

DataFast™ D-101



Hand Held Duplication Unit User's Manual



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Chapter 1

Introduction

1-1 Introduction

Congratulations on your purchase of the D-101 DataFast™ handheld disk duplication unit from Greystone Peripherals, Inc. The D-101 is the smallest, lightest and fastest duplication/diagnostic tool on the market today. Designed for the computer professional that needs a powerful portable solution, this hand held unit is the answer. Just place your master drive in the unit and you can take it anywhere—and with the D-101's bi-directional copy capability you can copy to or from a target drive, whatever the job requires.

The D-101 unit allows you to selectively copy program software and data from a master source drive to a target disk drive. Target drives that are identical to the source drive may be "mirrored", or duplicated exactly, sector by sector. A 'Smart Copy' mode is used for faster copying, or for dissimilar drives using a FAT16, FAT32, or NTFAT file system. The D-101 is ideal for applications that require portability.

Prior to execution, copying jobs are set up according to the type (physical details) of the source and target disk, selective or complete copying, and mode of copying. Setup and execution of copy jobs is accomplished using a six button keypad and a 4-line by 20-character LCD display. A menu guides you easily through setup and copy jobs.



D-101 DataFast Handheld Duplicator Unit

1-2 Features

- Duplicates software from a master disk to a target disk drive
- Supports Ultra DMA ATA/EIDE/IDE drives
- Data transfer speeds over 400 MB/min through IDE interface
- Copies all operating systems
- Bi-directional copying
- Copies Compaq and Winbook maintenance partitions
- Smart Copy mode duplicates only files, not unused space or deleted files (all FAT file systems)
- Mirror mode copies even unknown file systems to drives with identical cylinder, head and sector counts
- Duplicates drives larger than 8 GB
- Supports LBA, CHS addressing and Read/Write Multiple modes
- Automatic parameter translation option to keep logical cylinder count below 1024
- Wipeout mode fills each sector on disk with zeroes
- Verify option reads back copied data and compares with original
- Data logging tracks job results
- Cooling fan to prevent over-heating and ensure data integrity
- Parallel port allows copy operations between D-101 drive and a PC with IDE drives

1-3 Specifications

- **Power Requirements:** 110/220 Vac 1A 47-63Hz
- **Dimensions:** 6.5" (W) x 8.0" (D) x 1.85" – 2.75" (H)
- **Weight:** 1.5 lb

Serial Port

The serial port is reserved for factory test and technical support of the D-101. A D-101 unit can connect to an ASCII terminal or to a host PC by a serial port to serial port cable. The D-101 serial port is configured as:

- DOS COM1
- 9600 baud, 8-bit data, 1-stop bit, no parity
- IBM PC/AT-compatible DB-9 connector

Parallel Port

The parallel port is used to connect the D-101 to a host PC through a standard IEEE-1284 parallel interface. A PC bootable floppy containing remote software utilities is provided to enable copying between the D-101 and a PC, and for D-101 software upgrades. The D-101 parallel port is configured as:

- IEEE-1284 compatible
- DOS LPT1
- EPP mode (if supported by the connected PC.
Otherwise, bi-directional mode is used.)

Chapter 2

Setting Up Your D-101

This chapter will guide you through the easy procedures for setting up your D-101 hand held disk duplication unit. It includes the following sections:

- Unpacking your D-101
- Setting up the system for operation

Once you have completed the setup procedures detailed in this chapter, refer to Chapter 3 for operating instructions to get you up and running quickly.

2-1 Unpacking Your D-101

Before setting up the D-101, verify that you have received all the items for the system configuration you ordered. Please consult your dealer or Greystone Peripherals if any item is damaged or missing.

1. One D-101 unit
2. One 40-pin data cable
3. One 4-pin power cable
4. One IEEE 1284 parallel cable
5. One AC power adapter
6. 3.5" D-101 utilities diskette
7. Registration card
8. User's manual

Record the D-101 Serial Number

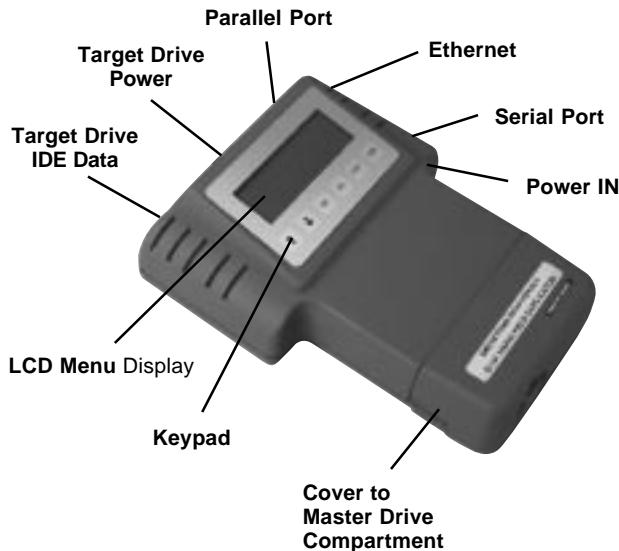
Now is a good time to record the serial number and date of purchase. Locate the serial number on the unit and write it down in the space below for future reference if needed.

D-101 Serial No.: _____

Date of Purchase: _____

2-2 Setting Up Your D-101

Proceed with the following instructions for easy set up of your D-101 disk duplicating system.



D-101 Connector and Feature Locations

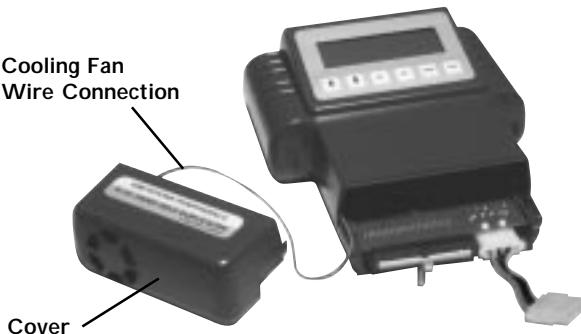
SPECIAL NOTE

All drives, both *master* and *target* drives must be set (following the drive manufacturer's instructions) as **MASTER DRIVES**. They must not be set as slave drives, or set to cable select.

NOTE

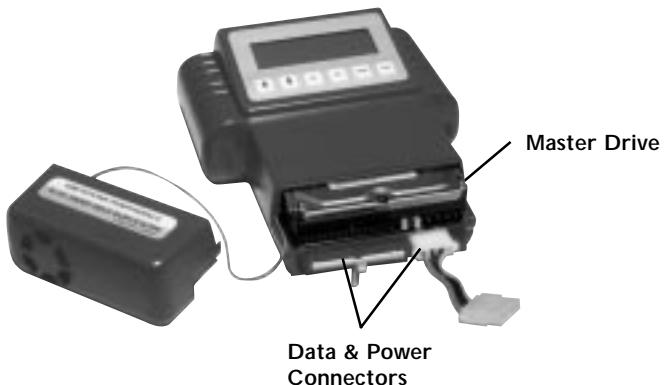
The D-101 supports bi-directional copying. You can designate the internal drive to be either the source (master) or the target (destination) drive.

1. Carefully remove the master drive compartment cover from the D-101. Note that the cover must remain attached to the unit because of the cooling fan wire connection.



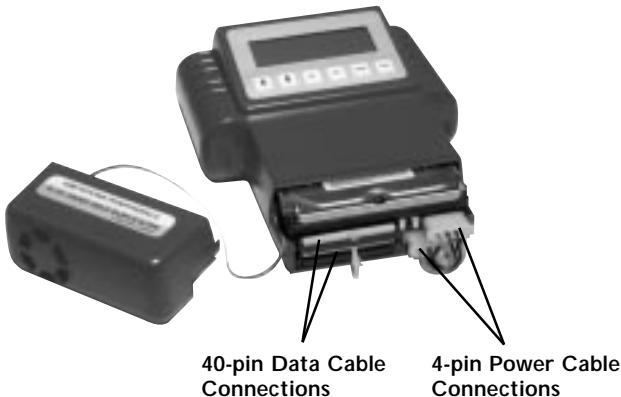
Remove the Master Drive Compartment Cover

2. Slide the master drive into the D-101 case with the data and power connectors accessible from the open end.



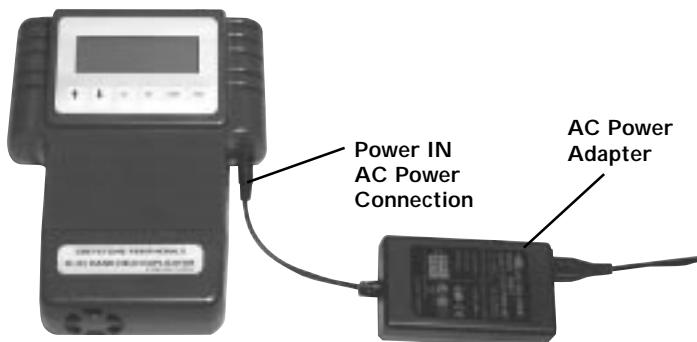
Slide Master Drive into Drive Compartment

3. Connect the 4-pin power and 40-pin data cables attached to the D-101's motherboard to their respective connectors on the master drive. The connectors are keyed for proper insertion.



Connect the Data and Power Connector Cables

4. Replace the cover.
5. Plug the round, single-prong end of the AC power adapter into the power-IN connector on the D-101 unit.



Connect the AC Power Adapter

6. Plug the two-pronged end of the power adapter into an AC power source. The D-101 will go through a self-test and display the following LCD power-on screen.

```
GREYSTONE D101 V1.00
SYSTEM LOADING

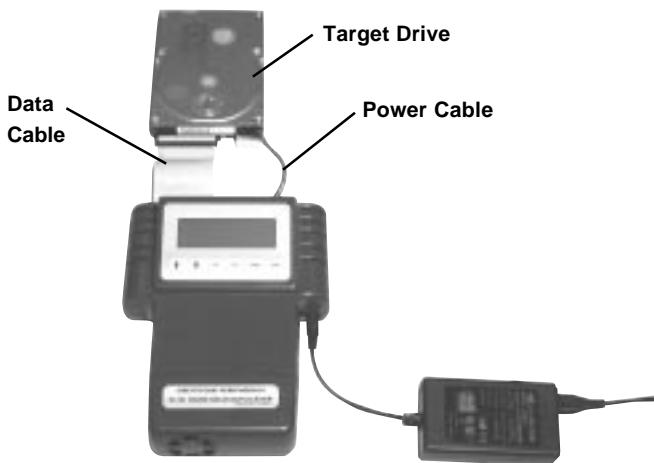
SELF TEST ERROR nn
```

If a self-test failure occurs, the type of self-test failure will be displayed. Otherwise, “A SELF TEST PASSED” message will be displayed. The self-test completion status will be visible during system loading before the main menu is displayed.

7. Attach the external target drive after the following “Main Menu” is displayed.

```
MAIN MENU
STANDARD JOBS
SRCE=INT TARGET=EXT
SEL=SELECT
```

Use the 4-pin power and 40-pin data cables (included with the unit) to connect the data and power connectors on the target drive to their respective connectors on the D-101. The connectors are keyed for proper insertion.



Attach the Target Drive

8. Your D-101 is ready to perform the selected functions from the program menu screens. Next, refer to *Chapter 3* for the operation of your D-101.

NOTE

The method for turning your D-101 unit ON or OFF is by unplugging the AC power source.

Chapter 3

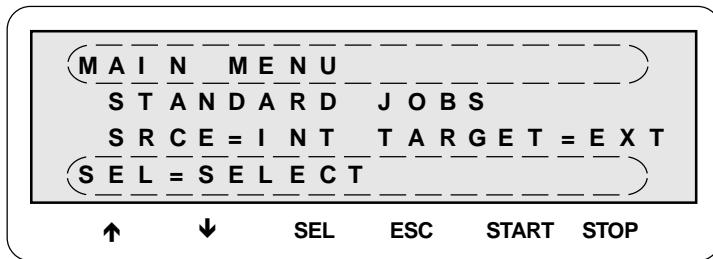
Operation

This chapter will guide you through the quick and easy operation of your D-101 handheld duplication system. The menu options presented in this chapter describe the available functions. These screens are factory set for safe, automatic execution; you cannot change any of the job settings.

Please note that the terms "source" and "master" are used interchangeably throughout this document.

3-1 Using the LCD Menu & Keypad

The D-101 control panel consists of an LCD menu screen (4-lines by 20-characters) and six navigation keys. The first menu title line and fourth keypad prompt line are static and do not scroll.



The user keypad consists of six keys assigned the following functions:

- ↑ Up key: Moves the cursor up, or increment a number field
- ↓ Down key: Moves the cursor down, or decrement a number field
- SEL: Selects a menu setting or submenu
- ESC: Exits a submenu or a setting change
- START: Starts a disk operation
- STOP: Stops a disk operation

3-2 Main Menu Screen

The following sections describe the options that are available through the “Main Menu”. Use the $\uparrow\downarrow$ keys to move the cursor, then press the “SEL” button to select.

```
MAIN MENU
STANDARD JOBS
SRCE=INT TARGET=EXT
SEL=SELECT
```

3-2.1 Changing the Source and Target Drives

The D-101 allows you to select either the internal drive, or the parallel port as the source drive. The default is for the internal drive to be the source and the external drive the target. To change this, position the cursor on the “SRCE=INT TARGET=EXT” line and press “SEL” .

To change the source master drive, select “Source Port” and press “SEL” . Use the $\uparrow\downarrow$ keys to toggle between INT (internal drive port), EXT (external drive port), or PAR (parallel port). Press “SEL” to set the desired option. This changes the configuration and returns to the “Select Port” menu. The target port can be changed using the same procedure.

```
SELECT PORTS MENU
SOURCE PORT=INT
TARGET PORT=EXT
ESC=EXIT SEL=CHANGE
```

3-2.2 Starting a Job

To start a copy, test, or wipe disk job, select “Standard Jobs” by using the $\uparrow\downarrow$ keys to position the cursor on the “Standard Jobs” line and then press <SEL>. Standard jobs include *Smart Copy*, *Mirror Copy*, *Disk Test* and *Wipe Disk*. The basic rules for choosing “Smart Copy” or “Mirror Copy” mode are:

- If you have dissimilar drives (different makes, models, cylinders, head and sectors), select the “Smart Copy” mode to invoke the disk duplicating process from the master to the connected target drive.
- If both drives are of the same manufacturer and model, with the *same* cylinders, heads and sectors, select “Mirror Copy” Mode, or “Smart Copy” mode.

The following sections describe how to run copy jobs from the “Standard Job” menu.

3-2.3 Standard Jobs

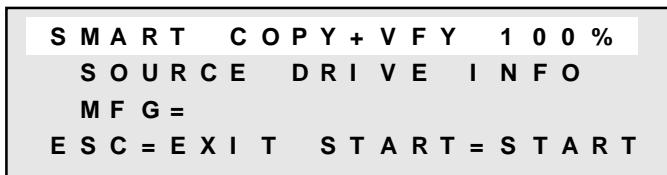
The following describe the options that are available through the “Standard Jobs” screen.

S T A N D A R D J O B S M E N U
S M A R T C O P Y
M I R R O R C O P Y
E S C = E X I T S E L = S E L E C T

Use the $\uparrow\downarrow$ keys to scroll line three for more “Standard Jobs” options:

D I S K T E S T
W I P E D I S K
E S C = E X I T S E L = S E L E C T

Smart Copy



Smart Copy mode copies the entire source master drive to the target drive, keeping the basic source's partition structure intact. If the file system of a source partition is unknown and the source and target drive has matching heads and sector/track configuration, the target partition size will be set equal to the source partition, and the contents will be "partition mirror" copied. If the file system is known (with FAT12, FAT16, FAT32, NTFS, or NTFS), the target partition size will be automatically adjusted, based on the ratio of the capacity of the source drive to the capacity of the target drive. Data will be copied file-by-file, adjusting target FAT size, and cluster size as needed.

The first line can be "Smart Copy" plus additional text "Vfy n%", if verify has been specified. Selecting the submenu options enables you to view the source and target drive information. If either the source or target drive is not detected, the manufacturer and serial number data will be replaced with a NO DRIVE indication and the missing drive info will be displayed as zeros.

To start "Smart Copy", press "START". The next screen will prompt you to confirm the action to start. Press "START" again.

The next screen will display a progress bar showing % completed in 5% increments or the file name during the copy process, the transfer speed and estimated time remaining.

If "STOP" is pressed during a copy operation, the screen will display an "Are you sure" question. To reduce the possibility of an accidental stop, the "STOP" button must be pressed twice to cancel the operation. If "Smart Copy" is cancelled, the operation will be logged, if logging is on, and the job completion status will be displayed.

"ESC" returns to the Standard Jobs menu.

Job Completion Status Display

Each job terminates with the following display. It lists the job that was run, the reason for completion, MBs copied, and the elapsed time.

```
S M A R T   C O P Y + V F Y
O P E R A T I O N   C O M P L E T E
n n n n n n M B   E T = h h : m m : s s
E S C = E X I T   S E L = V I E W L O G
```

The user has the option to press “SEL” to view the log data, or hit “ESC” to return to the job menu where the job originated. Job completion will power down the drives.

The following lists the additional status statements that can be seen in line 2 of the job completion status display.

```
C A N C E L   B Y   U S E R
S O U R C E   D R I V E   E R R O R
T A R G E T   D R I V E   E R R O R
```

Mirror Copy

```
M I R R O R   C O P Y + V F Y   1 0 0 %  
F R O N T = n n n n n  
B A C K = 0  
E S C = E X I T   S T A R T = S T A R T
```

The disk **Mirror Copy** mode is valid only for target drives which have the same number of cylinders, heads and sectors per track as the source drive. For Mirror Copy mode, the maximum number of megabytes to be copied must be defined. To duplicate identical drives, zero (0) for the back megabytes, and 65535 (maximum) for the front megabytes is normally set. This ensures that the entire drive is copied sector for sector.

The first line can be “Mirror Copy” plus additional text “Vfy n%” if verify has been specified. The second and third lines are used to set the Front (begin) and Back (end) parameters to limit the copy to specific parts of the source drive. By default, the Front is set to the total size of the Source drive in megabytes. To change the settings, press “SEL” to select front or back and use the **↑↓** keys to change the values in 100 MB increments.

To start “Mirror Copy”, press “START”. The next screen will prompt you to confirm the action to start. Press “START” again.

The next screen will display a progress bar showing % completed in 5% increments or the file name during the copy process, the transfer speed and estimated time remaining.

You can press “STOP” any time to discontinue the copy process. The screen will display an “Are you sure” question. To reduce the possibility of an accidental stop, “STOP” must be pressed twice to cancel the operation. If “Mirror Copy” is cancelled, the operation will be logged, if logging is on, and the job completion status will be displayed.

Disk Test

```
DISK TEST
FRONT = n n n n n
BACK = 0
ESC = EXIT  START = START
```

Use this mode to test the integrity of the readability and writeability of the target drive. This mode will read blocks of data from the target drive, save the data in RAM, write a test pattern to the same area of the target disk, read back and verify the test pattern, write the original data back to the disk, and verify that the original data was written back correctly. If any errors occur, the process will be stopped and the errors reported. The test process will be repeated for successive blocks on the disk. The front MB and back MB fields will specify what portion of the disk will be tested in this manner. The default values are set to test the full disk: Front MB = 65535 and Back MB = 0. If you only want to test a portion of the drive, you can specify different Front (begin) and Back (end) parameters to test.

The second and third lines are used to set the Front and Back parameters to limit the test operation to specific parts of the target disk. By default, the Front is set to the total size of the drive in megabytes. To change the settings, press “SEL” to select front or back and use the $\uparrow\downarrow$ keys to change the values in 100 MB increments.

To start “Disk Test”, press the “START” key. The next screen will prompt you to confirm the action to start. Press “START” again.

The next screen will display a progress bar showing % completed in 5% increments or the file name during the copy process, the transfer speed and estimated time remaining.

If “STOP” is pressed during a copy operation, the screen will display an “Are you sure” question. To reduce the possibility of an accidental stop, the “STOP” button must be pressed twice to cancel the operation.

Wipe Disk

```
W I P E D I S K
F R O N T = n n n n n
B A C K = 0
E S C = E X I T    S T A R T = S T A R T
```

This mode is used to erase the target drive by filling each sector with zeroes. The “Wipe Disk” option enables you to allocate the area of the drive you want to be erased. The default values are set for the full disk: Front MB = 65535 and Back MB = 0. If you only want a portion of it erased, you can specify different Front (begin) and Back (end) parameters. To change the settings, press “SEL” to select front or back and use the **↑↓** keys to change the values in 100 MB increments.

To start “Wipe Disk”, press “START”. The next screen will prompt you to confirm the action to start. Press “START” again.

The next screen will display a progress bar showing % completed in 5% increments or the file name during the copy process, the transfer speed and estimated time remaining.

You can press “STOP” at any time do discontinue the Wipe Disk process. Press “ESC” to return to the Wipe Disk menu. To view the copy log for more details about the job, press “SEL” .

3-2.4 SRCE=INT TARGET=EXT

This section describes the settings that are available through the “SRCE=INT TARGET=EXT” option in the “Main Menu”.

Use the **↑↓** keys to scroll line three for the available options.

```
MA I N   M E N U
S T A N D A R D   J O B S
S R C E = I N T   T A R G E T = E X T
S E L = S E L E C T
```

Set System Options

The D-101 allows you to set several global parameters that are common to all jobs.

```
SOURCE = INT  TARGET = EXT
SET SYSTEM OPTIONS
MAINTENANCE MENU
ESC = EXIT SEL = SELECT
```

```
SET SYSTEM OPTIONS
VERIFY FIRST 100 %
ENABLE LBA XLATE X
ESC = EXIT SEL = SELECT
```

Use the arrow keys to scroll line three of the “Set System Options” menu.

```
ENABLE INT 13 XLATE
PWR SETTLING = 05 SEC
CMD TIMEOUT = 15 SEC X
LOG ALL JOBS X
LOG FAILED JOBS
LOG DETAILS X
SHOW SMTCOPY FNAMS X
R/W MLTPL SECTORS X
ENABL CABLE SELECT X
```

“VERIFY FIRST n%” has selections of 100%, 80%, 60%, 40%, 20%, 1% or 0%. The selection of 0% will disable the verify operation.

Selecting drive “PWR SETTLING” time or drive “CMD TIMEOUT” allows the ‘seconds field’ to increment or decrement by using the arrow keys. The indicated values are default.

“LOG ALL JOBS” and “LOG FAILED JOBS” are also mutually exclusive. Both can be off, but turning on one will turn the other off. An ‘X’ in the last column indicates active selection and can be changed by selecting the menu item and using either arrow key to toggle the setting.

“LOG DETAILS” can be enabled or disabled for either of the above selections. An ‘X’ in the last column indicates active selection and can be changed by selecting the menu item and using either arrow key to toggle the setting.

“ESC” returns to Main Menu.

Maintenance Menu

```
MAINTENANCE MENU
SYSTEM STATISTICS
VIEW LOG FILE
ESC = EXIT SEL = SELECT
```

Use the arrow keys to scroll line three of the Maintenance menu.

```
SET TIME & DATE
UPDATE SOFTWARE
```

System Statistics menu

```
SYSTEM STATISTICS
JOBS RUN = n n n
TOTAL MB = n n n n n
ESC = EXIT
```

Use the arrow keys to scroll line three of the System Statistics menu.

```
FAILED COPIES = n n n n
VERIFY ERRORS = n n n n
```

View Log File

The D-101 stores a record of the last 1000 jobs run. You can choose to view the log at the end of each job or through the Maintenance Menu. Each job is assigned a serial log number, where 1 is always the number of the job just completed, number 2 is the previous job, etc.

You can tailor the log to record all of the jobs or only the filed jobs. You can also set the log to provide details of the source and target disks.

```
LOG ENTRY # 00001
12:04 PM 06/07/1999
SMART COPY+VRY 100%
ESC = EXIT
```

```
OPERATION COMPLETE
MB = 655355
ELAPSED TM = 00:35:00
FINISHED 12:39 PM
```

Set Time & Date

```
SET TIME & DATE
MONTH = mm
DAY = dd
ESC = EXIT SEL = CHANGE
```

“SEL” selects a line and the arrow keys increment/decrement the value. “ESC” or “SEL” stops the change, preserving the setting. The Time mode will toggle from AM to PM to 24 to AM again. The changes, if any, are not set until exiting up to the Maintenance menu.

Use the arrow keys to scroll line three of the Set Time & Date menu.

Y E A R	= y y y y
H O U R	= h h
M I N U T E	= m m
M O D E	= A M

Update Software

This function allows you to easily update your software as new features become available. To update your software, install the new software in your PC and set up the parallel connection from the PC to the D-101.

Proceed to the “Maintenance Menu” and select “Update Software”.

UPDATE SOFTWARE
WAITING FOR REMOTE
E S C = E X I T

When you enter this menu, the D-101 will attempt to connect, through the parallel port, to a connected PC running the Remote Software. After the connection is made, the second line will change to “CONNECTED”. When the update operation is started through the Remote Software, the second line will change to “UPDATING”.

While updating, the keypad is inactive to prevent accidental interruption. If the update transfer is successful, the D-101 will reboot to implement the new software update. If the update was not successful, due to transmission or other errors, the third line will display “UPDATE FAILED”. The keypad prompt will reappear on the fourth line of the display and the second line will display either “WAITING FOR REMOTE” or “CONNECTED”.

Chapter 4

Remote Operation

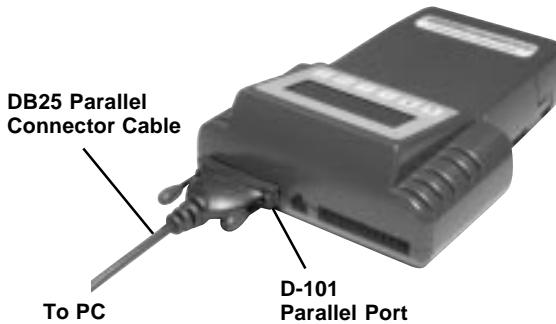
This chapter will guide you through the quick setup for remote operation using the provided Remote Software Utility with any Pentium-class PC. The connection to the PC is made through the parallel port of the PC operating in EPP mode. The Remote Software Utility enables you to do the following:

- Copy directly between the D-101 and a PC
- Select a local IDE hard drive on a PC for operations with the D-101
- Update the D-101 application software

4-1 Setup for Remote Operation

Your D-101 was shipped with a Remote Software Utility diskette and 6-foot IEEE 1284-compatible cable with DB25-P male connectors at both ends. Proceed with the following steps to set up your D-101 for remote operation.

1. Connect one end of the supplied parallel port cable to the 25-pin connector on the D-101 as shown below.
2. Connect the other end to the parallel port on the PC. Refer to the PC documentation for location of parallel port 1. The parallel port must be set for EPP mode.



D-101 Parallel Port-to-Parallel Cable Connection

3. Connect power to the D-101. The D-101 will display the main menu:

D-101 Display:

```
MAIN MENU
STANDARD JOBS
SRC E = INT TARGET = EXT
SEL = SELECT
```

The D-101 is now ready for remote operation. Continue to the next section to run the remote software utility on your PC.

4.2 Using the Remote Software Utility

The floppy diskette provided with the D-101 is a bootable diskette. To run the utility from this disk, place it in the A: drive. If Windows is currently running, select “Shutdown” and then “Restart” from the Start menu. If the PC is powered down, turn it ON and the system will boot automatically from the floppy diskette and display the following screen on the PC while attempting to establish communication with the D-101.

PC Screen:

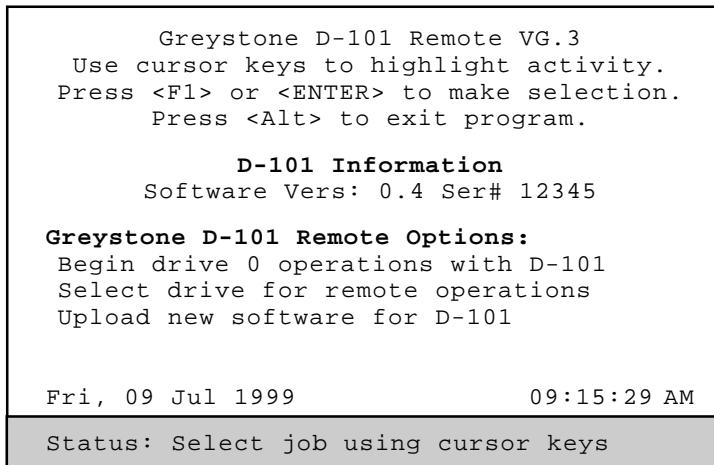
```
A:\>remote
Establish a connection with the D-101
Waiting for D-101
Press ESCAPE to exit._
```

If a connection cannot be established, the cause may be:

- The D-101 is not set up correctly.
- The cable is not connected properly.
- The supplied parallel port cable was not used. The cable must be an *IEEE 1284 parallel port cable* – not a standard printer cable or a serial cable.
- The parallel port BIOS setting in the remote computer is not set correctly. The BIOS setting for the parallel port should be set to “EPP” mode.

When connection to the D-101 is successful, the main screen for remote operation is displayed on the PC screen. Initially local IDE hard drive 0, usually referred to as the C: drive, will be selected for remote operations with the D-101. A submenu is provided to allow for selection of one of four different local IDE hard drives. The current selected drive number is shown in the drive operation menu line.

PC Screen:

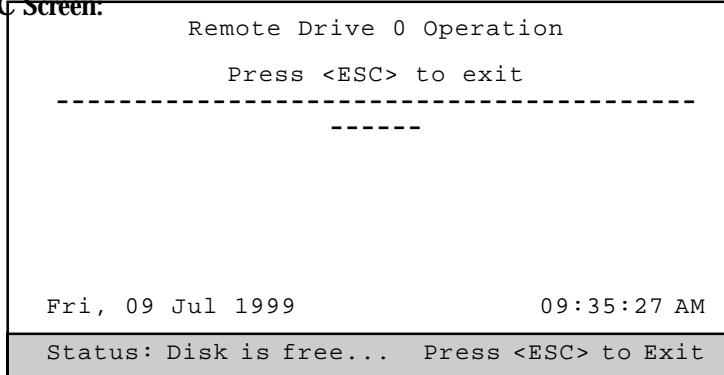


A status line at the bottom of the PC screen keeps you informed of the status of remote operations. Select the desired operation by using the arrow keys to highlight the operation, and then pressing <Enter>. The three options are described in the following sections.

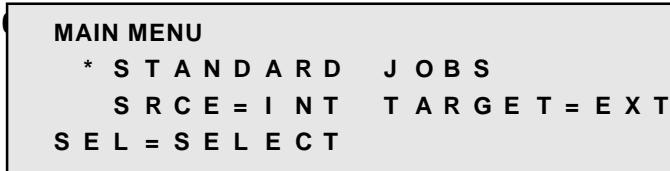
4-2.1 Begin Drive 0 Operations with D-101

When you select this option, the local IDE hard drive becomes either the source or target drive, depending upon how you set up the D-101. All D-101 disk drive operations can be performed on the selected drive without the need to physically remove the drive and cable it to the D-101. The current selected local drive is displayed in the menu heading. Once you have selected this option, return to the D-101 and run jobs just as you normally would.

PC Screen:



D-101



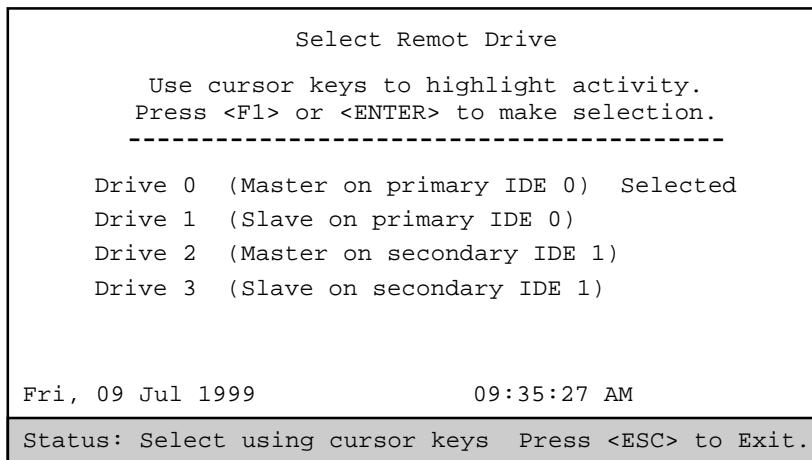
Use the SRCE/TARGET selection from the D-101 main menu to select either the source or the target to PAR, to establish communication through the parallel port to the remote computer. Select the desired operation using the STANDARD JOBS selection on the D-101 MAIN MENU. Then begin the job using the START key.

The status line on the PC screen displays “Disk is free,” “Disk is idle,” “Disk is reading,” or “Disk is writing,” depending upon current job status. You can return to the main remote menu whenever the “Disk is free” by pressing the <Esc> key. The <Esc> key is disabled whenever a D-101 disk operation has reserved the current selected local hard drive and the drive is reading, writing, or is idle.

4-2.2 Select Remote Drive

When the remote software is started, it will default to use local IDE hard drive 0 for remote operation with the D-101. Normally drive C: is connected to primary IDE port 0 as the master drive, while the DOS letter assigned to other drives are not predictable. This menu allows the user to select one of four local physical hard drives that may be cabled to the internal IDE ports.

PC Screen:



Select a drive by using the arrow keys to highlight the desired drive number, then press <Enter>. Press <Esc> to return to the main menu and retain the displayed selection.

4-2.3 Upload New Software to D-101

To update the software, insert the D-101 software distribution diskette into the PC's A: drive.

PC Screen:

```
Upload New Software
Press <F1> to begin, or <ESC> to cancel.

Handheld Information
Software Version G.3  Serial# 1462

Press any key when the distribution diskette
is in drive A

Fri, 09 Jul 1999          09:35:27 AM
Status:                  Press <ESC> to abort.
```

With the new distribution diskette in the A: drive of the remote PC, press any key. From the D-101's main menu , use the *arrow* and *Select* keys to navigate to the MAINTENANCE, then UPDATE SOFTWARE menu. The following will be displayed on the D-101:

D-101 Display:

```
U P D A T E   S O F T W A R E

E S C = E X I T
```

With the new distribution diskette in the drive, press **<F1>** to begin uploading the new software files. A series of '+' signs will be displayed as each file is transferred to the D-101.

When the software upload is complete, the PC screen displays "SUCCESS!" The D-101 performs a reset to initialize and use the new software, and the remote software returns to the main menu. If any errors occur during the upload process, both the remote software and the D-101 will display error messages and the D-101 will discard the updated software.

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Monday - Friday

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