Product Update Supplement to the MS-DOS Reference: Release 3.2

November 1987

This Product Update Supplement contains new information pertaining to the latest version of MS-DOS from GRiD® Systems: Release 3.21. The information contained in this document supplements the information found in the *MS-DOS Reference: Release 3.2*.

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SUMMARY OF CHANGES

The following summary describes the changes and additions to the *MS-DOS Reference: Release 3.2*. These changes are described in detail following the summary.

EMM.SYS	Expanded Memory Manager device driver that provides access to expanded memory if it is installed in your computer
GRIDSCAN.EXE	New utility that displays information on your GRiD computer hardware configuration (replaces SCANCASE)
FDISK.EXE	Enhanced to support multiple MS-DOS partitions on hard disks, to allow you to specify that there be no active partitions, and to support up to four hard disks
FORMAT.EXE	Enhanced to format high density (1.44 Mbyte) and low density (720 Kbyte) 3-1/2" diskettes in 1.44 Mbyte diskette drives
FORMATLD.BAT	A new batch file that automatically supplies the correct parameters to format low density 3-1/2" diskettes in high (1.44 Mbyte) or low (720 Kbyte) density diskette drives
LOWPOWER.SYS	A new device driver that causes your GRiD computer to beep when battery power becomes nearly exhausted
MODE.EXE	Enhanced with five new options to control memory usage, processor speed, color mapping, screen backlighting, and display hardware power. Additionally, changes have been made to the operation of some of the existing options.
PCMASTER.SYS / PCSLAVE.EXE	Enhanced to speed up data transfer between your GRiD laptop computer and a desktop computer
SERVER.EXE	Enhanced to support more modem choices for a PhoneLink connection to a GRiD Server™

EMM.SYS

EMM.SYS is a device driver that you must install on your system to take advantage of expanded memory, if you have that option installed on your 8086- or 80286-based GRiD computer. The Expanded Memory Manager driver (EMM.SYS) is fully compatible with the Lotus/Intel/Microsoft Expanded Memory Specification (EMS). Using the EMM.SYS driver, programs written to use EMS, such as InteGRiD and Lotus 1-2-3, can access it. You can also use EMS memory as a RAM disk.

To install the EMM.SYS driver on your system you must create a CONFIG.SYS file on your start-up disk that contains the following statement (or add it to an existing CONFIG.SYS):

```
DEVICE = EMM.SYS [/d]
```

For instructions on creating or modifying a CONFIG.SYS file, see Chapter 5 in the *MS-DOS Reference*.

The optional /d switch causes the EMM.SYS driver to perform additional memory diagnostics when it is loaded. Each page of EMS memory is checked for errors. Note that these additional memory diagnostics may require a minute or two to perform.

NOTE: If you are using EMS as a RAM drive, the DEVICE=EMM.SYS statement must precede the DEVICE=RAMDRIVE.SYS /a statement in the CONFIG.SYS file.

Programs that use EMS will automatically do so if you have correctly installed the EMM.SYS driver. GRiD application programs running under InteGRiD are loaded into EMS memory. This leaves main memory available for data and allows you to "window" many more applications than would be possible using main memory alone. For more information about the InteGRiD operating environment, refer to the *InteGRiD Software* manual. For more information on how other MS-DOS applications use EMS, refer to the documentation provided with those programs.

GRiDSCAN.EXE

GRIDSCAN.EXE is a new utility that replaces SCANCASE.EXE. GRIDSCAN.EXE displays information about your GRiD computer hardware configuration. The following information is included:

- System BIOS date
- Processor type
- Coprocessor type, if installed
- Amount of RAM installed
- Amount of expanded or extended memory installed
- Type and size of internal and external diskette drives
- Types of other external devices attached
- Modem type and PROM checksum, if installed
- Serial port number (COM1 or COM2)
- Color mapping method
- Keyboard firmware date

Additionally, detailed information on the ROMs installed in your computer is displayed. For each ROM slot this includes ROM part number, type, checksum, and capacity.

FDISK.EXE

The FDISK hard disk-partitioning utility has been enhanced to support multiple MS-DOS partitions, to allow no active partitions, and to support up to four hard disks.

Each hard disk can have up to two MS-DOS partitions: a primary partition (PRI DOS) and an extended partition (EXT DOS). The primary partition is the bootable paritition; you cannot boot from the extended partition, and it can be created only if a primary partition already exists on the disk. Similarly, you can't delete the primary partition without first deleting the extended partition, if it exists. Each partition can be no larger than 32 Mbytes.

The device letters that MS-DOS assigns to primary and extended partitions on the same hard disk are contiguous. For example, if the primary partition is assigned C, the extended partition is assigned the following letter, D.

When you create the first MS-DOS partition on a hard disk, that partition is automatically set as the primary partition and as the "active" partition. You can use the Change Active Partition option to select a different active partition (for example, GRiD-OS) or to make no partitions active. Remember that the active partition is the partition that the system uses to boot from when starting-up from a hard disk. If no partitions are active the system prompts you to select a partition when booting.

One additional change to FDISK is that you are no longer prompted for a starting cylinder number when creating a partition. FDISK automatically selects the next available cylinder as the starting cylinder of a new partition.

NOTE: An extended DOS partition created under GRiD MS-DOS 3.21 is only recognized when your computer is booted under GRiD MS-DOS version 3.21 or later. The extended partition is not recognized under earlier versions of MS-DOS (3.2, 2.11, etc.).

FORMAT.EXE

The FORMAT utility has been enhanced to support high density 1.44 Mbyte 3-1/2" diskette drives. When you specify FORMAT without the /N switch for a high density 3-1/2" drive, it defaults to formatting a high density (1.44 Mbyte) diskette. To format a low density (720 Kbyte) diskette in a high density drive, use the supplied batch file, FORMATLD.BAT, or specify the FORMAT command as follows:

```
FORMAT a: /N:9
```

Two new switches that are valid for all types of disks and drives have been added to FORMAT:

/N:xx Specifies the number of sectors per track. This defaults to 18 for high density 3-1/2" drives, and 9 for low density 3-1/2" drives and 5-1/4" drives. To format a low density (720 Kbyte) 3-1/2" diskette in a high density drive, you must specify /N:9.

/T:yy Specifies the number of tracks per side of the disk. This defaults to 80 for both high and low density 3-1/2" drives, and 40 for 5-1/4" drives.

NOTE: If you accidentally format a low density (720 Kbyte) diskette as a high density diskette, it may appear to work correctly, but you may have problems reading and/or writing to the diskette in normal use, resulting in lost data. It is very important not to make this mistake. Use the FORMATLD.BAT batch file when formatting low density 3-1/2" diskettes.

High density floppy drives can read and write both high and low density diskettes, but if you try to read or write a high density diskette in a low density drive, you'll get the error message, "Read fault error reading drive *x*".

FORMATLD.BAT

FORMATLD.BAT is a batch file that automatically supplies the correct parameters to format low density 3-1/2" diskettes in high (1.44 Mbyte) or low (720 Kbyte) density diskette drives.

To protect yourself against possible data loss as a result of incorrect formatting, you should use this batch file to format low density 3-1/2" diskettes. To use this batch file to format a low density diskette in drive A, for example, specify the following command:

```
FORMATLD a:
```

You can also add any of the standard FORMAT switches such as /S or /V to the end of the command line.

LOWPOWER.SYS

LOWPOWER.SYS is a device driver that causes your GRiD computer to beep when battery power becomes nearly exhausted. A set of 3 short beeps begins to sound at the same time that the low power light illuminates. The beeps continue to sound about once every 15 seconds until power is exhausted.

Depending on how your computer is configured and how you are using it, when the beeps begin to sound you can have as little as 1 minute or as much as 10 minutes of battery power left. You should save your data immediately and supply AC power to your computer, or turn off the computer and insert a fully charged battery pack.

MODE.EXE

The MODE command has been enhanced with five new options to control memory usage, processor speed, color mapping, screen backlighting, and display hardware power. Additionally, changes have been made to the operation of some of the existing options. In the following paragraphs, the changes are listed first, followed by the new options.

MODE Option 6—Switching On Serial Port

MODE SERIAL = [ON | OFF]

On some GRiD computers (such as the GRiDCase® 1500 Series™) the serial port cannot be turned off. If you try to turn it off, MODE displays an error message.

MODE Option 7—Switching On Internal Modem

MODE MODEM = [ON | OFF] [,addressSwitch] [,ON | OFF]

The first ON | OFF parameter is no longer required, it is optional.

On some GRiD computers (such as the GRiDCase 1500 Series) the internal modem, if installed, cannot be turned off. If you try to turn it off, MODE displays an error message.

MODE Option 8—Setting Cursor Appearance

MODE [LINE | BLOCK] [,BLINK | NOBLINK]

The BLINK | NOBLINK parameter is not supported on some GRiD computers (such as the GRiDCase 1500 Series and the GRiDLite Plus™). If you specify this parameter where it is not supported, MODE displays an error message,

MODE Option 10—Setting Font and Reverse Video

MODE FONT = [1 | 2 [3 | 4]] [,RVON | RVOFF]

On some models of GRiD computers (GRiDCase 1200 and 1300 series and GRiDLite™), the first parameter can be set to either 1 or 2 to make characters on the screen appear thick or thin, respectively. The second parameter turns reverse video on or off.

On other models of GRiD computers (GRiDCase 1500 Series and GRiDLite Plus), the first parameter selects an international character set instead of changing the character thickness. On these computers, specify the first parameter as follows:

1 English character set
2 French Canadian character set
3 Norwegian character set
4 Hebrew character set

The second parameter (RVON | RVOFF) is not supported on these computers.

MODE Option 11—Setting the ROM Device Letter

MODE ROM = d | OFF

The *d* parameter specifies a device letter. ROMs can be appended to any device. If you specify the first hard disk on your system, this setting is saved, even when the computer is powered off. If you select any other device, this setting is reset to drive A every time the computer is rebooted.

MODE Option 12—Setting Internal or External Display

Option 12 of the MODE command is a new option that provides the capability to select the current display on those GRiD computers that cannot display information on the internal screen and an external monitor at the same time. Specify option 12 as follows:

MODE GRID | CRT

The initial setting is GRID. If you select GRID, all screen output is displayed on the internal GRiD display. If you select CRT, all screen output is displayed on the external monitor.

MODE Option 13—Configuring Additional Memory

Option 13 of the MODE command is a new option on 80286-based GRiD computers that provides the capability to configure memory beyond 640 Kbytes as EMS (Lotus/Intel/Microsoft Expanded Memory Specification) memory or as extended memory. Extended memory is not currently supported under MS-DOS, and is only accessible using the protected mode of the 80286 microprocessor; it is currently used only by the XENIX operating system.

After changing the memory configuration, you must reboot your computer for it to take effect. The setting you choose, however, is maintained even when the computer power is off.

Specify option 13 as follows:

MODE MEM = EMS | EXT

The initial setting is EMS. If you select EMS, memory beyond 640 Kbytes is configured as EMS memory. If you select EXT, memory beyond 640 Kbytes is configured as extended memory.

InteGRiD and MS-DOS application users should generally choose EMS memory. InteGRiD makes optimal use of EMS memory if it is available, and many MS-DOS applications now support EMS memory. See the documentation on your application for specific details.

NOTE: If you configure extra memory as EMS memory, you must install the EMM.SYS driver to take advantage of it. See the section EMM.SYS, above, for details.

MODE Option 14—Setting Processor Speed

Option 14 of the MODE command is a new option that switches the processor between fast and slow speeds on GRiD computers that have multi-speed processors. Specify option 14 as follows:

MODE SPEED = FAST | SLOW

The initial setting is FAST. If you select FAST, the processor immediately begins operating at its high speed. If you select SLOW, the processor immediately begins working at its slow speed. If some programs don't seem to work properly at the higher speed, try switching to the slow speed.

Note that you can also switch between fast and slow processor speeds using the keystrokes **Ctrl-Alt-Fn-↑** and **Ctrl-Alt-Fn-↓**, respectively.

MODE Option 15—Setting Color Mapping

Option 15 of the MODE command is a new option that sets color mapping on the internal monochrome display. Some programs designed for color displays may be more readable with a color mapping mode other than the default. This MODE Option is only available on some models of GRiD computers (such as GRiDLite Plus and the GRiDCase 1500 Series).

Specify option 15 as follows:

MODE COLORMAP = n

The *n* parameter specifies color mapping mode 1, 2, 3, 4, 5, or 6. The initial setting is mode 1. The six color mapping modes are explained in the following table.

	Mode					
Color	1	2	3	4	5*	6*
Black	off	off	off	off	off	off
Blue	off	2/3	2/3	off	full	full UL
Green	2/3	2/3	1/3	1/3	full	full
Cyan	2/3	2/3	1/3	1/3	full	full
Red	1/3	1/3	2/3	2/3	full	full
Magenta	1/3	1/3	2/3	2/3	full	full
Brown	full	full	full	full	full	full
White	full	full	full	full	full	full

Legend: off = nothing displayed
1/3 = one third brightness
2/3 = two thirds brightness
full = full brightness
full UL = full brightness and underlined

*If the background color is white, modes 5 and 6 display in inverse video (black is full brightness and all other colors are off).

Note that you can also switch among the color mapping modes using the keystrokes **Ctrl-Alt-Fn-←** or **Ctrl-Alt-Fn-→**. These keystrokes simply cycle through each of the color mapping modes in order.

MODE Option 16—Controlling Screen Backlighting

Option 16 of the MODE command is a new option that controls the screen backlighting for those GRiD computers with backlit screens. Specify option 16 as follows:

MODE BACKLITE = [ON | OFF] | [n]

Specify either ON or OFF, or the *n* parameter, a number of minutes from 1 to 60. The initial setting is 2. On backlit computers, the backlighting automatically turns off when there have been no keys pressed for the specified number of minutes. Specify ON to turn the backlighting on until you change this setting or reboot the computer. Specify OFF to turn the backlighting off until you change this setting or reboot the computer.

MODE Option 17—Controlling Display Hardware Power

Option 17 of the MODE command is a new option that switches power off or on to the internal display hardware. If you are using an external monitor that is not plugged into the RGB port, but instead is plugged into an expansion card, you will probably need to turn off the internal display hardware. The internal display hardware conflicts with external monitor cards.

Specify option 17 as follows:

MODE DISPLAY = ON | OFF

The initial setting is ON. Specify ON to turn the internal display hardware back on if you are no longer using an external monitor plugged into its own card. Specify OFF to turn off the internal display hardware if you are using an external monitor that is plugged into its own card (not the RGB port). If your external monitor is plugged into the RGB port, you shouldn't turn off the display hardware.

PCMASTER.SYS / PCSLAVE.EXE

This GRiD file transfer utility has been enhanced so that it operates 12 times faster. It now operates at a transfer rate of 115,200 bits per second (the previous rate was 9600 bits per second).

When installing the PCMASTER.SYS device driver in the CONFIG.SYS file, you can specify the data transfer speed in addition to the serial port. The syntax is as follows:

DEVICE = PCMASTER.SYS [1 | 2] [,9600 | 115200]

The first parameter specifies the serial port to use for the transfer (COM1 or COM2). The initial setting depends on the model of your GRiD computer; for GRiD 1500 Series computers the default is COM2, otherwise it is COM1. The second parameter specifies the data transfer rate, in bits per second. The initial setting is 115200 bits per second. You may want to use the slower data rate if you find errors occurring during the transfer.

NOTE: If the master and slave stations have different versions of MS-DOS, the master station must be running GRiD MS-DOS version 3.21 or later, even if the slave station has a more recent version of non-GRiD MS-DOS or PC-DOS.

SERVER.EXE

The SERVER command has been enhanced to support more choices for the Modem Type item when using PhoneLink to connect to a GRiD Server. The following table lists the available modem type choices and describes when to use them.

Modem Type	Description
GRiD internal	For a GRiD computer using the built-in modem.
Hayes 1200	For any computer using an external or internal (card-type) Hayes SmartModem 1200 or 100% compatible modem.
Hayes 2400	For any computer using an external or internal (card-type) Hayes SmartModem 2400 or 100% compatible modem.
USRobotics 2400	For any computer using an external or internal (card-type) USRobotics Courier 2400 or 100% compatible modem.
External manual	For any computer using an external manual-dial modem.