Service Reference Card

HP Compaq d330 and d530 Series Personal Computers

Key Specifications

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Processor Type:	Intel Pentium 4 or Intel Celeron
RAM Type:	DDR PC2100, PC2700, or PC3200 non-ECC
Maximum RAM Supported:	up to 4 GB depending on the model
Expansion Bus:	PCI 2.2
Graphics Adapter*	Integrated controller, AGP support on select models
Hard drive interface:	UATA/100, SATA
I/O Interfaces:	Serial (2), parallel (1), USB 2.0 (6), diskette drive (1)

* All form factors EXCEPT the USDT include an AGP 2.0 (AGP 8x) slot.

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 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
File	System Information - Lists product name/type/speed/stepping, cache size, system ROM/version, installed memory size, system board revision, chassis serial number, integrated MAC for enabled or embedded NIC, and asset tracking number.
	About - Provides copyright information.
	Set Time and Date - Allows selection of system time and date.
	Save to Diskette - Saves system configuration, including CMOS, to a formatted, blank 1.44-MB diskette.
	Restore From Diskette - Restores factory default settings and clears all passwords.
	Set Defaults and Exit - Restores factory default settings and clears all passwords.
	Ignore Changes and Exit - Exits Computer Setup without applying or saving any changes.
	Save Changes and Exit - Saves changes to system configuration and exits Computer Setup.
Storage	Device Configuration - Lists all installed storage devices. The following options appear when a device is selected.
	Diskette Type (legacy diskette drives only) Identifies the highest capacity media type accepted by the diskette drive.
	Drive Emulation (IDE devices only) Selects drive type emulation for storage

Drive Type	Emulation Options
ATAPI Zip Drive	None (treated as other).
IDE Hard drive	No emulation available.
Diskette	None or hard drive.
IDE CD-ROM	None, diskette, or hard drive.
ATAPI LS-120	None (treated as other).
Other	None, CD, diskette, hard drive.

Heading	Option / Description
	Transfer Mode (IDE devices only) Specifies active data transfer mode: PIO, Max PIO, Enhanced DMA, Ultra DMA, and Max DMA.
	Translation Mode (IDE devices only) Selects translation mode to enable the BIOS to access disks partitioned and formatted on other systems and may be necessary for users of older versions of Unix. Options are: Bit-Shift, LBA Assisted, User, and None. **NOTE:** The translation mode automatically selected by BIOS should usually not be changed.
	Translation Parameters (IDE disk devices only) Allows you to specify disk parameters logical cylinders (max. of 1024), heads (max. of 256), and sectors per track (max. of 63) used by BIOS to translate disk I/O requests. Fields are visible and changeable only when drive translation mode is set to User.
	Multisector Transfers (IDE ATA devices only) Specifies how many sectors are transferred per multi-sector PIO operation. Options: Disabled, 8, and 16.
Options	Removable Media Boot. Enables/disables ability to boot system from removable media.
	Primary IDE Controller enable/disable.
	Secondary IDE Controller enable/disable
	Diskette MBR Validation enable/disable strict validation of the diskette Master Boot Record (MBR).
	DPS Self-Test - Allows execution of self-tests on IDE hard drives capable of Drive Protection System (DPS) tests.
	Controller Order - Allows selection of controller priority in the boot sequence. Not shown if all drives are connected to embedded IDE controllers

Continued

Computer Setup Menu *(Continued)*

Heading	Option / Description
Storage (Continued)	SATA Configuration (select models only). Allows selection of UATA and/or SATA controllers.
	For Windows 2K and XP, UATA and SATA are configurable as separate controllers. Depending on model, up to 4 UATA or 2 SATA devices may be accessed.
	For Window 98, and earlier OSs, UATA and SATA are configured as a combined controller. Depending on model, up to 2 UATA or 2 SATA devices may be accessed.
	Boot Order. Allows selection of boot order of installed mass storage devices (diskette, hard drive, CD-ROM, etc.).
Security	Setup Password - Enables setup (administrator) password.
	Power-On Password - Enables power-on password.
	Password Options (appears only if Power-On password is set) - Enable/disable password for warm boot.
	Smart Cover Lock (select models only) - Enables/disables Smart Cover Lock.
	Smart Cover Sensor (select models only) - Enables/disables Smart Cover Sensor. May also log cover removal.
	DriveLock (select hard drives) - Allows assignment of master or user password for hard drive(s).
	Master Boot Record (MBR) Security - Enable/disable MBR.
	Save MBR - Saves backup copy of MBR of current bootable disk.
	Restore MBR - Restores MBR to current bootable disk. (Appears only if MBR security is enabled.)
	Device Security - Enable/disable serial/parallel/USB ports, system audio, NIC (select models).
	Network Service Boot - Enables/disables Network Service Boot (select models only).
	System IDs - Allows setting of Asset Tag and Ownership Tag, chassis serial number, keyboard locale, and Universal Unique Identifier (UUID).
Advanced (advanced users only)	Power-On Options - Select POST mode for QuickBoot, FullBoot, Full-Boot every 1-30 days.; Enable/disable POST messages; Select Safe POST mode; Enable/disable option ROM prompt; Enable/disable I/O APIC mode; Select computer state after power loss; Select wakeup boot source; Enable/disable POST delay (for slow hard drives); Enable/disable ACPI/USB buffers; Enable/disable NIC option ROM download; Enable/disable hot-pluggable multibay floppy.
	Onboard Devices - Set resources for onboard devices (serial/parallel port, diskette controller, etc).
	PCI Devices - Lists currently installed PCI devices and IRQ settings. Allows configuration/disabling of devices (no effect on APIC systems)
	Bus Options - Enable/disable PCI bus mastering, PCI VGA palette snooping, PCI SERR# function, and ECC on select systems.
	Device Options - Set printer mode (output only, bidirectional, Num Lock State) Enable/disable power management events, wake-up events, processor cache, processor number, ACPI thermal mode, ACPI S# support. Select AGP aperture size. Enables monitor tracking.
	PCI VGA Configuration - Allows selection of VGA controller (if multiple PCI video controllers are installed).

Failsafe Boot Block ROM

The computer comes with a reprogrammable flash system ROM (read only memory). To upgrade the ROM, you may:

a. Order an upgraded ROMPaq diskette from HP.
or
b. 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 in the unlikely event of an unsuccessful ROM flash.

If the system detects an invalid system ROM during the boot sequence the system will sound one long and three short beeps, flash the three keyboard LEDs twice, and display a recovery mode message on the screen. To recover from the Boot Block recovery mode complete the following steps:

1. Remove any diskettes from the diskette drive and turn off power.
2. Insert a ROMPaq diskette into the diskette drive.
3. Turn on power to the system.
4. If a Setup password has been established, the Caps Lock LED will come on to prompt you for the password. Enter the password.
5. A successful boot and ROM flashing (re-programming) with a ROMPaq diskette is indicated by the three keyboard LEDs turning on and a series of beeps rising in tone.

Security Functions

The system offers two passwords (Power-On and Setup) for system and data protection. The passwords are independent of each other. The Power-On password, if established, protects the computer from unauthorized access by prompting the user for a password during power up. The Setup password, if established, protects the computer from unauthorized or inadvertent re-configuration by prompting the user for a password prior to entering the Setup Utility.

To establish a password:

1.   Turn on or restart the computer. If you are in Windows, click Start > Shut Down > Restart the computer.
2.   When the F10 Setup message appears in the lower-right corner of the screen, press the
      F10 key. Press Enter to bypass the title screen, if necessary. If you do not press F10 when prompted, a restart will be necessary.
3.   Select Security, then select Setup Password or Power-On Password and follow the instructions on the screen.
4.   Before exiting, click File > Save Changes and Exit.

Security Functions (*Continued*)

To change a password:

1. Turn on or restart the computer. If you are in Windows, click Start > Shut Down > Restart the Computer. To change the setup password, run Computer Setup.

2. When the key icon appears, type your current password, a slash (/) or alternate delimiter character, your new password, another slash (/) or alternate delimiter character, and your new password again as shown:
current password/new password/new password.
NOTE: Type the new password carefully since the actual characters do not appear on the screen.

3. Press the enter key.

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

To delete a password using Setup:

1. Turn on or restart the computer. If you are in Windows, click Start > Shut Down > Restart the Computer. To delete the setup password, run Computer Setup (F10).

2. When the key icon appears, type your current password followed by a slash (/) or alternate delimiter character as shown. Example: currentpassword/

3. Press the Enter key.

To delete the Setup password by clearing CMOS:

1. Shut down (Power down) the system and disconnect the power cord from the outlet or the system unit.

2. Remove the chassis cover.

3. On the system board, press and release the CMOS clear switch.

4. Replace the chassis cover and reconnect the power cord.

To delete or disable the Power On password:

1. Shut down (Power down) the system and disconnect the power cord from the outlet or the system unit.

2. Remove the chassis cover.

3. On the system board, remove the jumper on pins 1 and 2 of header E49 and place only on pin 2.

4. Replace the chassis cover and reconnect the power cord.

Security Features

Feature	Purpose	How It Is Established
Removable Media Boot Control	Prevents booting from removable media drives.	Setup Utilities. [1]
Serial, Parallel, USB, or Infrared Interface Control	Prevents data transfer through integrated serial, parallel, USB, or infrared interface.	Setup Utilities. [1]
Power-On Password	Prevents use of computer until password is entered. Can apply to both initial startup and restart.	Setup Utilities. [1]
Setup Password	Prevents reconfiguration of computer until password is entered.	Setup Utilities. [1]
Network Server Mode	Provides unique security features for computer used as server.	Setup Utilities. [1]
DriveLock	Prevents unauthorized access to data on drives supporting password protection.	Setup Utilities. [1]
Smart Cover Lock [2][3]	Software-controllable solenoid that, when activated, prevents unauthorized access to chassis interior.	Setup Utilities. [1]
Smart Cover Sensor [3]	Indicates computer cover or side panel has been removed. Can be set to require password for restart after cover or panel removal.	Setup Utilities. [1]
Master Boot Record (MBR) Security	May prevent unintentional or malicious changes to MBR of the current bootable disk and provides a means of recovering "last known" parameters.	Setup Utilities. [1]
Drive Protection System (DPS	Diagnostic tool built into hard drives on select models designed to discover problems that might result in unwarranted drive replacement.	Setup Utilities or Diagnostics for Windows.
Memory Change Alerts	Detects addition or removal of memory modules. Notifies system administrator.	Refer to Intelligent Manageability Guide.
Ownership Tag	Displays ownership information as defined by system administrator during system startup. (Protected by setup password).	Setup Utilities. [1]
Kensington CableLock Provision	Inhibits access to interior of computer chassis. Can also be used to secure computer to a fixed object for prevent theft.	Requires Kensington cable lock accessory to secure computer to a fixed object.

NOTES:
[1] For more information about Setup Utilities refer to the Computer Setup Guide.
[2] If for any reason the Setup utility is not accessible to unlock the Smart Cover Lock then a FailSafe key is required to bypass the Smart Cover Lock and open the computer. Refer to the Hardware Reference Guide on how to use the FailSafe key. To order a FailSafe key contact HP or your HP reseller.
[3] Available on select models.

Diagnostic Functions

Diagnostic functions are provided by the Setup Utility (in system ROM) and by Diagnostics for Windows. 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

Diagnostics for Windows may be pre installed on some models and can be downloaded free of charge from www.hp.com.

Error Conditions and Messages

PS/2 Keyboard LED Indications

NUM lock LED	Caps Lock LED	Scroll Lock LED	Event
Blinking [1]	Off [1]	Off [1]	Memory Failure
Off [2]	Blinking [2]	Off [2]	Graphics controller failure
Off [3]	Off [3]	Blinking [3]	System failure prior to graphics controller initialization
On	Off	Off	ROMPaq diskette not present, faulty, or drive problem
Off	On	Off	Password prompt
Blinking [4]	Blinking [4]	Blinking [4]	Invalid ROM and/or flash failed
Blinking [4]	Blinking [5]	Blinking [5]	Keyboard locked in network mode
On [6]	On [6]	On [6]	Successful ROM flash

NOTES:
[1] Accompanied by 1 short, 2 long beeps
[2] Accompanied by 1 long, 2 short beeps
[3] Accompanied by 2 long, 1 short beeps
[4] All LEDs will blink in sync twice, accompanied by 1 long and 3 short beeps
[5] LEDs will blink in sequence (NUM, Caps, then Scroll Lock)
[6] Accompanied by rising beep tone

Chassis LED and Beep Messages

Power LED	# Beeps	Event
Steady green	None	S0 System on (normal operation)
Blinks green @ 0.5 Hz	None	S1 Suspend
Blinks green @ 0.5 Hz	None	S3 Suspend to RAM
Off (clear)	None	S4 Suspend to disk
Off (clear)	None	S5 Soft off
Blinks red 2 times @ 1 Hz [1]	None	Processor thermal shutdown
Blinks red 3 times @ 1 Hz [1]	None	Processor not seated / installed
Blinks red 4 times @ 1 Hz [1]	None	Power supply failure
Blinks red 5 times @ 1 Hz [1]	5	Memory error
Blinks red 6 times @ 1 Hz [1]	6	Video error
Blinks red 7 times @ 1 Hz [1]	7	PCA failure
Blinks red 8 times @ 1 Hz [1]	8	Invalid ROM checksum (error)

NOTE:
[1] Repeated after 2 second pause

Common POST Error Messages

Screen Message	Beeps	Probable Cause	Recommended Action
101-Option ROM Error	1L, 1S	1. System ROM checksum error. 2. Expansion card. 3. CMOS corruption. 4. System board	1. Verify ROM, reflash if required. 2. Remove suspected expansion card, reboot. 3. Clear CMOS memory, reboot. 4. Replace system board.
102-, 103- System Board Failure	none	DMA, timers	1. Clear CMOS memory. 2. Remove expansion boards. 3. Replace system board.
164-Memory Size Error	2S	Incorrect memory configuration.	1. Run Setup (F10). 2. Check DIMMs for proper seating, proper type, and HP compatibility. 3. Remove DIMMs singularly and reboot to isolate faulty DIMM.
201-Memory Error	none	RAM failure	Same as 164.
202-Memory Type Mismatch	none	DIMMs do not match.	Same as 164.
212-Failed Processor	none	Processor has failed to initialize.	1. Check processor seating. 2. Replace processor.
301-, 304- Keyboard Error	none	Keyboard failure.	Check keyboard connection or keys. Replace keyboard. If 304, possible system board problem
411-Network Interface Card Interrupt Conflict	2S	NIC interrupt conflicts with another device.	Reset IRQ (reboot system).
501-Display Adapter Failure	1L, 2S	Graphics controller.	1. Reseat graphics card. 2. Check monitor connection. 3. Replace graphics card.
602-Diskette Boot Error	none	Diskette in drive A not bootable	Remove/replace diskette.
1720-, 1721- SMART Hard Drive Detects Imminent Failure	none	Hard drive is about to fail.	Run drive protection system test if available. Check for firmware patch for erroneous error message.
178x, 179x- Hard Drive Failure	none	Hard drive or hard drive circuitry failure.	Run Setup or hard drive diagnostics. Replace hard drive.

NOTES: L = long, S = short