Character item to 8.

**What to do:** Mark or space parity is not supported with 8 bits per character. If possible, either change the setting of the Parity item in the Access form, or the Bits Per Character item in the Communication Line Properties form to 7.

### **10715: Answerback string may not be blank**

**What happened:** The Answerback item in the Communication Line Properties form is set to Type a String, but it is blank.

**What to do:** Set this item to Disabled or enter an answerback string.

**10716: Host line end character may not be blank**

**What happened:** The Host Line End Translation item in either the Full or Half Duplex Properties form is set to Type a Character, but it is blank.

**What to do:** Set this item to another choice, or type a character.

**10717: Line end string to host may not be blank**

**What happened:** The Line End String Sent to Host item in the Full Duplex 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.

**10718: Line turnaround string may not be blank**

**What happened:** The Line Turnaround String Sent to Host item in the Half Duplex Properties form is blank or has an invalid setting.

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

**10719: 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.

**10720: 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 7) in the Display Characteristics form to Diagnostic.

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

### **10721: Wait for host data value is invalid**

**What happened:** The value specified for the Wait for Host Data item in the Soft Keys form is not within the range 1 to 30000.

**What to do:** Enter a value within the range.

### **10722: 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.

### **10723: Line prompt string may not be blank**

**What happened:** The Line Prompt for Host item in the Send File Properties form is set to Enter Prompt, but is blank.

**What to do:** Set this item to None or enter a line prompt.

**10724: Not connected to host**

**What happened:** You attempted to send or receive a file when not connected to a host or other computer.

**What to do:** You must be connected to a host or other computer before you can send or receive files.

**10725: No protocol libraries found**

**What happened:** You selected the Receive File with Protocol item and GRiDTerm couldn't find the Xmodem or any other protocol files in the Programs subject of your attached storage devices.

**What to do:** Ensure that you have the Xmodem (or other) protocol file available on an attached storage device. Also, remember to use the GRiDManager command Update Options Form Choices after you've copied the protocol file to your permanent storage device.

**10726: File is not of kind Terminal**

**What happened:** You tried to exchange for another file with Next Action on the Exchange form set to Get New File Only and the file you are exchanging for is not a GRiDTerm terminal description file.

**What to do:** If you want to exchange and set Next Action to Get New File Only, the file you are exchanging for must have a Kind of Tml under InteGRiD (Terminal under GRiD-OS).

**10727: Top margin is invalid**

**What happened:** The value specified in the Top Margin item of the Print Options form is not within the range 1 to 250.

What to do: Enter a value within the range.

**10728: Bottom margin is invalid**

What happened: The value specified in the Bottom Margin item of the Print Options form is not within the range 1 to 250.

What to do: Enter a value within the range.

**10729: Top margin is not less than bottom margin**

What happened: You've set the Top Margin item greater than or equal to the Bottom Margin item in the Print Options form.

What to do: Set the Top Margin item less than the Bottom Margin item.

**10730: CTS wait time is invalid**

What happened: The value specified in the Wait for CTS item in the Advanced Line Properties form is not within the range 0 to 30000.

What to do: Enter a value within the range.

**10731: DCD wait time is invalid**

What happened: The value specified in the Wait for DCD item in the Advanced Line Properties form is not within the range 0 to 30000.

What to do: Enter a value within the range.

**10732: RTS wait time is invalid**

**What happened:** The value specified in the Delay After RTS item in the Advanced Line Properties form is not within the range 0 to 30000.

**What to do:** Enter a value within the range.

**10733: DCD handshaking requires RTS handshaking**

**What happened:** You've set the Wait for DCD item in the Advanced Line Properties form to Hundreth(s) of a Second or Forever (enabling DCD handshaking) and have not enabled RTS handshaking by setting the RTS Active item to Only While Sending.

**What to do:** In order to use DCD handshaking, you must first enable RTS handshaking by setting the RTS Active item to Only While Sending.

**10734: Typeface changes not allowed with split display view**

**What happened:** You tried to change the Current Typeface setting when the display buffer was split into two views.

**What to do:** Typeface changes are not allowed when the display buffer is split. You must reset the display buffer to show only one view (Code-V) before you can change the typeface.

---

## APPENDIX E: GRiDTASK INTERFACE

---

GRiDTerm includes an interface for GRiDTask which allows a GRiDTask user access to the GRiDTerm receive buffer and device driver connection identifier. The interface is provided by the GRiDTask library "GTermInt". To use this library, you must install it in your GRiDTask program by using a GRiDTask statement such as the following:

```
INSTALL "GTermInt ~ Lib ~"
```

GRiDTerm must be the current application window when you install the GTermInt library. If you quit or cancel the GRiDTerm application and then want to start it again, you must de-install the GTermInt library and install it again. Use the GRiDTask verb REMOVELIB to de-install the library.

This library contains the following six verbs:

```
TERMINITINTERFACE  
TERMCHARSTOREAD  
TERMLINESTOREAD  
TERMREADCHAR$$  
TERMREADLINE$$  
TERMSETGETCONN
```

These verbs are explained in the following sections. For details on using GRiDTask, refer to the *GRiDTask User's Guide*.

---

### TERMINITINTERFACE

The TERMINITINTERFACE verb initializes the library, as long as GRiDTerm is the current application window. You must call this verb after installing the library in GRiDTask, but before using any of the other GRiDTerm verbs.

## Syntax

error = TERMINITINTERFACE

error returns the error number of any error that occurred. Error 12 is the only error that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

---

## TERMCHARSTOREAD

The TERMCHARSTOREAD verb returns the number of characters that have been received by GRiDTerm since the last time TERMREADCHARS\$ or TERMREADLINE\$ has been called.

## Syntax

numChars = TERMCHARSTOREAD (@error)

@error is a variable parameter that returns the error number of any error that occurred. Errors 12, 402, and 412 are the only errors that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

## Example

See the example provided for TERMREADCHARS\$.

---

## TERMLINESTOREAD

The TERMLINESTOREAD verb returns the number of lines that have been received by GRiDTerm since the last time TERMREADCHARS\$ or TERMREADLINE\$ has been called. A line that may have been only partially read by TERMREADCHARS\$ is included in this count. Any partially received lines (no CR-LF at end), however, are not counted.

Lines may be up to 250 characters long; longer lines are counted as two lines.

**NOTE:** When calculating the number of lines received, GRiDTerm ignores lines that are "continued" to the next line on the display because of the display width setting; such a line is considered part of the previous line.

## Syntax

```
numLines = TERMLINESTOREAD (@error)
```

@error is a variable parameter that returns the error number of any error that occurred. Errors 12, 402, and 412 are the only errors that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

## Example

See the example provided for TERMREADLINE\$.

---

## TERMREADCHARS\$

The TERMREADCHARS\$ verb returns a specified number of characters from GRiDTerm's receive buffer, starting with the characters received since the last time this procedure or TERMREADLINE\$ was called. A maximum of 512 characters at a time can be returned.

## Syntax

```
chars$ = TERMREADCHARS$ (@numChars, @error)
```

@numChars specifies the number of characters to read and returns the actual number of characters read.

@error is a variable parameter that returns the error number of any error that occurred. Errors 12, 402, and 412 are the only errors that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

## Example

```

PROCEDURE ReadNewChars
; sets newChars$ to all new characters received

LOCALS done, numNewChars, charsRead
done = FALSE
newChars$ = ""
WHILE not done
  numNewChars = TERMCHARSTOREAD (@error)
  CheckError ; procedure to check for an error
  charsRead = numNewChars
  newChars$ = newChars$ + (TERMREADCHARS$ (@charsRead, @error))
  CheckError
  IF charsRead = numNewChars THEN
    done = TRUE
  ENDIF
WEND
ENDP ; ReadNewChars

```

This procedure reads all the new characters that have been received by GRiDTerm since the last time any characters (or lines) were read. A single string is returned that holds all the new characters.

---

## TERMREADLINES\$

The TERMREADLINES\$ verb returns a specified number of lines from GRiDTerm's receive buffer, starting with the lines received since the last time this procedure or TERMREADCHARS\$ was called. A maximum of 10 lines at a time can be returned. Any partially received lines (no CR-LF at end), however, are not returned.



If the first line to be read has already been partially read by `TERMREADCHARS$`, only the unread portion of that line is returned.

Lines may be up to 250 characters long; longer lines are read as multiple lines.

**NOTE:** When calculating the number of lines to read, `GRIDTerm` doesn't count lines that are "continued" to the next line on the display because of the display width setting; such a line is considered part of the previous line.

## Syntax

```
lines$ = TERMREADLINES$ (@numLines, @error)
```

@numLines specifies the number of lines to read and returns the actual number of lines read.

@error is a variable parameter that returns the error number of any error that occurred. Errors 12, 402, and 412 are the only errors that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

## Example

```
PROCEDURE ReadLines
; sets newLines$ to the oldest lines that haven't yet been read, up to 10 lines
; sets linesRemaining to the number of lines left unread
```

```
LOCALS numNewLines, linesRead
newLines$ = ""
numNewLines = TERMLINESTOREAD (@error)
CheckError ; procedure to check for an error
linesRead = numNewLines
newLines$ = TERMREADLINES$ (@linesRead, @error)
CheckError
IF numNewLines = linesRead THEN
    linesRemaining = 0
ELSE
    linesRemaining = numNewLines-linesRead
ENDIF
ENDP ; ReadLines
```

This procedure reads the oldest lines that GRiDTerm has received that haven't yet been read, up to a maximum of 10 lines. Additionally, the number of lines remaining that haven't yet been read is returned.

---

## TERMSETGETCONN

The TERMSETGETCONN verb sets or gets the device driver connection identifier used by GRiDTerm. This verb is primarily useful in an environment in which custom device drivers are used.

A connection identifier specifies which device driver GRiDTerm should use to make a connection. To get a connection identifier to pass in to GRiDTerm, it is necessary to use operating system routines directly from Pascal or PLM. Refer to the *Development Tools Reference Manuals* for more information.

If GRiDTerm is not connected when this verb is used, the verb passes in a connection identifier for GRiDTerm to use to make a connection; the verb returns 0 to let you know that it used the connection you passed it.

If GRiDTerm is connected and you pass in a connection identifier of 0 using TERMSETGETCONN, the verb returns the connection identifier that GRiDTerm is currently using and suspends GRiDTerm's connection. If GRiDTerm is connected and you pass in a non-zero connection identifier, TERMSETGETCONN simply returns the same connection identifier that you passed in and does not suspend the current GRiDTerm connection.

## Syntax

TERMSETGETCONN @connectionID, @error

@connectionID sets GRiDTerm's connection identifier if GRiDTerm is not connected, or returns GRiDTerm's connection identifier if GRiDTerm is connected.

@error is a variable parameter that returns the error number of any error that occurred. Errors 12, 402, and 412 are the only errors that can be returned. 0 is returned for no error. This parameter is automatically reset to 0 after each call; you don't need to manually reset it.

## Example

```
; Get connection ID from custom Pascal routine = connection  
GetConnection (@connectionId)
```

```
; Give GRiDTerm the connection ID  
TERMSETGETCONN @connectionId, @error
```

This example passes GRiDTerm a connection ID. The connection ID comes from a custom verb in the procedure GetConnection.

---

## GLOSSARY

---

- ASCII** American Standard Code for Information Interchange. A code consisting of control characters and alphanumeric characters used for information interchange among data processing systems, data communication systems, and associated equipment. The 128 standard ASCII characters can be represented by seven data bits. See Appendix C.
- Answerback** A terminal identifier code that a terminal automatically transmits to the host system upon receipt of an ENQ (ASCII 5) character.
- Asynchronous** A transmission technique in which the length of time between transmitted characters may vary. Because characters aren't transmitted at regular intervals, they must be delimited by special characters called Stop Bits. Asynchronous operations do not require a clock signal. GRiDTerm is an asynchronous terminal emulator. Contrast with Synchronous.
- Auto-dial modem** A modem that can dial phone numbers itself, without the use of a telephone. Contrast with Manual-dial modem.
- Baudot** A rarely used data transmission code in which each character is represented by 5 bits.
- Binary data** Data composed of bits. In this manual, also refers to data containing characters outside the 128 standard ASCII characters. Such data can only be represented by eight data bits. All executable files contain binary data.
- Bit** BInary digiT, the smallest unit of information within a computer. A bit within the computer is represented as a 1 or 0, indicating "on" or "off" respectively. There are eight bits in a byte.

<b>Baud rate</b>	The rate at which a modem transmits or receives digital data; the faster the transmission, the higher the baud rate.
<b>Break key</b>	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. GRiDTerm signals a break by sending 500 milliseconds of space bits. Some hosts use a different ASCII character to signal a break.
<b>Carrier</b>	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.
<b>Character stream</b>	A group of characters transmitted one at a time in a sequential stream.
<b>Code</b>	A key on the computer keyboard that alters the operation of other keys. It is used to give commands to GRiD applications on GRiD computers. On computers without a <b>Code</b> key use the <b>Alt</b> key instead.
<b>Control character</b>	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.
<b>Cursor</b>	The blinking triangle that indicates where the next character will be entered, whether typed by you or transmitted by the host.
<b>Display buffer</b>	An area in main memory that temporarily stores data you type in and data received while communicating with a host system. Additionally, this data is displayed on the screen, if Display Received characters is set to Yes; the data can be scrolled using the Arrow keys. The data is erased when you exit from GRiDTerm or use the Erase Data Buffer command (Code-E). The display buffer can be divided into separate send and receive display buffers using the View (Code-V) command.
<b>Echoing</b>	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.

- FIFO buffer** A temporary buffer used by the computer hardware and GRiDTerm to store received data before it is put into GRiDTerm's main display buffer.
- 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 accommodate 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 one time. 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 one time. 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.
- Host system** The central computer and associated software and devices that control communications with external computers. Computers using InteGRiD or GRiD-OS can communicate with host systems through terminal emulator programs such as GRiDTerm, GRiDVT100, and GRiD3101. The Dow Jones News Retrieval is an example of a service 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 the command "logoff" terminates communications for some systems.
- Manual-dial modem** A modem that cannot dial phone numbers itself. You must use a telephone to dial the number, and then connect the modem to the telephone line. Contrast with Auto-dial modem.
- Message line** The highlighted line at the bottom of the screen display. Only messages from GRiD 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.
- Modem driver** A file on your computer used by GRiDTerm to interface with a particular modem. Modem driver files have a Kind of Mdm under InteGRiD or Modem under GRiD-OS.
- Null modem cable** A cable that connects the serial ports of two computers together so that they can communicate without having to use a pair of modems and the telephone network.
- Parity bit** A check bit added to each character (for example, in a data transmission) that makes the sum of all the binary 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.

- 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 applications, a record consists of data followed by the carriage return and line feed (CR-LF) control characters. Each record corresponds to one row in the cell-based applications, such as GRiDPlan II.
- Serial driver** A file on your computer used by GRiDTerm to interface with a device connected to the serial port. Serial driver files have a Kind of Ser under InteGRiD or Serial under GRiD-OS.
- 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 computer keyboard.
- 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.
- T-connector** A telephone connector that allows you to plug both your computer and a telephone into a single telephone line.



<b>Terminal description file</b>	A file that contains the settings of the GRiDTerm Access, Display Characteristics, Communication Line Properties, Advanced Line 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 description files have a Kind of Tml under InteGRiD, or Terminal under GRiD-OS.
<b>Terminal emulator</b>	A computer program that allows one computer or terminal to mimic another terminal. GRiDTerm, GRiDVT100, and GRiD3101 are examples of terminal emulator programs. GRiDTerm emulates a variety of asynchronous terminals; GRiDVT100 emulates the DEC VT100, VT101, and VT102 display terminals; and GRiD3101 emulates an IBM 3101 display terminal.
<b>Timeout</b>	A time interval during which a certain operation must take place, for example, connecting to a host system once having dialed it. If the operation does not occur in the allowed time, it is cancelled.
<b>Touch-tone dialing</b>	A dialing system that uses audible tones rather than pulses. It is faster than pulse dialing, and has been installed in most modern telephone exchanges.
<b>Word wrap</b>	A text display feature that prevents words from being broken across subsequent lines on a display. If a word won't entirely fit at the end of a line, the whole word is moved to the next line.
<b>Xmodem</b>	A type of file transfer protocol designed to ensure that a file is received without errors.

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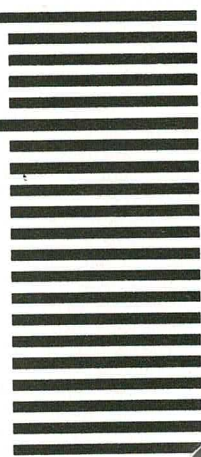
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