Service Reference Card

HP Compaq dx2200 MT Series Business PC

Key Specifications

Processor Type:	Intel Celeron D or Pentium 4
RAM Type:	DDR PC2 5300, non-ECC
Maximum RAM Supported:	2GB
Expansion Bus:	PCI 2.2
Graphics Adapter	Integrated controller. PCI-e support.
Hard drive interface:	SATA 1.5 Gb/s
I/O Interfaces:	Serial (1), parallel (1), USB 2.0 (6), diskette drive (1)

System Setup and Boot

Basic system information regarding system information, setup, power management, hardware, and passwords is maintained in the Setup Utility held in the system ROM. The Setup Utility is accessed by pressing the F10 key when prompted (on screen) to do so during the boot sequence. If the screen prompt opportunity is missed, a restart will be necessary.

Computer Setup Menu

Heading	Option / Description
System Information	Lists the following main system specifications: • Product Name • SKU number • Processor Type • Processor Speed • CPU ID/Patch ID • Cache Size • Memory Size • System ROM • Integrated MAC Address • UUID • System serial number • Asset tracking number • Asset tag number
Standard CMOS Setup	Date (mm/dd/yy) - Allows you to set system date.
	Time (hh:mm:ss) - Allows you to set system time.
	PATA Controller - Disables/enables PATA controller
	PATA Ch 0 Master/PATA Ch 0 Slave - Allows you to detect IDE HDD size in selected channel, set access mode on selected channel, view firmware version, and capacities, run SMART HDD status, and perform various SMART tests.
	SATA Controller - Disables/enables onboard SATA controller.
	SATA Ch 1 Master/SATA Ch 2 Master - Allows you to detect HDD size in selected channel, set extended drive on selected channel, set access mode on selected channel, view firmware version, and capacities, run SMART HDD status, and perform various SMART tests.
	Floppy Controller - Disables/enables floppy drive controller.
	Drive A - allows you to set floppy drive to None or 1.44, 3.5 in.
	Halt On - Allows you to set POST error behavior.
	POST Delay - Allows you to set a POST delay to 0, 5, 10, 15, or 30 seconds.
Advanced BIOS Features	Device Boot Disabling - Allows you to restrict a device from booting.
	F9 Boot Menu - Disables/enables F9 Boot Menu.
	Removable Device Boot Priority - Allows you to specify the order of attached removable devices in the boot sequence.
	Hard Disk Boot Sequence - Allows you to specify the order in which attached HDDs are booted.
	Optical Drive Boot Sequence - Allows you to specify the order in which attached ODDs are checked for a bootable operating system image.
	Network Boot Sequence - Allows you to specify the order in which network devices are checked for a bootable OS image.
	First, Second, Third, or Fourth Boot Device - Allows you to specify boot sequence or disable any of the three devices.
	Boot up Numlock Status - Allows you to turn the default feature on or off.
	Security Option - Allows you to set security to determine whether a password is needed for booting or when entering Computer Setup.
	APIC Mode - Disables/enables APIC.
	MPS Version Control for OS - Allows you to select 1.1 or 1.4 MPS table version.
	BIOS write Protection - Disables/enables ROM BIOS upgrading.
	Execute Disable Bit - Disables/enables Execute Disable Bit (XD) to prevent malicious buffer overflow attacks
	Enhanced Intel SpeedStep Technology - enables/disables processor SpeedStep technology.
	Hyper-Threading Technology - enables/disables processor Hyper-Threading technology.

Computer Setup Menu *(Continued)*

Heading	Option / Description
Advanced Chipset Features	UMA Frame Buffer - Allows you to select the Unified Memory Architecture (UMA) frame buffer size to 32MB, 64MB, or Auto.
	Init Display First (VGA Setting) - Allows you to set primary display device to PCI slot, OnChip VGA, or PCI-e.
	SURROUNDVIEW - Disables/enables SURROUNDVIEW (available when a PCI-e video card is installed.
	Auto Detect PCI Clk (VGA Setting)- Disables/enables PCI clock auto detection.
Integrated Peripherals	Onboard HD Audio - Disables/enables onboard HD audio.
	On-Chip USB Controller - Disables/enables USB controller.
	USB Legacy Support - Disables/enables USB keyboard and mouse.
	Onboard Audio - Allows you to auto-detect or disable onboard audio.
	Onboard LAN - Disables/enables onboard LAN controller.
	Onboard LAN Boot ROM- Disables/enables Boot ROM onboard on the LAN chip.
	Onboard Serial Port 1 - Allows you to select one of these settings: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, or 2E8/IRQ3.
	Onboard Parallel Port - Allows you to select one of these settings: Disabled, 378/IRQ7, 278/IRQ5, or 3BC/IRQ7.
	Parallel Port Mode - Allows you to set parallel port mode to SPP, EPP, ECP, ECP+EPP, or Normal.
	ECP Mode use DMA - If parallel port mode set to SECP or ECP+EPP, allows you to set DMA channel for ECP mode to 1 or 3.
Power Management Setup	After AC Power Loss- Allows you to select system power loss behavior to Last state, On, or Off.
	ACPI Suspend Type - Allows you to select system power loss behavior.
	External Modem S5 Wake-up - Disables/enables wake-up modem from S5.
	RTC Alarm Resume - Disables/enables RTC alarm.
	Date (of Month) Alarm - If resume by Alarm is enabled, allows you to select the day of the month to resume RTC alarm.
	Resume Time (hh:mm:ss) Alarm - If enabled, allows you to select what time the RTC alarm will resume.
PnP/PCI Configurations	Reset Configuration Data - Disables/enables automatic reconfiguration.
	Resources Controlled By - Allows you to select whether resources are controlled manually or automatically.
	IRQ Resources for IRQ 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. Allows you to assign each system interrupt a type depending on the device type using the interrupt.
	Maximum Payload Size - Allows you to set TLP payload size for the PCI-e devices to 128, 256, 512, 1024, 2048, or 4096 bytes.
PC Health Status	System Fan Fail Check - Disables/enables system fan detection during POST.
	Smart Fan Function - Disables/enables smart fan functionality.
	Current CPU Temperature - View.
	Current System Temperature - View.
	Current CPU Fan Speed - View.
	Current System Fan Speed - View.
	Vcore - View.
	+12V - View.
	VCC5 - View.
	+3.3V - View.
	VBAT (V) - View.
	3VSB (V) - View.
Load Optimized Defaults	Allows you to reset Computer Setup to factory defaults.
Set Supervisor Password	Allows you to set a password to control access to Computer Setup.
Set User Password	Allows you to set a password to control access to the Computer. (Supervisor password must already be set for this feature to enable,)
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.

Failsafe Boot Block ROM

The computer comes with a reprogrammable flash system ROM (read only memory). To upgrade the ROM, download the latest ROM BIOS image from the HP Web site (www.hp.com) and follow the online GUI/instructions.

All ROM BIOS 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 in the unlikely event of an unsuccessful ROM flash.

If the system detects an invalid system ROM during the boot sequence the system will search for a bootable device. To recover from the Boot Block recovery mode complete the following steps:

Boot Block Recovery

1. Remove any bootable media from the computer and turn off power.
2. Insert a bootable diskette, or CD containing the ROM BIOS.
3. Turn on power to the system.
4. The system will automatically flash the ROM, load the BIOS default, and then boot to the operating system.

Security Functions

The system offers both a supervisor and a user password for system and data protection.

- When the supervisor password is established it protects the computer from unauthorized or inadvertent re-configuration by prompting the user for a supervisor password prior to entering the Setup Utility.
- When the user password is established it prevents unauthorized users from gaining access to the computer when the device is turned on or restarted. (The supervisor password must be enabled before a user password can be established.)

Establishing a Supervisor Password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press the **F10** key until you enter Computer Setup. If you do not press **F10** when prompted, a restart will be necessary.
3. Select **Set Supervisor Password** and follow the instructions on the screen.
4. Before exiting, click **File > Save Changes and Exit**.

Establishing a User Password:

A supervisor password must have already been set before performing this operation.

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.
2. As soon as the computer is turned on, press the **F10** key until you enter Computer Setup. If you do not press **F10** when prompted, a restart will be necessary.
3. Select **Set User Password** and follow the instructions on the screen.
4. Before exiting, click **File > Save Changes and Exit**.

Changing a User or Supervisor Password:

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart the Computer**.
2. As soon as the computer is turned on, press the **F10** key until you enter Computer Setup. If you do not press **F10** when prompted, a restart will be necessary.
3. When the prompt appears, type your current password, then select the desired **Set...Password** item from the **F10** headings.
4. Enter the new password twice. Follow the instructions on the screen.
5. Press the enter key.

The new password will take effect the next time the computer is restarted.

Deleting a Password

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart the Computer**.
2. As soon as the computer is turned on, press the **F10** key until you enter Computer Setup. If you do not press **F10** when prompted, a restart will be necessary.
3. When the prompt appears, type your current password.
4. Press the **Enter** key then, select either **Set user** or **Set Supervisor Password** in the **F10** menu as described in the previous section.
5. When the prompt appears, press the **Enter** key twice. A message will appear advising you that the password has been disabled.

Clearing CMOS and All Passwords

This procedure

1. Shut down the system and disconnect the power cord from the power outlet.
2. Remove the chassis access panel.
3. On the system board, move the CMOS jumper from pins 2-3 to pins 1-2
4. Allow the jumper to remain in that position for at least 5 seconds then, return the jumper to pins 2-3.
5. Replace the chassis access panel and reconnect the power cord.
6. Turn on the computer and allow it to start.

Security Features

Feature	Purpose	How It Is Established
Floppy drive controller	Prevents the transfer of data to or from the floppy drive.	Setup Utilities
Device Boot Disabling	Prevents booting from and or all of these devices: Internal or external USB, Internal ODD, or Internal FDD	Setup Utilities
Security Option	Prevents use of computer until password is entered. Can apply to both initial startup and restart.	Setup Utilities
BIOS Write Protect	Restricts ability to change ROM BIOS without approval.	Setup Utilities.
USB Controller	Allows you to disable or enable all USB devices.	Setup Utilities

NOTE:
For more information about Setup Utilities refer to the Computer Setup Menu on the previous page or in the *Service Reference Guide*.

Diagnostic Functions

The following diagnostic functions are provided by the F10 Computer Setup Utility in the system ROM.

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

Error Conditions and Messages

Chassis Diagnostic LEDs

Power LED	Event
Steady green	System on (normal operation)
Off (clear)	Computer off
Blinks green @ 0.5 Hz	Suspend to RAM (some models)
Blinks green @ 0.5 Hz	Normal Suspend
Blinks green @ 0.25 Hz	System overheating
Blinks green 5 times @ 1 Hz *	Memory not seated/installed
Blinks green 6 times @ 1 Hz *	Graphics card error
Blinks green 8 times @ 1 Hz*	Invalid ROM

NOTE:
* Repeated after 2 second pause

Common POST Error Messages

Screen Message	Probable Cause	Recommended Action
Parity Error	Fatal memory parity error. System halts after displaying this message.	Reseat memory modules. Replace memory modules
... Master/... Slave Hard Disk Error	(Primary/Secondary) Master/Slave hard drive could not be initialized by the BIOS.	Reseat the device data and power cables. Replace the device data cable. Replace the device. Replace the system board.
...Master/Slave Drive — ATAPI Incompatible	Device configured as a (Primary/Secondary) Master/Slave failed an ATAPI compatibility test.	Replace the device. Replace the system board.
SMART capable but Command Failed. SMART Command Failed	BIOS unable to send a SMART message to the device.	Backup the data on the hard drive. Replace the hard drive.
SMART status Bad, Backup and replace. SMART Capable and Status Bad.	SMART capable hard drive detects an imminent failure.	Backup the data on the hard drive. Replace the hard drive.
DMA-1 Error DMA-2 Error DMA Controller Error	Error when initializing the DMA controller.	Reconnect the cables on the peripheral device. Replace the data cable. Replace the device. Replace the system board.
Checking NVRAM...Update Failed	BIOS could not write to the NVRAM block.	Change system board jumper JP2 to pins 2-3, then flash the system BIOS. Reset jumpers to 1-2. Replace the system board.
NVRAM Ignored or NVRAM Bad	NVRAM data used to store plug and play data was not used for system configuration in POST.	Restart computer, access Computer Setup. Select **Load Default Settings > Save and Exit**. Change system board jumper JP2 to pins 2-3, then flash the BIOS. Reset jumpers to 1-2.
NVRAM Checksum Bad, NVRAM Cleared	Error detected while validating NVRAM data.	Restart the computer, use the F10 Key to access Computer Setup, Select **Load Default Settings > Save and Exit**.
Microcode Error	BIOS could not find or load CPU microcode to update the CPU.	Ensure the system board BIOS supports the processor. Change system board jumper JP2 to pins 2-3, then flash the BIOS. Reset jumpers to 1-2.