Service Reference Card

HP dx5150 Series Personal Computers

Key Specifications

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Processor Type:	AMD Athlon 64, AMD Sempron
RAM Type:	PC3200 DDR-SDRAM, 400 MHz, non-ECC
Maximum RAM Supported:	Up to 4 GB
Expansion Bus:	PCI 2.3 and PCI Express
Graphics:	Integrated graphics & PCI Express expansion capability
Hard Drive Interface:	SATA (up to 7200 rpm)
I/O Interfaces:	Serial, parallel, USB 2.0 (8), PS/2 (2), RJ-45, VGA, DVI-D, Audio-In, Audio-Out (2), Mic In (2)

System Setup and Boot

Basic system information regarding file, storage, security, and power configuration is maintained in the Setup Utility held in the system ROM. The Setup Utility is accessed by pressing the **F10** key during the boot sequence. If you do not press the **F10** key at the appropriate time, you must restart the computer and press and hold the **F10** key again to access the utility.

Computer Setup Menu

Heading	Option	Description
System Information	Displays	Product Name, Processor Type, Cache Size, Memory Size, System ROM, Integrated MAC, UUID, System Serial #, Asset Tag.
Standard CMOS Features	Date (mm:dd:yy)	Allows you to set system date.
	Time (hh:mm:ss)	Allows you to set system time.
	• PATA IDE Channel 0 Master & Slave • SATA IDE Channel 1 & 2 Master	For each, allows you to: • enable/disable auto detection of HDD size & head. • set IDE to: None; Auto, Manual. • set access mode to: CHS, LBA, Large, Auto.
	Drive A	Allows you to set Drive A to Disabled or Auto.
	Floppy 3 Mode Support	Disables/sets diskette drive support to Drive A.
	Halt On	Allows you to set at: All Errors, No Errors, All but Keyboard, All but Diskette, All but Diskette/Keybd.
	POST Delay	Allows you to set a POST delay.
Advanced BIOS Features	Removable Device Boot Priority	Allows you to specify the order in which attached devices are checked for a bootable OS image.
	Hard Disk Boot Priority	Allows you to specify the order of attached hard drive devices. The first drive in the order has priority in the boot sequence and is recognized as drive C.
	CD-ROM Boot Priority	Allows you to specify the order in which attached CD-ROM drives (including USB ODD) are checked for a bootable operating system image.
	Network Boot Priority	Allows you to specify the order in which network devices (including UP NIC cards) are checked for a bootable operating system image.
	Quick Power On Self Test	Enables/disables the system to skip certain tests while booting. Enabling this feature decreases the time required to boot the system.
	• First Boot Device • Second Boot Device • Third Boot Device • Fourth Boot Device	Allows you to specify which devices will boot first, second, third, and fourth. **NOTE**: MS-DOS drive lettering assignments may not apply after a non-MS-DOS operating system has started.
	Boot Up NumLock Status	Allows you to set the default NumLock status on or off.
	APIC Function	Enables/disables the APIC support.
	MPS Version Ctrl for OS	Allows you to set the MPS version for the OS.
	HDD SMART Function	Enables/disables SMART capability on the HDD.
	BIOS Write Protection	Enables/disables BIOS write protection.
Advanced Chipset Features	Internal Video Mode	Disables/selects internal video mode.
	AGP Aperture Size	Allows you to set the AGP aperture size.
	UMA Frame Buffer Size	Allows you to set the size of UMA frame buffer.
	Video Display Devices	Allows you to select the video display devices.
	Auto Detect PCI Clk	Enables/disables PCI Clk auto detection.
	Spread Spectrum	Enables/disables spread spectrum.
Integrated Peripherals	South OnChip IDE Device	Allows you to enable/disable IDE devices.
	South OnChip PCI Device	Allows you to: • enable/disable: Onboard AC97 Audio. • select: SATA Disabled, IDE Controller (non-RAID), RAID Controller. • enable/disable: Onboard LAN, Onboard LAN Boot ROM.
	Init Display First	Allows you to select the primary VGA source.
	Surroundview	Allows you to enable/disable Surroundview only if PCI-E GFX add-on card is ATI. Provides support for up to three independent monitors.

Computer Setup Menu *(Continued)*

Heading	Option	Description
Integrated Peripherals (*continued*)	OnChip USB Controller	Enables/disables the USB controller.
	Front Panel USB Port	Enables/disables the front panel USB ports.
	Onboard FDC Cntroller	Enables/disables onboard FDC controller.
	Onboard Serial Port	Allows you to disable or select setting for the onboard serial port.
	Onboard Parallel Port	Allows you to disable or select setting for the onboard parallel port.
	Parallel Port Mode	Allows you to select parallel port mode.
	ECP Mode Use DMA	If Parallel Port Mode is set to ECP or ECP+EPP, allows you to set the ECP Mode Use DMA to 1 or 3.
Power Management Setup	ACPI Function	Enables/disables ACPI functions.
	ACPI Suspend Type	Allows you to set type of ACPI suspend.
	After AC Power Loss	Allows you to select: Last State, On, Off.
	PowerOn by PCI Card	Enables/disables ability to power on by PCI card.
	AMD Cool'n'Quiet	Allows you to set the AMD Cool'n'Quiet to auto or to disable it.
	RTC Alarm Resume	Enables/disables resumption of RTC alarm.
	Date (of Month)	If RTC Alarm Resume enabled, allows you to select the day of the month for resumption of RTC alarm.
	Resume Time (hh:mm:ss)	If RTC Alarm Resume is enabled, allows you to select what time the RTC alarm will resume.
PnP/PCI Configuration	Reset Configurations Data	Enables/disables automatic reconfiguration. Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup, if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
	Resources Controlled By	Allows you to select whether resources are controlled automatically or manually. BIOS can automatically configure all the boot and Plug-and-Play-compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.
	IRQ Resource: IRQ-3, 4, 5, 7, 10, 11, 12, 14, 15 assigned to	When resources are controlled manually, allows you to assign each system interrupt a type, depending on the type of device using the interrupt. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
	PCI/VGA Palette Snoop	Enables/disables PCI/VGA palette snoop.
	Assign IRQ for VGA	Enables/disables ability to assign IRQ for VGA.
	Assign IRQ for USB	Enables/disables ability to assign IRQ for USB.
PC Health Status	System Information	Lists: CPU Temperature, System Temperature, CPU Fan Speed, System Fan Speed.
Load Optimized Defaults		Allows you to reset Computer Setup to factory defaults.
Set Supervisor Password		Allows you to establish a password to control access to Computer Setup.
Set User Password		Allows you to establish a password to control access to the computer.
Save & Exit Setup		Allows you to save current settings and exit Computer Setup.
Exit Without Saving		Allows you to exit Computer Setup without saving changes.

NOTE: Support for Computer Setup options may vary depending on hardware configuration.

FailSafe Boot Block ROM

The FailSafe Boot Block ROM allows for system recovery in the event of a ROM flash failure. The computer comes with a reprogrammable flash system ROM. To upgrade the ROM:

- Order an upgraded ROMPaq diskette or CD from HP, or

- Download the latest ROMPaq images from the HP Web site (www.hp.com).

All ROMPaq ROM images from HP are digitally signed to ensure authenticity and minimize potential corruption. Your system ROM includes a Failsafe Boot Block that is protected during the flash process and allows the computer to be restarted during an unsuccessful ROM flash.

If the computer detects an invalid system ROM during the boot sequence, the System Power LED blinks red 8 times, 1 every second, followed by a 2 second pause. The computer also beeps 8 times. To recover from the Boot Block recovery mode complete the following steps:

1. Remove any diskettes or CDs from the drives and turn off power.
2. Insert a ROMPaq diskette or CD into the drive and turn on the computer.
3. Enter the supervisor password. If the computer successfully starts and reprograms the ROM, the three keyboard lights will turn on, and you will hear a rising tone series of beeps.
4. Remove the diskette or CD, and then turn power off and on to restart the computer.

Security Functions

The computer offers two independent passwords for computer and data protection. The **User** password protects the computer from unauthorized access by prompting the user for a password during power up. The **Supervisor** password protects the computer from unauthorized or inadvertent reconfiguration by prompting the user for a password prior to entering Computer Setup. You can also use the Supervisor password as an override to the User password.

To establish a User or Supervisor password:

NOTE: If the system is equipped with an embedded security device, refer to *HP ProtectTools Embedded Security Guide* on the *Documentation CD*.

1. Turn on or restart the computer. In Windows, click **Start > Shut Down > Restart.**
2. As soon as the computer is turned on, press and hold the **F10** key until you enter Computer Setup. Press **Enter** to bypass the title screen, if necessary.
3. Select either **Set Supervisor Password** or **Set User Password** and enter the password.
4. To save the password and exit Computer Setup, click **File > Save Changes and Exit**.

To change or delete a User or Supervisor password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart.**

2. When the **Enter Password** box displays, type the current User password, if required, and then press **Enter**.

3. Press and hold the **F10** key until you enter Computer Setup. Press **Enter** to bypass the title screen, if necessary.

4. When the **Enter Password** box displays to access Computer Setup, type the current Supervisor password, if required, and then press **Enter**.

5. Select either **Set Supervisor Password** or **Set User Password**.

6. If you want to change the password, when the **Enter Password** box displays, type the new password, and then press **Enter**.

7. If you want to delete the password, when the **Enter Password** box displays, press **Enter** instead of entering the new password. This deletes the current password.

8. To save changes and exit Computer Setup, click **File > Save Changes and Exit**.

To disable or clear the User or Supervisor passwords:

1. Shut down the operating system properly, then turn off the computer and any external devices, and disconnect the power cord from the power outlet.

2. Press the power button again to drain the system of any residual power.

3. Remove the access panel.

4. Locate the header and jumper.

    NOTE: The password jumper is green so you easily identify it. For assistance locating the password jumper and other system board components, see the system's Illustrated Parts Map (IPM). You can download IPMs from www.hp.com/support.

5. Remove the jumper from pins 1 and 2. Place the jumper on pins 2 and 3.

6. Replace the access panel and reconnect external equipment.

7. Plug in the computer and turn on power. Allow the operating system to start.

8. To establish new passwords, repeat steps 1 through 4, replace the password jumper on pins 1 and 2, then repeat steps 6 through 8. Establish the new passwords in Computer Setup. Refer to the *Computer Setup (F10) Utility Guide* on the *Documentation CD* for Computer Setup instructions.

To clear CMOS:

1. Power down the computer and disconnect the power cord from the AC outlet.

    NOTE: The CMOS button will not clear CMOS if the power cord is connected.

2. Remove the access panel.

3. On the system board, slide and hold the CMOS switch for 5 seconds after the standby LED turns off.

4. Replace the access panel and reconnect the power cord.

NOTE: You will receive POST error messages after you clear CMOS and reboot that indicate that configuration changes have occurred. Use Computer Setup to reset passwords and any special system setups along with the date and time.

Security Features

Feature	Description
Supervisor Password	Allows you to set and enable Supervisor (administrator) password. **NOTE**: If the Supervisor password is set, you must enter it to change Computer Setup [1] options, flash the ROM, and make changes to certain plug and play settings under Windows. See the *Troubleshooting Guide* on the *Documentation CD* for more information.
User Password	Allows you to set and enable a User password. **NOTE**: If the User password is set, you must enter it to access the computer. See the *Troubleshooting Guide* on the *Documentation CD* for more information.
Device Security	Enables/disables serial ports, parallel port, front USB ports, system audio, and network controllers.
Network Service Boot	Enables/disables the computer's ability to boot from an operating system installed on a network server. (Feature available on NIC models only; the network controller must reside on the PCI bus or be embedded on the sys bd.)
System IDs	Allows you to set: • Asset tag (18-byte ID) and ownership Tag (80-byte ID displayed at POST). • Chassis serial number or Universal Unique Identifier (UUID) number. You can update the UUID only if the current chassis serial number is invalid. • Keyboard locale setting (i.e., English or German) for System ID entry.
Master Boot Record Security	Allows you to enable or disable Master Boot Record (MBR) Security. When enabled, the BIOS rejects all requests to write to the MBR on the current bootable disk. Each time the computer is powered on or rebooted, the BIOS compares the MBR of the current bootable disk to the previously-saved MBR. If the BIOS detects changes, it allows the option of saving the MBR on the current bootable disk, restoring the previously-saved MBR, or disabling MBR Security. You must know the supervisor password, if one is set. **NOTE**: Disable MBR Security before intentionally changing the formatting or partitioning of the current bootable disk. Several disk utilities (such as FDISK and FORMAT) attempt to update the MBR. If MBR Security is enabled and disk accesses are being serviced by the BIOS, write requests to the MBR are rejected, causing the utilities to report errors. If MBR Security is enabled and the operating system is servicing disk accesses, BIOS detects MBR changes during the next reboot and displays an MBR Security warning message.

NOTE: Support for security features varies depending on computer configuration.
[1] For more information about Computer Setup, see the *Computer Setup (F10) Utility Guide* on the *Documentation CD*.

Diagnostic Functions

Diagnostic functions are provided by the Setup Utility (in system ROM) and by Diagnostics for Windows. The Diagnostics for Windows utility is a component of Intelligent Manageability that allows you to view information about the hardware and software configuration of the computer while running Microsoft Windows. It also allows you to perform hardware and software tests on the subsystems of the computer.

Diagnostics for Windows provides detailed system information including:

- Processor type and speed
- Memory amount, mapping, and integrity
- Hardware peripheral availability/settings
- Hard drive type, space used/available
- System identification, asset tracking

Diagnostic Functions (*continued*)

When you invoke Diagnostics for Windows, the current configuration of the computer is shown in the Overview screen. This screen provides access to several categories of information about the computer and the **Test** tab. You can print or save the information in every screen of the utility to a file. Diagnostics for Windows may be preinstalled on some models and can be downloaded from www.hp.com/support/files.

Computer Diagnostic LEDs (front of computer)

LED Color	Activity	State/Message
Green	On	Computer on (normal operation).
Green	1 blink/2 seconds	Suspend Mode.
Green	1 blink/2 seconds	Suspend to RAM.
Red	2 blinks, 1 second apart	CPU thermal shutdown.
Red	3 blinks, 1 second apart	CPU not installed.
Red	4 blinks, 1 second apart	Power supply overload.
Red	5 blinks and beeps, 1 second apart*	Pre-video memory error.
Red	6 blinks and beeps, 1 second apart*	Pre-video graphics error.
Red	7 blinks and beeps, 1 second apart*	System board failure.
Red	8 blinks and beeps, 1 second apart*	Invalid ROM.
Red	9 blinks and beeps, 1 second apart*	System powers on unable to boot.
Red	10 blinks and beeps, 1 second apart*	Bad option card.

*Blinks repeated after 2 second pause. Beeps stop after 5 iterations.

Common POST Error Messages

Screen Message	Probable Cause	Recommended Action
BIOS ROM checksum error– System halted	The checksum of the BIOS code in the BIOS chip is incorrect, indicating that the BIOS code may be corrupt.	Contact your system dealer to replace the BIOS.
CMOS battery failed	The CMOS battery is no longer functional.	Contact your system dealer for a replacement battery.
CMOS checksum error—Defaults loaded	Checksum of CMOS is incorrect, so the system loads the default equipment configuration. A checksum error may indicate that CMOS is corrupt. A weak battery can cause this error.	Check the battery and replace, if necessary.
CPU at nnnn	Displays running speed of CPU.	None.
Press ESC to skip memory test		The user may press **Esc** to skip the full memory test.
HARD DISK INSTALL-FAILURE	Cannot find or initialize the hard drive controller or the drive.	Make sure the controller is installed correctly. If no hard drives are installed, be sure the **Hard Drive** selection in Setup is set to NONE.
Keyboard error or no keyboard present	Cannot initialize the keyboard.	Make sure the keyboard is attached correctly and no keys are pressed during POST. To purposely configure the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. The BIOS then ignores the missing keyboard during POST.
Memory Test:	This message displays during a full memory test, counting down the memory areas being tested.	None.
Memory test fail	If POST detects an error during memory testing, additional information appears giving specifics about the type and location of the memory error.	Shut down the system, reseat the DIMMs, and reboot the system. If the problem persists, contact the system dealer for a replacement.
Override enabled– Defaults loaded	If the system cannot boot using the current CMOS configuration, BIOS can override the current configuration with a set of BIOS defaults for the most stable minimal performance system.	None.
Error: Non-System disk or disk error Replace and press any key when ready	The BIOS was unable to find a suitable boot device. This may mean an uninitialized or corrupt ATA flash.	Shut down the system, ensure that the power and data cables of all storage devices are plugged in properly, and reboot the system. If the problem persists, contact an authorized service center for assistance.
Warning: CPU fan has failed	CPU fan weak (RPM < 1000) or not turning.	Ensure that the CPU fan power cable is connected. If the problem persists, contact an authorized service center.
Warning: System Fan has failed	System fan weak (RPM < 1000) or not turning.	Ensure the system fan power cable is connected. If the problem persists, contact an authorized service center.
Memory is running at Single Channel Mode	When two same size memories are put in slot 1 and 3, this message displays.	For optimal performance, shut down the system and move the second DIMM from the XMM3 to the XMM2 socket.
Memory is in 64 bit mode. Move memory modules to slots 1 and 2 for best performance.	When two of the same size/density memories are inserted into slot 1 and 3, this message displays.	For optimal performance, shut down the system and move the memory modules to the XMM1 and XMM2 sockets.
Warning: Bad memory config. Move memory module(s) to slot 1 (and slot 2).	Found DIMM3 alone, or DIMM3 and DIMM4 are populated when DIMM1 is alone, or DIMM1 and DIMM2 are not populated.	Shut down the system and move memory modules to XMM1 and XMM2 sockets.
Warning: Memory configuration is not supported. Please see user documentation for recommended memory configs.	Found unsupportable memory configuration. Configure to boot at DDR333, the smallest DIMM size available in 64bit mode.	Consult the user documentation to determine recommended memory configurations. Then shut down the system and move the memory to an appropriate configuration.