

DF-1 User's Manual



GREYSTONE

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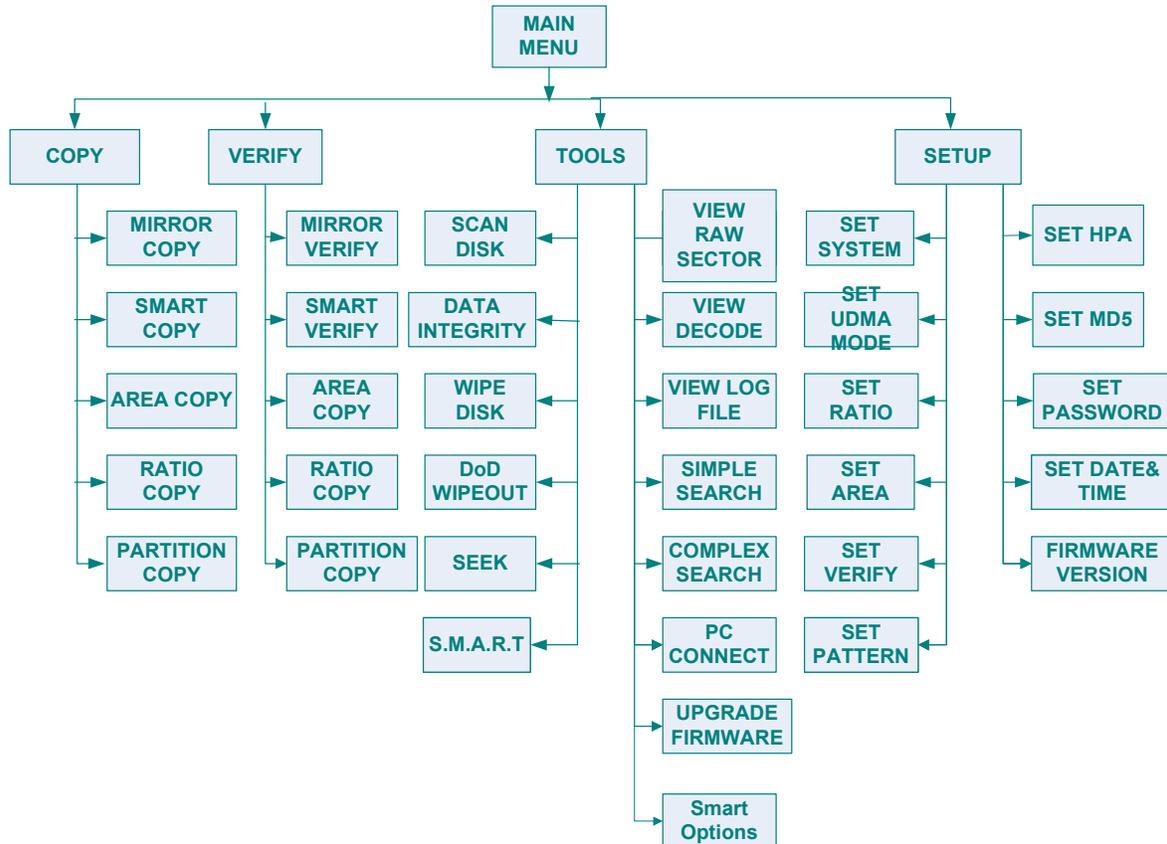
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Introduction

DF1 – Duplicator is a fast and stand alone hard disk drive duplicator. This machine is effectively used to copy program software and data from a source to a target. It may run at the speed of up to 4GB/m. A source drive may be “mirror” duplicated or copied exactly to a target drive, sector by sector, regardless of the source’s file systems. DF-1 intelligently auto-sets the UDMA mode corresponding to the mode the target drive supports. You are also able to manually set the UDMA modes for duplication.

New firmware is easily upgraded via USB or LAN port.



The above is a diagram of function menu of DF-1. It is very easy for you to apply these functions by using navigation keys and some other keys on keypad to move the cursor to the function you wish to run. The simple instructions will be



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displayed at the bottom of LCD, which helps you to operate more easily. These are list of keys with their correlative functions assigned.

Right arrow or **ENTER**: Enter the sub or setting menu or execute the function.

Left arrow or **ESC**: Exit a sub menu or setting change.

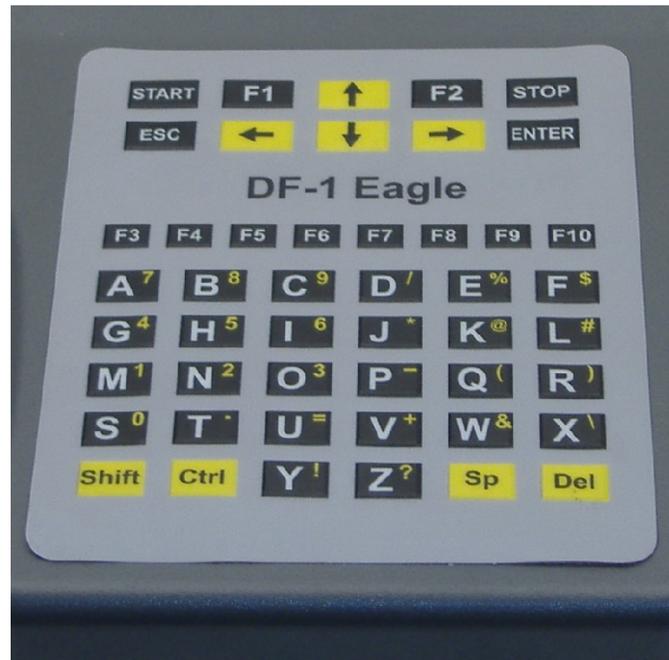
Up arrow: Move the cursor up or make number field increment.

Down arrow: Move the cursor down or make number field decrement.

ESC: Return to the previous menu or stop execution.

Stop: Temporarily stop duplication, verification or test process.

Start: During provisional stop, press start to continue duplication, verification or test process.



1 Setting Up your DF-1

This chapter will guide you through the easy procedures for setting up your DF-1 hand held duplication unit. It includes the following sections:

- Unpacking your DF-1
- Setting up the system for operation



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1.1 Unpacking Your DF-1

Before setting up the DF-1, verify that you have received all the items for the system configuration you ordered. Please consult your dealer or **Greystone Data Systems** if any item is damaged or missing.

1. One DF-1 unit
2. One 80-pin UDMA cable
3. One 4-pin power cable
4. One AC power adapter
5. User's manual

4.3 Setting Up Your DF-1

Proceed with the following instructions for easy set up of your DF-1 duplicating system.

Remove the top plate cover of the DF-1.



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Insert your “Master” drive into the drive slot.

Connect drive power cable to the DF-1 and the “Master” drive and UDMA cable to the DF-1 and the “Master” drive.

Replace top plate (optional). The unit will run if the top plate is left off.

Connect drive power cable to the DF-1 and the “copy” drive and UDMA cable to the DF-1 and the “copy” drive.

Connect the AC power adapter. This will start the boot up sequence for the “Master” drive. It will not power up the “copy” drive.

2 DF1 – Duplicator preparation for cloning

- Supply power for DF1- duplicator. (Same as last setup step.)

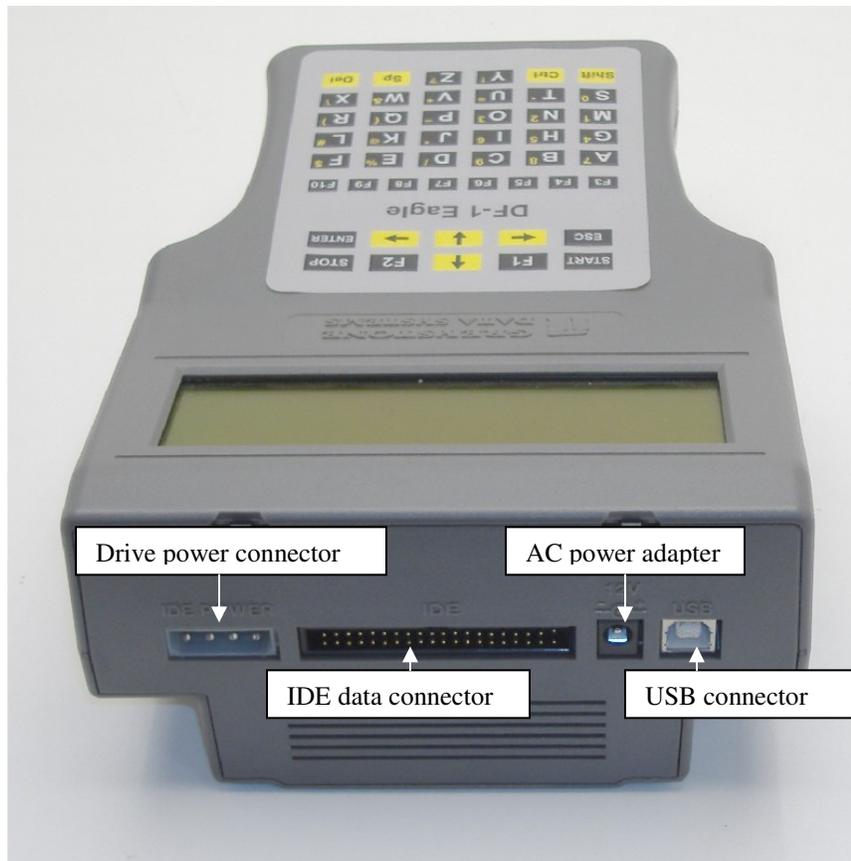


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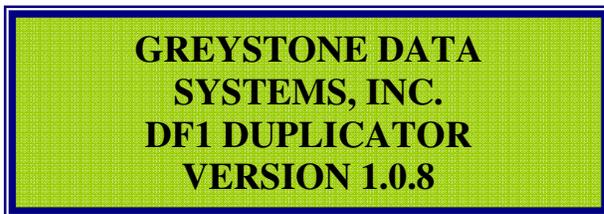
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- Then you can see the led is bright and “Booting..” is appears on the LCD display. The following message appears for a while:



And the main menu is showed on the LCD display with the functions as following

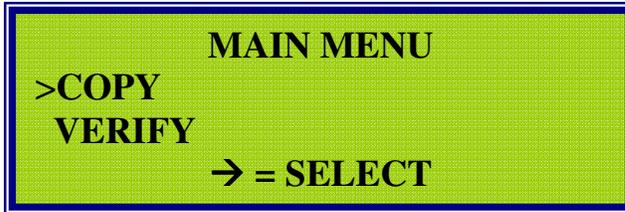


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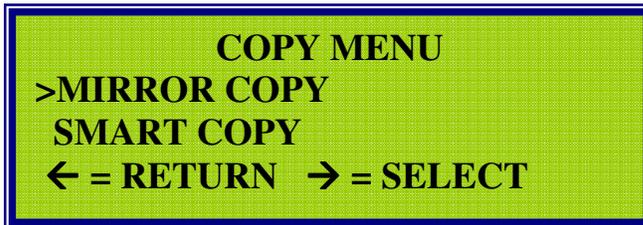


- Appropriately plug the “copy” (slave) drive to the corresponding ports via power and data cables

3 Function Descriptions

3.1 Copy Function

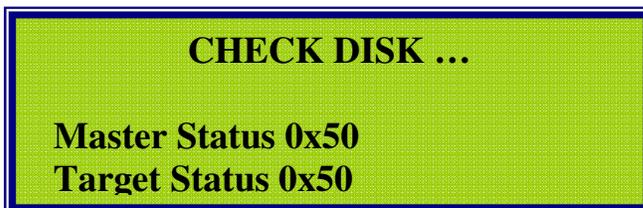
Press **Right arrow** or **Enter** to enter the COPY MENU. It is possible for you to select one of the copy types, such as Mirror Copy, Smart Copy, Area Copy, Ratio Copy, or Partition Copy. These copy types will be described in details below.



4.1.1 Mirror Copy

This option will be able to “mirror” copy regardless of whatever file systems from a master drive to slave drive. This is valid if the slave drive has the same number of cylinders, heads and sectors per track as the master drive. This ensures that the total drive is duplicated sector by sector.

Press **Right arrow** to start checking disk process to check if the drives are ready to be copied. If both of drives are ready, it will implement duplication.



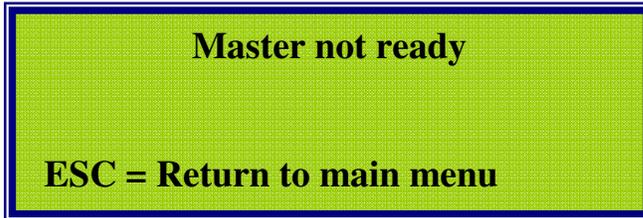
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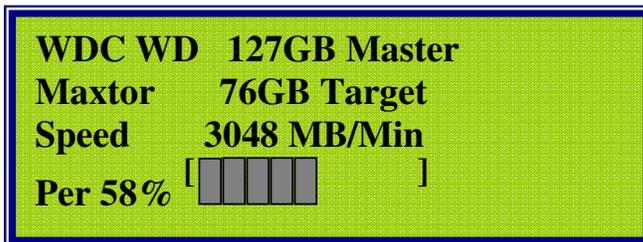
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If one or both of drives are not ready,

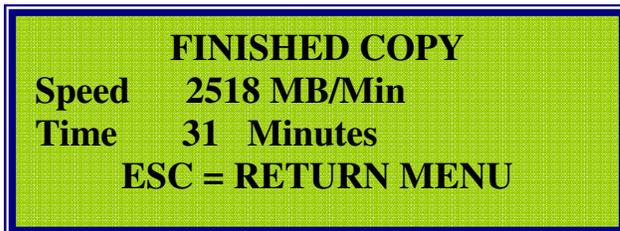


In this case, you should check carefully whether the ribbon data cable and power cable are firmly secured. Then select Mirror Copy again to continue duplication.

During copying process, the manufacturer and capacity of two drives, the speed and percentage of copy on process bar may be viewed on LCD display the same as figure below:



When duplication is successful, you can see Finish Copy with the average speed and time on LCD. Press **Esc** to return to the sub menu.



When duplication fails, you also will see the warning Error with the average speed and time on LCD. Press **ESC** to return to the sub menu.



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If you interrupt the copying progress by pressing **Stop** key, Unfinished Copy with the average speed and time will be displayed on LCD. Press **ESC** to return to the sub menu.



When you press **ESC** to turn back to the sub menu, the DF1 will automatically power off the drives, so that is safe for you to replace any drive if you want.

4.1.4 Smart Copy

If you have different drives (differences of capacity, manufacturer, model, cylinders, sectors or heads) or file systems of FAT, FAT32, NTFS and EXT2/3, it is possible to choose Smart Copy for duplicating from a source to target with less time than Mirror Copy.

With this copy mode, the target partitions will be resized to the ratio of the master's partitions and the sectors that contain data will be cloned from a source drive to a target and skip the blank sectors.

The screen shots are the same as "Mirror Copy".

3.1.3 Area Copy

With Area Copy selected, it is possible for you to copy any area in the drive use "Set Area" (Section 4.4.4) in **Setup** function to select the area to be copied. The first 1024MB is default.

4.1.4 Ratio Copy

With Ratio Copy selected, it is possible for you to copy a pre-defined percentage of master and target drives. You use "Set Ratio" (Section 4.4.3) in **Setup** function to set ratio you wish to apply. 100% is the default.

4.1.5 Partition Copy

This feature is not available at this time.



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4.2 Verify function

This option is used to verify whether the data between the source drive and the target drive is similar or not after a duplication. You may verify entire disk or part of disk depending on your choice of verifying options, such as mirror verify, ratio verify, area verify, smart verify and partition verify.



The same as **Copy** function described above you can use navigation arrow keys or **Enter/Start/Stop/Esc** to control verification function. With each verification option, it always checks disks to check if the drives are ready. If both of them are about to be executed, verification begins with brief information of drives, speed and percentage process bar being showed on LCD display. Each verification type should have correlative parameters set by **Setup** function before being enabled except for Mirror Verify option. If not, it will be run with default values.

4.2.1 Mirror Verify

If a Mirror Copy has been completed, use the Mirror Verify to verify that the information has been copied.



4.2.2 Smart Verify

If a Smart Copy has been completed, use the Smart Verify to verify that the information has been copied.



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4.2.3 Area Verify

If an Area Copy has been completed, use the Area Verify to verify that the information has been copied. It will verify only the area copied.

4.2.4 Ratio Verify

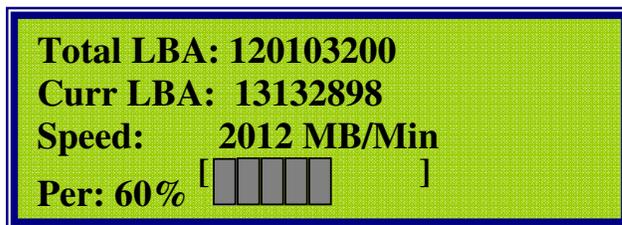
If a Ratio Copy has been completed, use the Ratio Verify to verify that the information has been copied. It will verify only the area copied.

4.3 Tools

Select TOOLS function, you may see many options, such as Scan Disk, Wipe Disk, Data Integrity, Seek, and S.M.A.R.T ...

4.3.1 Scan Disk:

This utility is provided to confirm that every sector (or a range of sectors) on target disk is readable and writeable. This utility scans all sectors on hard drive and cut bad sectors found.



4.3.2 Data Integrity

This feature is not available at this time.

4.3.3 Wipe disk:

Wipe disk is used to erase the target drive by filling each sector with Set Pattern in setup menu. This option enables you to allocate the area of the drive to be written with the pattern.



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4.3.4 DoD Wipe out:

This function is used to erase the target drive upon DoD 5220.22-M standard. This is a Smart Option. Contact GDS to purchase.

4.3.5 Seek:

Seek tests are provided to confirm the ability of a drive to function properly with various seek conditions. Several tests perform large seeks after the read or write of every sector. Other tests perform a small incremental seek after every read or write.

4.3.6 S.M.A.R.T.:

The S.M.A.R.T utility enables the status of the internal failure prediction capability of a drive to be reported. S.M.A.R.T (Self-Monitoring, Analysis and Reporting Technology) is an industry-wide method by which IDE drives monitor internal parameters and warn of the increased potential of a drive failure. This utility enables you to determine whether or not a drive supports S.M.A.R.T. For those drives supporting S.M.A.R.T, you have the ability to activate or deactivate S.M.A.R.T. When S.M.A.R.T is activated you can determine if one or more "threshold conditions" in a drive have been exceeded, meaning that - even though the drive is presently operational - there is an increased likelihood of a drive failure.

4.3.7 View Raw Sector:

This function is for displaying any sector on Master or Target drive. Values on sector will be displayed as Hex format.

Select the letter standing for the drive you would like to view sector and then ENTER to type the LBA address to view.



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Select device:
M=Master - - T=Target
Select: Master
ESC = Exit ENTER = Go

Max LBA: 160086527
LBA:

ENTER to view

000: EB4890108ED0BC00
008: B0B800008ED88EC0
010: FBBE007CBF0006B9
018: 0002F3A4EA210600

- Press on the UP and DOWN arrow keys to view the previous and next lines.
- If you press and hold these keys, the lines will be showed continuously.

4.3.8 View Decode:

This function is for displaying all files and folders in all Partitions of Master drive.

Partition List

>1 /boot	EXT2
2 /usr	EXT2
3 /	EXT2



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Using the UP and DOWN arrow to move the cursor to the partition/ directory/ file and then ENTER to select or view file content.

At a certain folder or file, if you press on "D", the full path of that folder or file will be displayed on LCD.

Press on ESC to return to upper menu and STOP to back to Partition List menu.

4.3.9 View Log File:

This feature is not available at this time.

4.3.10 Simple Search:

This feature is not available at this time.

4.3.11 Complex Search:

This feature is not available at this time.

4.3.12 PC Connect:

This feature is not available at this time.

4.3.13 Upgrade firmware

Enter this function by pressing on → or Enter to upgrade new firmware. It is possible for you to choose which way to upgrade firmware, via USB or LAN



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SELECT PROTOCOL
<U> USB Protocol
<L> LAN Protocol
<ESC> Cancel <ENTER>

If you enter U letter to choose upgrade firmware via USB and then press on ENTER, the firmware will be automatically updated via USB plugged into USB port.

If you enter L letter to upgrade firmware via LAN (Local Area Network), there are two options for your choice.



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Internet Configuration
<D> **Default**
<C> **Configure**
 <ESC> **Exit** <ENTER>

- Press on D letter to update with default IP address and gateway information.
- Press on C letter to use the information already loaded into the unit to configure IP address and gateway before updating from server.

IP Configuration
IP address:
172.16.4.104
 <ESC> **Exit** <ENTER> **Save**

Add Gateway
Gateway:
255.255.0.0
 <ESC> **Exit** <ENTER> **Save**

If you enter the wrong number, you can press on **DELETE** to delete a character. Press on **ENTER** to save and upgrade firmware via IP address and gateway you have just configured.

4.4 Set Up

Press Down arrow key to enter SETUP MENU in order to change the configuration as UDMA modes, date & time, password, set pattern, set ratio or so on. This function helps you to set up the values corresponding to the functions as Ratio Copy/Verification, Area Copy/Verification, Partition Copy/Verification, etc...



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You may increase the number with Right arrow key and decrease one with Left arrow key or enter any number with numeric keys on keypad. Press ENTER to save what have just been adjusted and ESC to exit setting change.

4.4.1 Set System

There are parameters, such as command timeout (in seconds), command delay (in mSeconds) and command retry (by number or times), which are set for duplicating. In addition, DF1 machine also has power management support. The user can stand by DF1 machine by entering the time in seconds for Standby mode. When DF1 stands by, the LCD and hard drive disks turn off and the CPU runs on low power, but the whole system is still running with the session stored to the memory.

```
          SET SYSTEM
> TIMEOUT   (s)
  DELAY     (ms)
  RETRY     (times)
    ← = DEC → = INC
```

4.4.2 Set UDMA mode

This allows you to set the UDMA mode for 0 to 5.

```
          SET UDMA MODE
> UDMA MODE 5

    ← = DEC → = INC
```



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4.4.3 Set ratio

You may set up the percentage you wish to ratio copy or verify. The ratio will increment by 5 percent. The value set here will be used in Ratio Copy (Section 4.1.4)

```
          SET RATIO
> RATIO 95

< = DEC  > = INC
```

4.4.4 Set Area

You may set up the area you wish to copy or verify. The set area will increment by 100 MB. The value set here will be used in Area Copy (Section 4.1.3)

```
          SET AREA
> START MB  0
  END   MB 1024

< = DEC  > = INC
```

4.4.5 Set Verify

This allows you to set the verify mode for when the duplicating is taking place. You can select to enable or disable the Auto mode, and the percentage of the duplication to verify.

```
          SET VERIFY
> AUTO MODE: DISABLED
  PERCENT 100

< = DEC  > = INC
```



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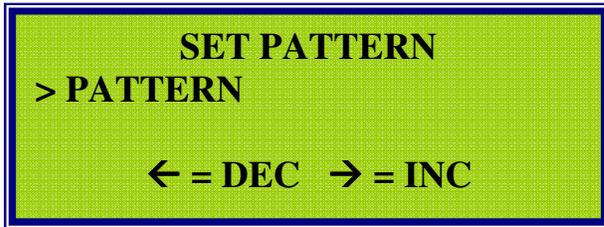
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FAX: (510) 661-2105
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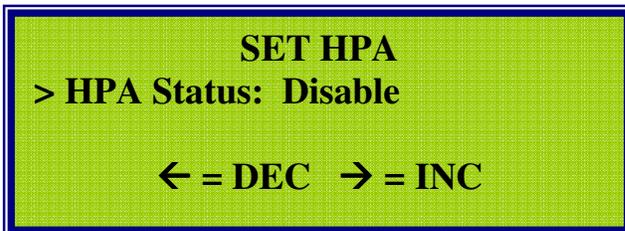
4.4.6 Set pattern

You can select the pattern you want written using the Wipe Disk (Section 4.3.3). The default is 0.



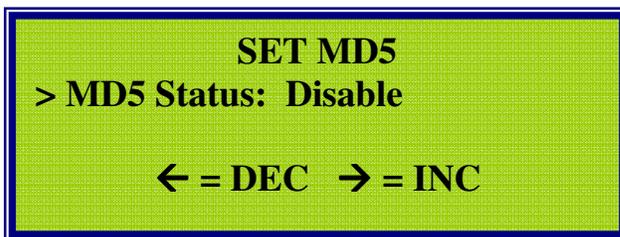
4.4.7 Set HPA

You can set HPA disable or enable to copy Host Protected Area if you would like to do.



4.4.8 Set MD5

This option can be enabled or disabled. This is a Smart Option.



4.4.9 Set Password

This option is to change the password on the unit.



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```
SET PASSWORD
> PASSWORD: 0123456789

→ = SELECT
```

4.4.10 Set Date & Time

Use this to set the date and time.

```
SET DATE & TIME
MINUTE      45
HOUR        6
DAY         31
← = DEC → = INC
```

4.4.11 Firmware Version

Using **left arrow** to decrease and **right arrow** to increase the number or you can enter the number on the keypad. Simply press **Esc** key to exit the CONFIG function when you are in sub menu.

```
FIRMWARE VERSION
DF1 – DUPLICATOR
VERSION 1.0.8
ESC = RETURN MENU
```



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4.4.12 Smart Options

Smart Options provide us the below features and they must be purchased separately:

NTFS Smart Option

- The NTFS Smart Option copies only the data on a NTFS partition from the source to the target drives.
- If this is not enable and you choose smart copy with NTFS partition source drive, the duplication is still done in Mirror Copy mode.

EXT2/3 Smart Option

- This allows you to smart copy Linux drives.

DOD Wipe out Smart Option

- Enables target drives to be completely erased, in accordance with DoD 5220.22-M specifications.

Partition Smart Option

- This can be used to choose one or more partitions from the source drive, to be duplicated to the target drive with the resized and/or reordered partitions on the target drive. Each target drive configuration can be determined independent of the other target drives. With this option, a source drive can be constructed containing many different software loads, each of which can be duplicated individually to target drives.

Sector Copy

- Permits selection of sectors to copy.

HPA Smart Option

- The HPA Smart Option allows you to copy the Host Protected Area.

USB Duplicate Smart Option

- This feature is not available at this time

LAN Duplicate Smart Option

- This feature is not available at this time

To purchase any of the Smart Options, please call Greystone Data Systems at **(510) 661-2101** or email to technical support. You will be given a password key to unlock the purchased option for immediate use.

You will see the display on LCD as following



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```
SERIAL NO. 24568  
> NTFS          DISABLE  
EXT2/3        DISABLE  
ESC = EXIT    ENTER = SET
```

Move the UP or DOWN pointer to point the option you would like to enable. Then press ENTER to select the one you would like. Enter the password, which is in Hexadecimal format. When you enter hexadecimal letters, you should press and hold SHIFT and then press the letter.

```
SMART OPTIONS  
> NTFS          84AF56D4  
ESC=EXIT      ENTER=SAVE
```

If the password is invalid, the wrong one will not be saved. You should enter the right one or press on ESC to exit.
If the password is valid, it will be saved for your future use.

```
SMART OPTIONS  
> NTFS          ENABLE  
EXT2/3        DISABLE  
ESC = EXIT    ENTER = SET
```

If you would like to disable any smart option, just simply choose it and press ENTER. The warning message will be displayed to make sure you would like to.



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**Are you sure to
disable this option?**

<N> = NO <Y> = YES

Notes:



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