TravelMate 230/ 280
Service Guide

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Revision History

Please refer to the table below for the updates made on HP Lapin service guide.

Date	Chapter	Updates
01/20/2003	Cover page	Correct typo on page II
		Dual high quality stereo speakers on page 2
		Modify item 3 media activity on page 12
		Supports memory size per socket: 512MB on page 19
		USB Compliancy Level: USB 2.0 on page 25
	Chapter 2	Modify Flash BIOS procedures
		Delete "Removing HDD password procedures"
	Chapter 3	Mark the size of the flat-bladed screwdriver and hexed screwdriver
		Correct the disassembly procedure of HDD module.
	Chapter 4	Modify wording: If an error occurs with the internal diskette drive, first turn off the power and then reconnect the diskette connector to the system board.
	Chapter 5	Modify Switch Setting
02/08/2003	Chapter 1	Delete dual display feature
04/14/2003	Chapter 1	Delete RS-232 serial port connectivity feature

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Conventions

The following conventions are used in this manual:

`Screen messages`	Denotes actual messages that appear on screen.
NOTE	Gives bits and pieces of additional information related to the current topic.
WARNING	Alerts you to any damage that might result from doing or not doing specific actions.
CAUTION	Gives precautionary measures to avoid possible hardware or software problems.
IMPORTANT	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for Acer "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For ACER AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

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System Introduction

Features

This computer was designed with the user in mind. Here are just a few of its many features:

Performance

- Intel® Mobile Celeron Pentium® 4 series processors from 1.6G up tp 2.0G with 512KB cache (TravelMate 230)
- Intel® Mobile Northwood Pentium® 4 series processors from 1.6G up tp 2.4G with 512KB cache (TravelMate 280)
- 64-bit memory bus
- Two 200-pin DDR-DRAM with each supporting 128MB/ 256MB/ 512MB, upgradable to the total maximum of 1024MB with SODIMM modules, supporting PC1600/2100 .
- Built-in floppy diskette drive and Hard diskette drive
- High-capacity, Enhanced-IDE hard disk
- Simultaneous LCD and CRT display
- Smart Lithium-Ion battery pack
- Power management system with ACPI (Advanced Configuration Power Interface)
- Plug and Play Feature

Multimedia

- 16-bit high-fidelity AC'97 stereo audio with 3D sound and wavetable synthesizer
- Built-in dual speakers
- High- speed CD-ROM, DVD-ROM, or DVD/ CD-R/RW drive

Connectivity

- 84/85/88 key keyboard, which is PC/AT keyboard compatible.
- Four Universal Serial Bus (USB) 2.0 Ports (Two ports optional)
- Bluetooth (Optional)
- Two IEEE 1394 ports (optional)
- Built-in V.90 and V.92 RJ-11 56Kbps fax/modem
- Onboard 10/100 Mbps Ethernet LAN Support
- Upgradeable memory and hard disk
- Mini PCI interface 802.11b/ 802.11a+b Module (optional)
- ECP Compliant parallel port.

Multimedia

- All-in-one design (CD-ROM, floppy disk drive, hard disk drive)
- Sleek, smooth and stylish design
- Full-sized keyboard
- Ergonomically centered touchpad pointing device with Internet scroll key

Expansion

- One CardBus PC Card (formerly PCMCIA) Type III slot.
- Upgrageable memory and hard disk

I/O Ports

- One VGA port, I^2C compatible (Optional)
- One DC-in port (AC adapter)
- Dual high quality stereo speakers
- One line-in
- One line-out
- One CardBus type III slot (3.3V, 5V, 12V support)
- Four USB ports (2 ports optional)
- Two IEEE 1394 ports (optional)
- One ECP parallel port
- One RJ-11 port
- One RJ-45 jack

Display

- 14.1” and 15” TFT LCD displaying 32-bit true-color at 1024x768 XGA resolution
- 3D capabilities
- Supports other output display devices such as LCD projection panels for large audience presentations
- “Automatic LCD dim” feature that automatically decides the best settings for your display and conserves power is activated when the system operates in Battery condition.

Video performance

4X AGP UMA video graphic accelerator with 8MB shared from system memory with Intel 845GL to boost the video performance.

Simultaneous display

The computer’s large display and multimedia capabilities are great for giving presentations. If you prefer, you can also connect an external monitor when giving presentations. This computer has built-in AGP and VGA display system to support simultaneous LCD and CRT display. Simultaneous display allows you to control the presentation from your computer and at the same time face your audience. You can also connect other output display devices such as LCD projection panels for large-audience presentations.

Dual Display

The computer’s unique graphics chip takes advantage of Windows XP’s multi-display capability, allowing you to extend your desktop to an external display device, such as an external monitor projector. With this feature enabled, you can move program windows to/from the computer LCD and the external monitor.

Power management

The power management system incorporates an "automatic LCD dim" feature that automatically dims the LCD when the computer is powered by a battery pack to conserve battery power. See “Power Management” on page 28 for more information on power management features.

Opening and closing the display

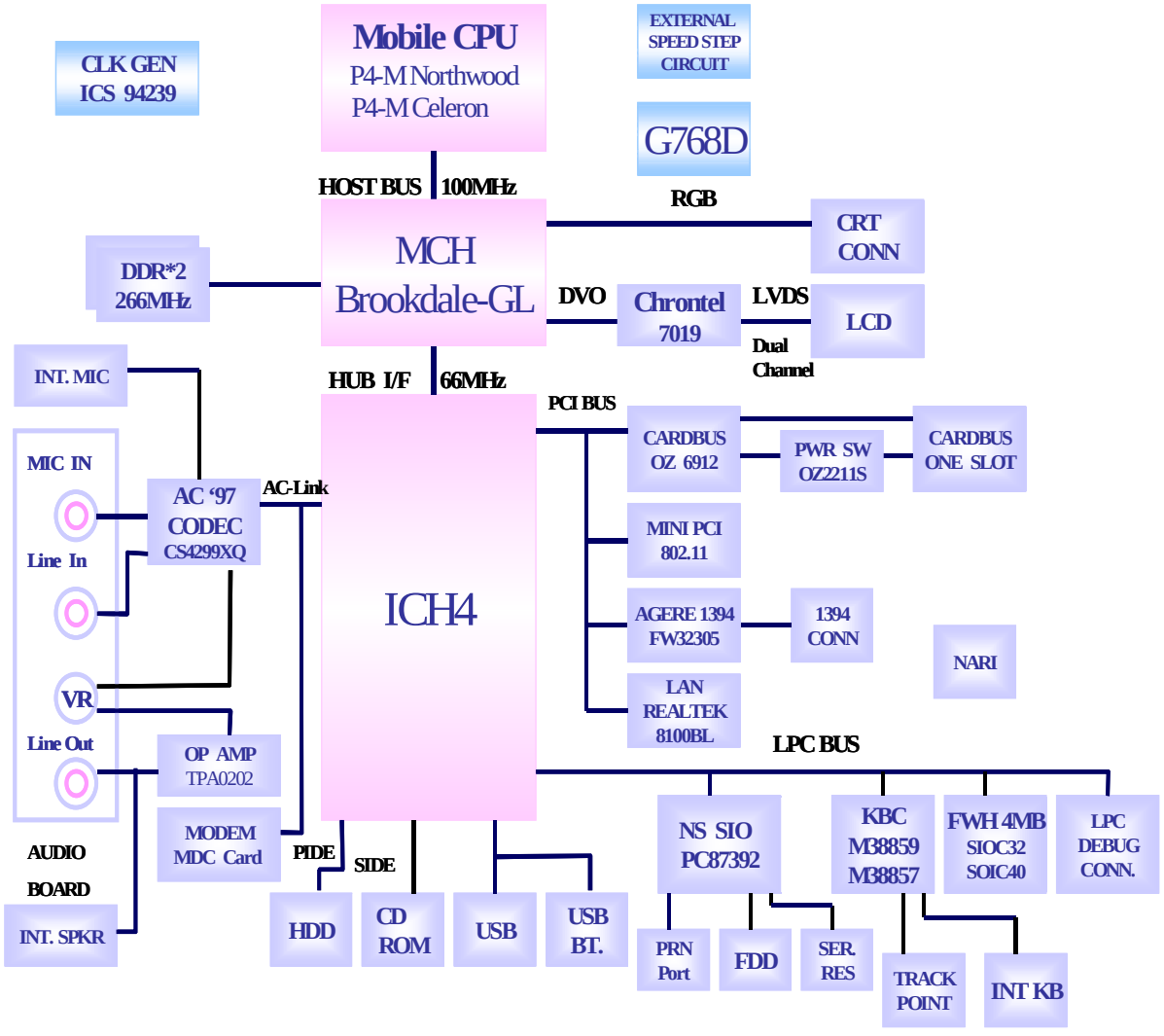
To open the display, slide the display cover latch to the right and lift up the cover. Then tilt it to a comfortable viewing position. The computer employs a microswitch that turns off the display (and enters standby mode) to conserve power when you close the display cover, and turns it back on when you open the display cover.

NOTE: If an external monitor is connected, the computer turns off the display (but does not enter standby mode) when you close the display cover.

To close the display cover, fold it down gently until the display cover latch clicks into place.

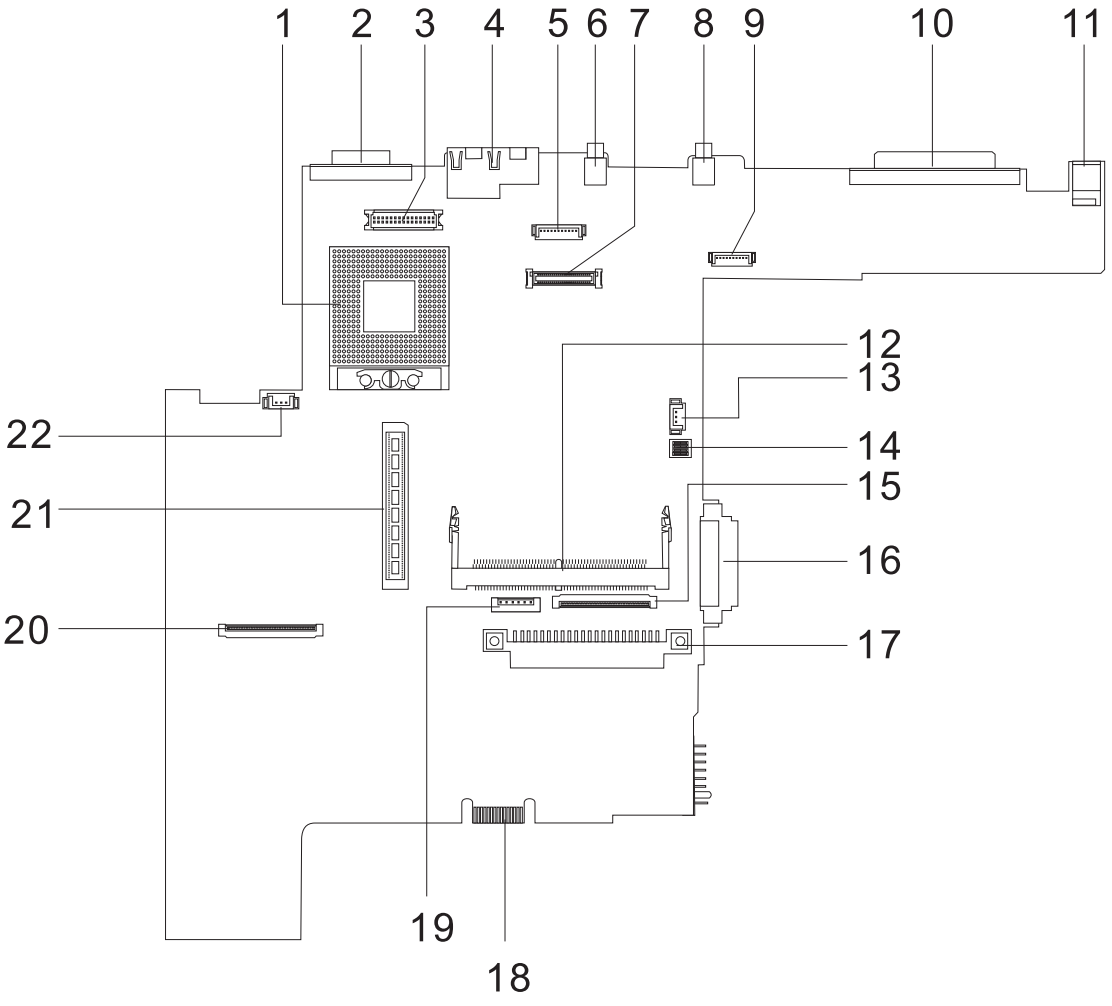
WARNING: To avoid damaging the display, do not slam it when you close it. Also, do not place any object on top of the computer when the display is closed.

System Block Diagram



Board Layout

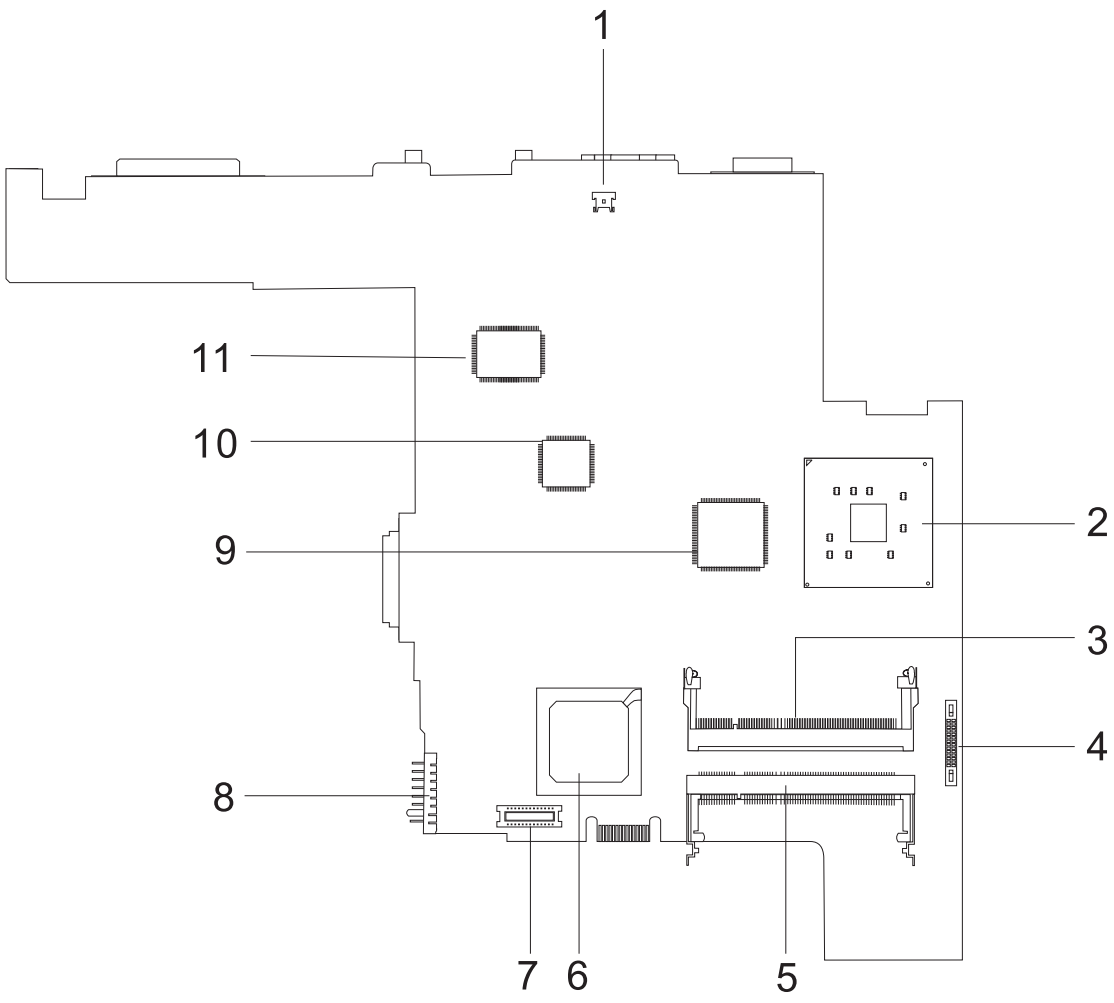
Top View



PCB No. 02217-SB

1	CPU Socket	12	Mini-PCI Connector
2	CRT Port	13	RTC Battery Connector
3	Inverter Connector	14	SW1 Setting (Please see Chapter 5 for details)
4	RJ45 + RJ11	15	Internal Keyboard Cable Connector
5	Bluetooth Connector (Dummy)	16	CD-ROM Connector
6	USB Port 0	17	HDD Connector
7	LCD Coaxial Cable Connector	18	Golden Finger (or Debug Board)
8	USB Port 1	19	Touch Pad Cable Connector
9	Launch Cable Connector	20	FDD Connector
10	Parallel Port	21	CardBus Connector
11	DC-in Port	22	Fan Connector

Bottom View

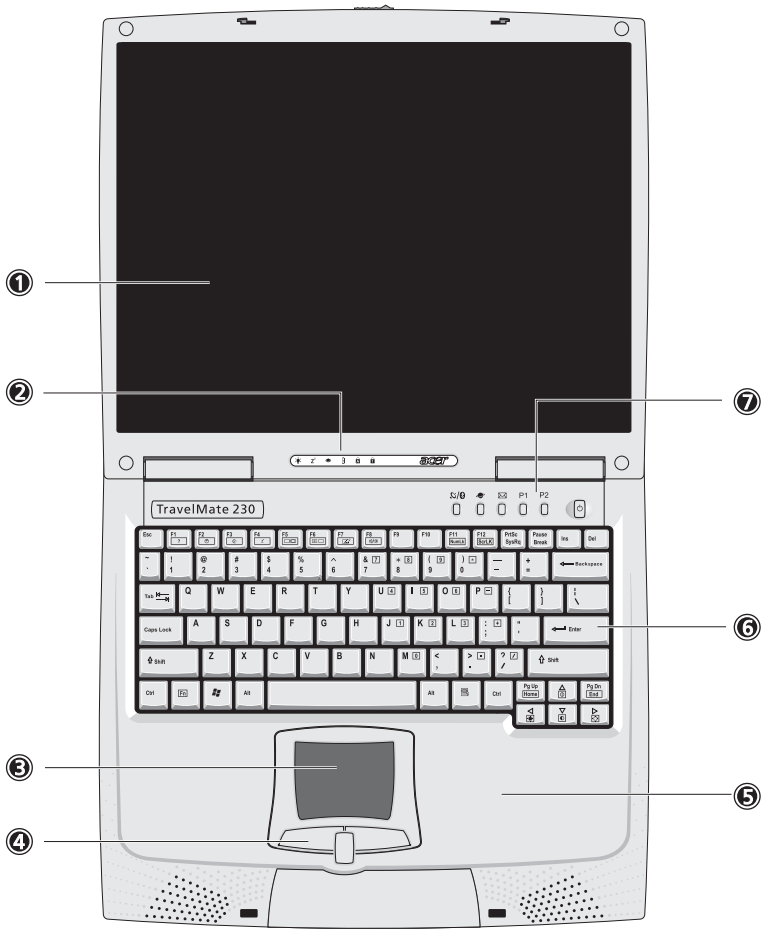


1	Modem Cable Connector	7	Modem Connector
2	North Bridge (845-GL)	8	Battery Connector
3	DIMM Socket 1	9	CardBus Controller (OZ6912T)
4	Audio Board Connector	10	LAN Controller (RTL8100BL)
5	DIMM Socket 2	11	LVDS
6	South Bridge (ICH4)		

Panel

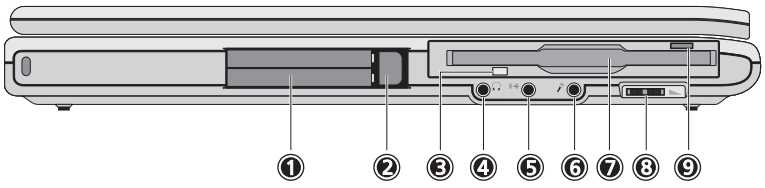
Ports allow you to connect peripheral devices to your computer as you would with a desktop PC.

Front Panel



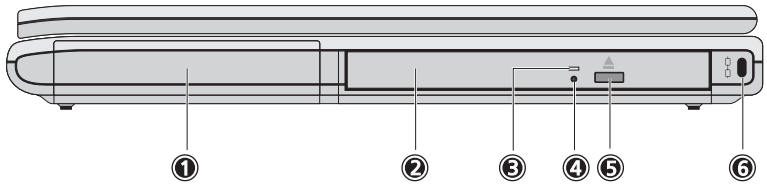
#	Item	Description
1	Display screen	Also called LCD (Liquid Crystal Display), displays computer output.
2	Status indicators	LEDs (Light Emitting Diodes) that turn on and off to show the status of the computer and its functions and components.
3	Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
4	Click button (left, center and right)	The left and right buttons function like the left and right mouse buttons, the center button serves as a scroll up/ down button.
5	Palmrest	Comfortable support area for your hands when you use the computer.
6	Keyboard	Inputs data into your computer.
7	Easy launch keys	Buttons for launching frequently used programs.

Left Panel



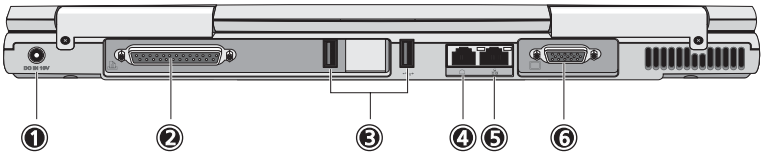
#	Icon	Item/ Port	Description
1		PCMCIA (PC card) Port	Connects to one Type III 16-bit PC card or 32-bit CardBus PC Card.
2		Eject button	Eject PC cards from the card slots.
3		Floppy activity indicator	LED (light-emitting diodes) that turn on and off when the floppy is active.
4		Speaker/ headphone-out jack	Connects to audio line-out devices (e.g., speakers, headphones)
5		Line-in jack	Accepts audio line-in devices (e.g., audio CD player, stereo walkman).
6		Microphone-in jack	Accepts a mono/stereo condenser microphone.
7		Floppy drive	Internal diskette drive, accepts 3.5-inch floppy diskettes
8		Volume control	Controls the volume of the speakers.
9		Floppy disk eject button	Push this button to eject the floppy disk

Right Panel



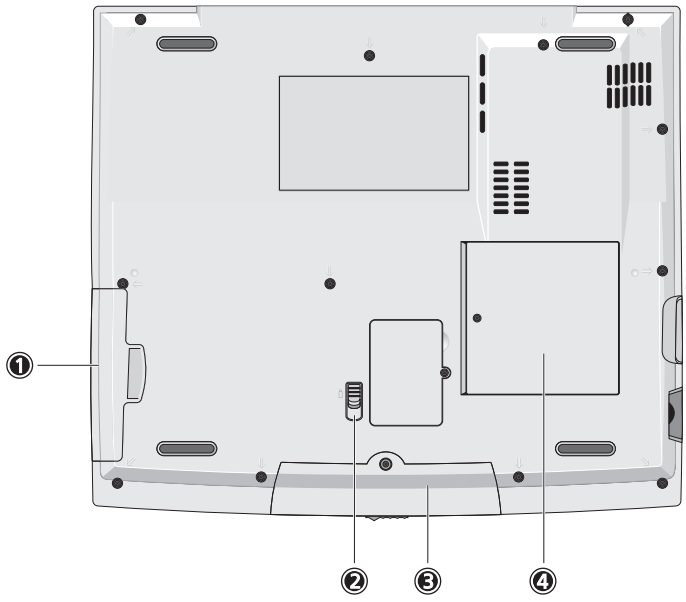
#	Icon	Item/ Port	Description
1		Battery bay	Houses the computer's battery pack.
2		Optical drive	Houses removable optical drive modules.
3		LED indicator	Lights up when the optical drive is active.
4		Eject button	Ejects the compact disc from the drive.
5		Emergency eject slot	Ejects the compact discs when the computer is turned off.
6		Security keylock	Kensington-compatible key-based computer security lock.

Rear Panel



#	Icon	Port	Description
1		Power Jack	Connects to an AC adapter
2		Parallel port	Connects to a parallel device (e.g., parallel printer)
3		USB port (two)	Connects to any Universal Serial Bus devices(e.g., USB mouse, USB camera).
4		Modem jack	Connects to the phone line
5		Network jack	Connects to an Ethernet 10/100-based network
6		External display port	Connects to a display device (e.g., external monitor, LCD projector) and displays up to 64K colors at 1280x1024 resolution

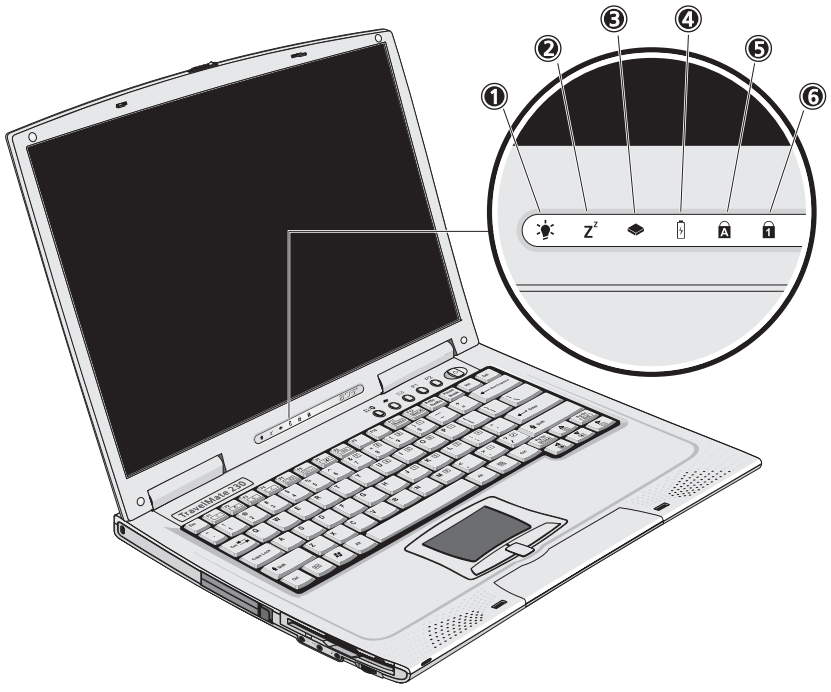
Bottom Panel



#	Item	Description
1	Battery bay	Houses the computer's battery pack.
2	Battery release latch	Unlatches the battery to remove the battery pack.
3	Hard disk bay	Houses the computer's hard disk (secured by a screw).
4	Memory compartment	Houses the computer's main memory.

Indicators

The computer has six easy-to-read status icons on the right of the display screen.



The Power and Standby status icons are visible even when you close the display cover so you can see the status of the computer while the cover is closed.

#	Icon	Function	Description
1		Power	Lights when the computer is on.
2		Sleep	Lights when the computer enters Standby mode and blinks when it enters into or resumes from hibernation mode.
3		Media Activity	Lights when the floppy drive, hard disk or Media drive is active.
4		Battery Charge	Lights when the battery is being charged.
5		Caps Lock	Lights when Caps Lock is activated.
6		Num Lock (Fn-F11)	Lights when Numeric Lock is activated.

Keyboard

The keyboard has full-sized keys and an embedded keypad, separate cursor keys, two Windows keys and twelve function keys.

Special keys

Lock keys

The keyboard has three lock keys which you can toggle on and off.

Lock key	Description
Caps Lock 	When  is on, all alphabetic characters typed are in uppercase.
Num Lock (Fn-F11) 	When  is on, the embedded keypad is in numeric mode. The keys function as a calculator (complete with the arithmetic operators), -, *, and /). Use this mode when you need to do a lot of numeric data entry. A better solution would be to connect an external keypad.
Scroll Lock (Fn-F12) 	When  is on, the screen moves one line up or down when you press the up or down arrow keys respectively.  does not work with some applications.

Embedded numeric keypad

The embedded numeric keypad functions like a desktop numeric keypad. It is indicated by small characters located on the upper right corner of the keycaps. To simplify the keyboard legend, cursor-control key symbols are not printed on the keys.

Desired access	Num lock on	Num lock off
Number keys on embedded keypad	Type numbers in a normal manner.	
Cursor-control keys on embedded keypad	Hold Shift while using cursor-control keys.	Hold Fn while using cursor-control keys.
Main keyboard keys	Hold Fn while typing letters on embedded keypad.	Type the letters in a normal manner.

NOTE: If an external keyboard or keypad is connected to the computer, the Num Lock feature automatically shifts from the internal keyboard to the external keyboard or keypad.

Windows keys

The keyboard has two keys that perform Windows-specific functions.

Keys	Description
Windows logo key	Start button. Combinations with this key perform shortcut functions. Below are a few examples: + Tab (Activates next taskbar button) + E (Explores My Computer) + F (Finds Document) + M (Minimizes All) SHIFT + + M (Undoes Minimize All) + R (Displays the Run... dialog box)
Application key	Opens a context menu (same as a right-click).

Hot Keys

The computer employs hot keys or key combinations to access most of the computer's controls like screen contrast and brightness, volume output and the BIOS Utility.

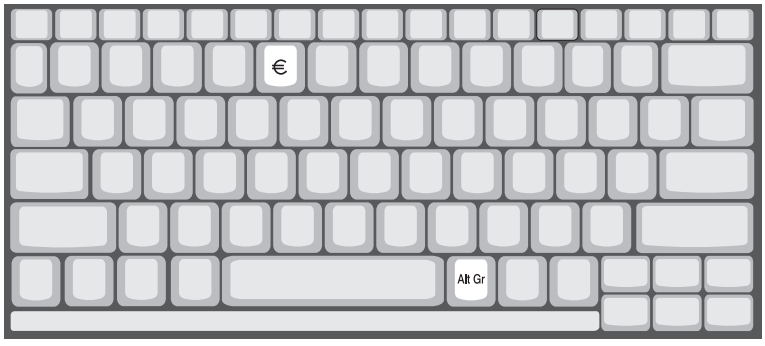
To activate hot keys, press and hold the **Fn** key before pressing the other key in the hot key combination.

Hot Key	Icon	Function	Description
Fn- F1	?	Hotkey help	Displays a list of the hotkeys and their functions.
Fn- F2		Setup	Accesses the notebook configuration utility.
Fn- F3		Power Scheme Toggle	Switches between the power management scheme used by the computer (function available if supported by operating system).
Fn- F4	Z z	Sleep	Puts the computer in Sleep mode.
Fn- F5		Display toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn- F6		Screen blank	Turns the display screen backlight off to save power. Press any key to return.
Fn- F7		Touchpad Toggle	Turns the internal touchpad on and off.
Fn- F8		Speaker on/off	Turns the speakers on and off; mutes the sound.
Fn- ↑		Contrast up	Increases the screen contrast (available only for models with HPA displays).
Fn- ↓		Contrast down	Decreases the screen contrast (available only for models with HPA displays).
Fn- →		Brightness up	Increases the screen brightness.

Hot Key	Icon	Function	Description
Fn-¨	☼	Brightness down	Decreases the screen brightness.
Fn-PG UP	Pg Up Home	Home	Functions as the HOME key.
Fn-PG DN	Pg Dn End	End	Functions as the END key.
ALT Gr-Euro	€	Euro	Types the Euro symbol.

The Euro symbol

If your keyboard layout is set to United States-International or United Kingdom or if you have a keyboard with a European layout, you can type the Euro symbol on your keyboard.



NOTE: for US keyboard users: The keyboard layout is set when you first set up Windows. For the Euro symbol to work, the keyboard layout has to be set to United States-international.

To verify the keyboard type:

1. Click on **Start**, **Control Panel**.
2. Double-click on **Regional and Language Options**.
3. Click on the **language** tab and click on **Details**.
4. Verify that the keyboard layout used for “EN English (United States) is set to United States-International.

If not, select and click on **ADD**, then select **United States-International** and click on **OK**.

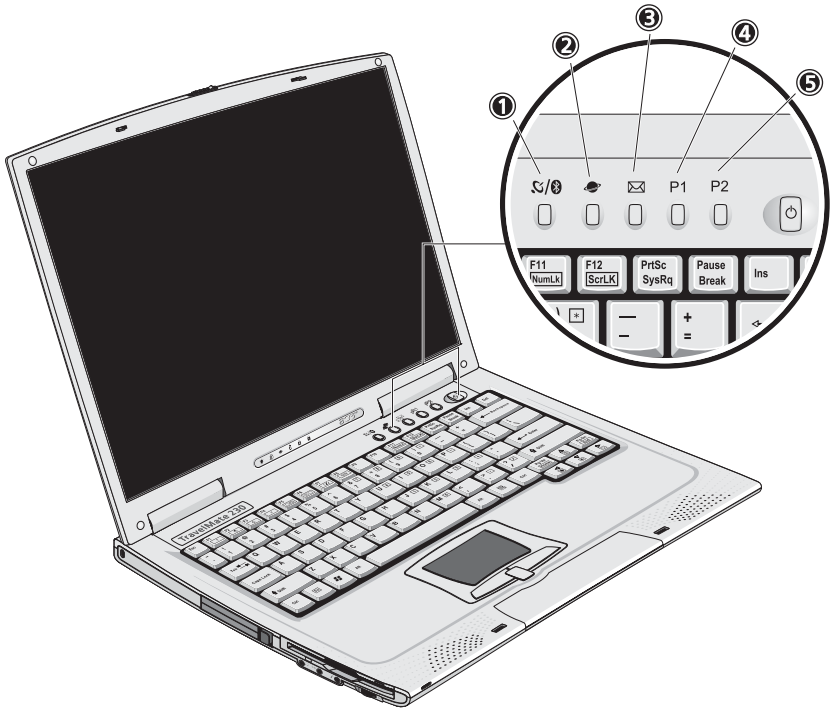
5. Click on **OK**.

To type the Euro symbol:

1. Locate the Euro symbol on your keyboard.
2. Open a text editor or word processor.
3. Hold ALT Gr and press the Euro symbol.

Launch Keys

Located at the top of the keyboard are five buttons. These buttons are called launch keys. They are designated as wireless LAN/Bluetooth , Web Browser button, mail button, P1 andP2. By default, P1 and P2 are users programmable. The Web Browser button, by default, is used to launch the internet browser The mail button is used to launch the e-mail application. The LED of the mail button will flash when the user has received an incoming email.



#	Icon	Function	Description
1		Wireless/ Bluetooth	802.11a/802.11b wireless LAN/Bluetooth (Optional)
2		Web browser	Internet browser application
3		Mail	Email application
4	P1	P1	User-programmable
5	P2	P2	User-programmable

System Board Major Chips

Item	Controller
System core logic	Intel ICH4
Super I/O controller	Mitsubish 38857
Audio controller	Cirrus CS4299XQ
Video controller	Intel 845GL
Hard disk drive controller	Embedded in Intel ICH4
Keyboard controller	Mitsubish 38857
CardBus Controller	OZ 6912T-U
RTC	Intel ICH4

Processor (for TravelMate 230)

Item	Specification
CPU type	Intel Celeron Pentium® 4
CPU package	To 2.0GHz uFCBGA
CPU core voltage	1.7V
CPU I/O voltage	1.25V

Processor (for TravelMate 280)

Item	Specification
CPU type	Intel Mobile Northood P4 with 512KB Cache
CPU package	To 2.4GHz uFCBGA
CPU core voltage	1.7V
CPU I/O voltage	1.25V

BIOS

Item	Specification
BIOS vendor	Phoenix BIOS
BIOS Version	R01XXX
BIOS ROM type	Flash ROM
BIOS ROM size	512KB
BIOS package	32 Pin PLCC
Supported protocols	ACPI 2.0 (if available, at least 1.0b), SMBIOS 2.3, PCI 2.2, Boot Block, PXE 2.0, Mobile PC2001, Hard Disk Password, INT 13h Extensions, PCI Bus Power Management interface Specification, EI Torito-Bootable CD-ROM Format Specification V1.0, Simple Boot Flag 1.0
BIOS password control	Set by switch, see SW1 settings

Second Level Cache

Item	Specification
Cache controller	Built-in CPU
Cache size	128KB
1st level cache control	Always Enabled

Second Level Cache

Item	Specification
2nd level cache control	Always Enabled
Cache scheme control	Fixed-in write back

System Memory

Item	Specification
Memory controller	Intel 845GL
Onboard memory size	0MB
DIMM socket number	2 Sockets
Supports memory size per socket	512MB
Supports maximum memory size	1024MB
Supports DIMM type	DDR-DRAM SODIMM
Supports DIMM Speed	266 MHz
Supports DIMM voltage	3.3 V
Supports DIMM package	200-pin so-DIMM
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications .

Memory Combinations

Slot 1	Slot 2	Total Memory
0MB	128MB	128 MB
128MB	0MB	128 MB
128MB	128MB	256 MB
256MB	0MB	256MB
0MB	256MB	256MB
256MB	128MB	384MB
128MB	256MB	384MB
256MB	256MB	512MB
0MB	512MB	512MB
512MB	128MB	640MB
256MB	512MB	768MB
128MB	512MB	640MB
512MB	256MB	768MB
256MB	128MB	384MB
128MB	256MB	384MB
512MB	512MB	1024MB
0MB	512MB	512MB

Above table lists some system memory configurations. You may combine DIMMs with various capacities to form other combinations.

Modem Interface

Item	Specification
Chipset	Ambit MDC module with Lucent modem controller
Fax modem data baud rate (bps)	14.4K
Data modem data baud rate (bps)	56K
Supports modem protocol	V.90/V.92MDC
Modem connector type	RJ11
Modem connector location	Rear side

Floppy Disk Drive Interface

Item	Specification		
Vendor & model name	Mitsumi D353G W/I BEZ MCI JU-226A293		
Floppy Disk Specifications			
Media recognition	2DD (720KB)	2HD (1.2 MB, 3 mode)	2HD (1.44MB)
Sectors/track	9	15	18
Tracks	80	80	80
Data transfer rate (Kbit/s)	1 MB	1.6 MB	2 MB
Rotational speed (RPM)	300	360	300
Read/write heads	2		
Encoding method	MFM		
Power Requirement			
Input Voltage (V)	+5V		

Hard Disk Drive Interface

Item	Specification
Vendor & Model Name	IBM (IC25N020ATD)
Capacity (MB)	20000
Bytes per sector	512
Logical heads	16
Logical sectors	63
Drive Format	
Logical cylinders	16383
Physical read/write heads	3
Disks	2
Spindle speed (RPM)	4200RPM
Performance Specifications	
Buffer size	2MB
Interface	ATA-5
Data transfer rate (disk-buffer, Mbytes/s)	121-216
Data transfer, rate (host~buffer, Mbytes/s)	100 MB/Sec
DC Power Requirements	
Voltage tolerance	5 +/- 5%

CD-ROM Interface

Items	Specification
Vendor & Model Name	Mitsumi SR-244W1
Performance Specification	
Transfer rate	Read Sustained: 1545~3600 KB/sec Programmed I/O: 16.7 MB/sec Max. (Mode 0~4) Multi-word DMA: 16.7 MB/sec Max. (Mode 0~2) Ultra DMA: 33.3MB/sec Max.
Access time (typ.)	Random: 115 ms Full Stroke: 250 ms
Rotation speed	5136 rpm
Data Buffer Capacity	128 KB
Interface	IDE
Applicable disc format	CD/CD-ROM(12cm,8cm), CD-R, CD-RW, CD-DA, CD-ROM (Mode 1, Mode2), CD-ROM XA (Mode 2, Form1 and Form 2), Photo CD (Single, Multi- session), Enhanced CD
Loading mechanism	Drawer with soft eject and emergency eject hole
Power Requirement	
Input Voltage	+5V[DC]+/-5%

DVD-ROM Interface

Item	Specification	
Vendor & model name	MKE SR-8177-BAA6	
Performance Specification	With CD Diskette	With DVD Diskette
Transfer rate (KB/sec)	Average Sustained: CAV mode 775~1800 blocks/sec (10.3X to 24X) 1550~3600kBytes/sec (Mode 1) 1768~4106 kBytes/sec (Mode 2)	DVD-5: Normal Speed (1X) 11.08 Mbits/sec CAV mode 36.67~88.64 Mbits/sec DVD-9/DVD-R: Normal Speed (1X) 11.08 Mbits/sec CAV mode 36.67~88.64 Mbits/sec

DVD-ROM Interface

Item	Specification	
Average Full Access time (typ.)	Random (*1) CAV mode 110 msec typical 150 msec average max Full Stroke (*2) CAV mode 200 msec typical 260 msec average max	DVD-5: Random (*4) 120 msec typical 160 msec average max Full Stroke (*5) 270 msec typical 350 msec average max DVD-9: Random (*7) 150 msec typical 200 msec average max Full Stroke (*8) 340 msec typical 450 msec average max DVD-RAM (2.6G) Random (*7) 200 msec typical 300 msec average max Full Stroke (*8) 300 msec typical 600 msec average max DVD-RAM (4.7G) Random (*9) 180 msec typical 300 msec average max Full Stroke (*10) 320 msec typical 700 msec average max
Data Buffer Capacity	512 kBytes	
Interface	IDE	
Applicable disc format	DVD: DVD-5, DVD-9, DVD-10, DVD-R (3.95G), DVD-RAM (2.6G), DVD-RAM (4.7G) CD: CD-Audio, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), CD-I (mode 2, form 1 and form 2), CD-I Ready, CD-I Bridge, CD-WO, CD-RW, Photo CD, Video CD, Enhanced Music CD, CD-TEXT	
Loading mechanism	Soft eject (with emergency eject hole)	
Power Requirement		
Input Voltage	+5V[DC]+/-5%	

(*1) Average of Data read over the whole area from 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block more than 2000 times including latency and layered error correction time.
(*2) From 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block including latency and layered error correction time.
(*3) Disc: MNSU-005
(*4) Average of Data read over the whole area from starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F), more than 2000 times including latency and layered error correction time.
(*5) from starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F) including latency and layered error correction time.
(*6) Disk: MKE-D551.
(*7) Average of Data read over the whole area from starting data recorded area (LBA:0) to maximum data recorded area (LBA:3FA0DF), more than 2000 times including latency and layered error correction time.
(*8) from starting data recorded area (LBA:0) to maximum data recorded area (LBA:3FA0DF) including latency and layered error correction time.

(*9) Disk: ODSC-PARA

Combo Drive Interface

Item	Specification
Vendor & model name	KME UJDA740
Performance Specification	
Transfer rate (KB/sec)	Read Sustained: DVD-ROM MAX 8X CAV (MAX 10800 KB/sec) CD-ROM MAX 24X CAV (MAX 3600 KB/sec) Write: CD-R 4X, 8X (CLV), Max 16X, MAX 24X (ZCLV) CD-RW 4X (CLV) HS-RW 4X,8X, 10X (CLV) ATAPI Interface: PIO mode 16.6 MB/sec :PIO Mode 4 DMA mode 16.6 MB/sec:Multi word mode 2 Ultra DMA mode 33.3MB/sec: Ultra DMA mode 2
Buffer rate	2MB
Access time	DVD-ROM 180 ms typ. (1/3 stroke) CD-ROM 130 ms typ. (1/3 stroke)
Start up time	less than 15s
Stop time	less than 6s
Acoustic noise	less than 50 dBA
Interface	Enhanced IDE (ATAPI) compatible
Master/Slave	Set by Cable Select (By host)
PC compatible	PC2001 compatible
Applicable disc format	CD: CD-DA, CD-ROM, CD-ROM XA, CD-R, CD-RW, PhotoCD (multiSession), Video CD, CD-Extra(CD+), CD-text DVD: DVD-ROM, DVD-R, DVD-RW (Ver.1.1)
Slope	15 degree (Any direction)
Dimensions, Weight	128X129X12.7mm (WXDXH) (except protrusion) 200g+- 10g
Eject	Soft Eject (with emergency eject hole)

Audio Interface

Item	Specification
Audio Controller	Cirrus Logic CS4299-XQ
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	20 bit stereo Digital to Analog converter 18 bit stereo Analog to Digital converter
Compatibility	Microsoft PC98/PC99, AC97 2.1
Mixed sound source	Line-in, CD, Video, AUX
Voice channel	8/16 bit, mono/stereo
Sampling rate	44.1 KHz
Internal microphone	Yes
Internal speaker / Quantity	Yes/2

Audio Interface

Item	Specification
Supports PnP DMA channel	DMA channel 0 DMA channel 1
Supports PnP IRQ	IRQ10, IRQ11

Video Interface

Item	Specification
Vendor & Model Name	Intel 845GL
Chip voltage	Core / 2.5V, 1.5V, 1.8V
Supports ZV (Zoomed Video) port	NO
Graph interface	4X AGP (Accelerated Graphic Port) Bus
Maximum resolution (LCD)	1024 x768 (32bit colors)
Maximum resolution (CRT)	1024x768 (32 bit colors) 1280x1024 (32 bit colors) 1600x1200 (32 bit colors)

Video Memory

Item	Specification
Fixed or upgradeable	Fixed, share the system memory
Video memory size	8MB

Video Resolutions Mode

Resolution	Refresh Rate	
	CRT Only	LCD/CRT Simultaneous
640x480x256	90	60
640x480x64K	90	60
640x480x16M	90	60
800x600x256	90	60
800x600x64K	90	60
1024x768x256	90	60

Parallel Port

Item	Specification
Parallel port controller	LPC47N227
Number of parallel port	1
Location	Rear side
Connector type	25-pin D-type
Parallel port function control	Enable/Disable by BIOS Setup
Supports ECP/EPP	Yes (set by BIOS setup)
Optional ECP DMA channel (in BIOS Setup)	DMA channel 1 and 3
Optional parallel port I/O address (in BIOS Setup)	378, 278, 3BC
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
USB Compliancy Level	2.0
OHCI	USB 2.0
Number of USB port	2
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

PCMCIA Port

Item	Specification
PCMCIA controller	O2-Micro Cardbus Controller OZ6912T-U
Supports card type	Type III
Number of slots	One type III
Access location	Left side
Supports ZV (Zoomed Video) port	Yes
Supports 32 bit CardBus	Yes (IRQ17)

Keyboard

Item	Specification
Keyboard controller	Mitsubishi M38857
Keyboard vendor & model name	API
Total number of keypads	84-/85/88- key
Windows 95 keys	Yes
Internal & external keyboard work simultaneously	Yes

Battery

Item	Specification
Vendor & model name	SIMPLO
Battery Type	Li-ION
Pack capacity	2000mAH
Cell voltage	3.8V / 1.2V
Number of battery cell	8
Package configuration	4529 / 8S
Package voltage	14.8V

DC-DC/Charger Converter

Item	Specification		
Vendor & Model Name	O2		
Input Voltage	AC Adapter or Battery: 8V - 19VDC		
DC-DC Converter Output			
Output Rating	+5V	3.3V	12V
Current (w/load, A)	0~5A	0~4A	120mA
Charger Output	Li-ION	Ni-MH	

DC-DC/Charger Converter

Item	Specification	
Normal charge (charge while system is not operative)	2.8A	2.25V
Background charge (charge even system is still operative)	0.8A	
Battery-low 2 level (V)	12.5V	8V
Battery-low 3 level (V)	10V	7.5V
Protection		
Charger protection	Over Current Protection	
DC/DC converter protection	OCP (Over Current Protection, A) OVP (Over Voltage Protection, V) UVP (Under Voltage Protection, V)	

DC-AC LCD Inverter

Item	Specification
Vendor & model name	Ambit
Input voltage (V)	8 ~ 21V
Input current (mA)	1A (max.)
Output voltage (Vrms, no load)	1400Vrms
Output voltage frequency (kHz)	40 ~ 70KHz
Output Current/Lamp	5.5 mA ~ 6.5mA

NOTE: DC-AC inverter is used to generate very high AC voltage, then support to LCD CCFT backlight user, and is also responsible for the control of LCD brightness. Avoid touching the DC-AC inverter area while the system unit is turned on.

NOTE: There is an EEPROM in the inverter, which stores its supported LCD type and ID code. If you replace a new inverter or replace the LCD with a different brand, use Inverter ID utility to update the ID information.

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LCD

Item	Specification	
Vendor & model name	14.1” AU B141XN04 V2	15” Hitachi TX38D85VC1CAB
Mechanical Specifications		
LCD display area (diagonal, inch)	14.1	15
Display technology	TFT	TFT
Resolution	XGA (1024x768)	XGA (1024x768)
Support colors	262K	262K
Optical Specification		
Brightness control	Keyboard hotkey	Keyboard hotkey
Contrast control	None	None
Electrical Specification		
Supply voltage for LCD display (V)	3.3 (typ.)	3.3 (typ.)
Supply voltage for LCD backlight (Vrms)	650 (typ.)	650 (typ.)

AC Adapter

Item	Specification
Vendor & model name	Delta ADP-65DB
Input Requirements	
Maximum input current (A, @90Vac, full load)	1.5 A @ 110Vac 1.0 A @ 240Vac
Nominal frequency (Hz)	50-60
Frequency variation range (Hz)	47-63
Input voltage range (Vrms)	90-270
Inrush current	The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac and 230Vac respectively.
Efficiency	It should provide an efficiency of 80% minimum, when measured at maximum load under 115Vac.
Output Ratings (CV mode)	
DC output voltage	19V
Noise + Ripple	300mVp-pmax (20 MHz bandwidth)
Load	0(min) 3.16A(max)
Output Ratings (CC mode)	
DC output voltage	19V +/-1.0V for CV mode
Constant current mode	3.6 +/- 0.3A
Dynamic Output Characteristics	
Turn-on delay time	3 sec (@ 115Vac)
Hold up time	5ms (@115Vac, Full load)
Over Voltage Protection (OVP)	24V
Short circuit protection	3.9A max can be protected and output can be shorted without damage
Electrostatic discharge (ESD)	15KV (at air discharge) 8KV (at contact discharge)
Dielectric Withstand Voltage	
Primary to secondary	3000Vac
Leakage current	0.25 mA max. (@ 254Vac, 60Hz)
Regulatory Requirements	Safety Requirements: 1.The subject product rated 100-120V 60Hz must be listed under UL 1950 and certified with SCA Standard C22.2 No.950. 2.The subject product rated 200-240V 50Hz must comply with low voltage directive 73/23EEC. EMI Requirements: 1.The subject product rated 100-120V 60Hz must meet the EMI requirements of FCC part 15, Subpart B for Class B Digital Device and get FCC Certification before marketing into USA and Canada. 2.The subject product rated 200-240V 50Hz must meet the EMC Directive 89/336/EEC. 3.The subject product rated 100-120V must meet the VCCI-2 EMI requirements.

Power Management

Power Saving Mode	Phenomenon
Standby Mode Enter Standby Mode when 1.Standby/Hibernation hot-key is pressed and system is not ready to enter Hibernation mode. 2.System standby/ Hibernation timer expires and system is not ready to enter Hibernation mode.	❑ The buzzer beeps ❑ The Sleep indicator lights up
Hibernation Mode **Enter Hibernation Mode (suspend to HDD) when** **1.Hibernation hot-key is pressed and system is ready to enter Hibernation mode** **2.System Hibernation timer expires and system is ready to enter Hibernation mode.**	❑ All power shuts off
Display Standby Mode Keyboard, built-in touchpad, and an external PS/2 pointing device are idle for a specified period.	❑ The display shuts off
Hard Disk Standby Mode Hard disk is idle within a specified period of time.	❑ Hard disk drive is in standby mode. (spindle turned-off)

Environmental Requirements

Item	Specification
Temperature	
Operating	+5~+35 °C
Non-operating	-20~+60 °C
Humidity	
Operating	20% to 85% RH, non-condensing
Non-operating	20% to 85% RH, non-condensing (Unpacked)
Non-operating	20% to 90% RH, non-condensing (Storage package)
Vibration	
Operating (unpacked)	5~25.6Hz: 0.38mm (peak to peak) 25.6~250Hz: 0.5G
Non-operating (unpacked)	5~27.1Hz: 0.6G 27.1~50Hz: 0.04mm (peak to peak) 50~500Hz: 2.0G
Non-operating (packed)	5~62.6Hz: 0.51mm (peak to peak) 62.6~500Hz: 4.0G

Mechanical Specification

Item	Specification
Dimensions	326(W) x 267.5(D) x 35.0~37.3(H)mm
Weight	6.8 lbs with14.1” TFT LCD and CD-ROM/ 6.9 lbs with 15”LCD and CD-ROM

Mechanical Specification

Item	Specification
I/O Ports	One type III PCMCIA (PC Card) port, one RJ-11 port, one RJ-45 port, one DC-in port, one ECP parallel port, four USB ports (two optional), two IEEE 1394 ports (optional)one line-in jack, one line-out jack, one speaker/headphone-out jack, one VGA port /I^2 C compatible (optional).
Drive Bays	One
Material	Plastic
Indicators	Power-on, Standby, Battery Status, Media Access, CapsLock and NumLock
Switch	Power

Memory Address Map

Memory Address	Size	Function
00000000-0009FFFF	640 KB	Base memory
80600000-80600FFF	4 KB	Intel 845GL
80620000-8063FFFF	128 KB	
81000000-81FFFFF	3 MB	
000A0000-000CFFFF	192 KB	
08000000-08000FFF	4 KB	O2 Micro OZ6912T Cardbus Controller
08001000-08001FFF	4 KB	
82400000-82400FFF	4 KB	USB
82200000-82200FFF	4 KB	Audio

I/O Address Map

I/O Address	Function
00000000-0000000F	Direct Memory Access controller
00000000-00000CF7	PCI bus
00000010-0000001F	Motherboard resources
00000020-00000021	Programmable interrupt controller
00000024-00000025	Motherboard resources
00000028-00000029	Motherboard resources
0000002C-0000002D	Motherboard resources
0000002E-0000002F	Motherboard resources
00000030-00000031	Motherboard resources
00000034-00000035	Motherboard resources
00000038-00000039	Motherboard resources
0000003C-0000003D	Motherboard resources
00000040-00000043	System Timer
00000050-00000053	Motherboard resources
00000060-00000060	Standard 101/102-key or Microsoft Natural PS/2 keyboard
00000061-00000061	System Speaker
00000062-00000062	Microsoft ACPI-Compliant Embedded Controller
00000064-00000064	Standard 101/102-key or Microsoft Natural PS/2 keyboard
00000066-00000066	Microsoft ACPI-Compliant Embedded Controller
00000070-00000071	System CMOS/realtime clock
00000072-00000077	Motherboard resources
00000080-00000080	Motherboard resources

I/O Address Map

I/O Address	Function
00000081-0000008F	Direct memory access controller
00000090-0000009F	Motherboard resources
000000A0-000000A1	Programmable interrupt controller
000000A4-000000A5	Motherboard resources
000000A8-000000A9	Motherboard resources
000000AC-000000AD	Motherboard resources
000000B0-000000B5	Motherboard resources
000000B8-000000B9	Motherboard resources
000000BC-000000BD	Motherboard resources
000000C0-000000DF	Direct memory access controller
000000F0-000000FE	Numeric data processor
00000170-00000177	Secondary IDE channel
000001C0-000001CF	Motherboard resources
000001F0-000001F7	Primary IDE channel
00000274-00000277	ISAPNP Read Data Report
00000279-00000279	ISAPNP Read Data Report
00000376-00000376	Secondary IDE channel
00000378-0000037F	Printer (LPT1)
000003B0-000003BB	Intel (R) 82845G Graphic Controller
000003C0-000003DF	Intel (R) 82845G Graphic Controller
000003F0-000003F5	Standard floppy disk controller
000003F6-000003F6	Primary IDE channel
000003F7-000003F7	Standard floppy disk controller
000003F8-000003FF	Motherboard resources
000004D0-000004D1	Motherboard resources
00000600-0000060F	Motherboard resources
00000A79-00000A79	ISAPNP Read Data Report
00000D00-0000FFFF	PCI bus
00001000-0000107F	Motherboard resources
00001180-000011BF	Motherboard resources
00001800-0000181F	Intel (R) 82801DB/DBM USB Universal Host Controller-24C2
00001820-0000183F	Intel (R) 82801DB/DBM USB Universal Host Controller-24C4
00001840-0000185F	Intel (R) 82801DB/DBM USB Universal Host Controller-24C7
00001860-0000186F	Intel (R) 82801DB Ultra ATA Storage Controller-24CB
00001880-0000189F	Intel (R) 82801DB/DBM SMBus Controller-24C3
000018C0-000018FF	Crystal WDM AC'97 Driver for ICH4
00001C00-00001CFF	Crystal WDM AC'97 Driver for ICH4
00002000-0000207F	Agere Systems AC'97 Modem
00002400-000024FF	Agere Systems AC'97 Modem
00003000-000030FF	Realtek RTL8139/810x Family Fast Ethernet NIC
0000FD00-0000FDFF	O2Micro OZ6912 CardBus Controller
0000FE00-0000FE00	Motherboard Resources
0000FF00-0000FFFF	O2Micro OZ6912 CardBus Controller

IRQ Assignment Map

Interrupt Channel	Function
NMI	System errors
IRQ0	System timer
IRQ1	Keyboard
IRQ6	Floppy
IRQ8	Real time clock
IRQ9	Microsoft ACPI-Compliant System
IRQ11	Intel (R) 82801DB/DBM SMBus Controller-24C2
IRQ12	Synaptics PS2 pointing device
IRQ13	Numeric data processor
IRQ14	1st IDE device
IRQ15	2nd IDE device
IRQ16	Intel (R) 82801DB/DBM USB Universal Host Controller-24C2
IRQ16	Intel (R) 845G Graphics Controller
IRQ17	Agere Systems AC'97 Modem
IRQ17	Crystal WDM AC'97 Driver for ICH4
IRQ17	O2Micro OZ6912 CardBus Controller
IRQ18	Intel (R) 82801DB/DBM USB Universal Host Controller-24C7
IRQ19	Intel (R) 82801DB/DBM USB Universal Host Controller-24C4
IRQ19	Realtek RTL8139/810x Family Fast Ethernet NIC
IRQ21	OHCI Compliant IEEE 1394 Host Controller
IRQ23	Intel (R) 82801DB/DBM USB 2.0 Enhanced Host Controller-24CD

NOTE: IRQ settings may be changed by OS

DMA Channel Assignment

DMA Channel	Function
DRQ0	Not used
DRQ1	Not used
DRQ2	Floppy
DRQ3	Not used
DRQ4	DMA controller
DRQ5	Not used
DRQ6	Not used
DRQ7	Not used

System Utilities

BIOS Setup Utility

The BIOS Setup Utility is a hardware configuration program built into your computer's BIOS (Basic Input/ Output System).

Your computer is already properly configured and optimized, and you do not need to run this utility. However, if you encounter configuration problems, you may need to run Setup. Please also refer to Chapter 4 Troubleshooting when problem arises.

To activate the BIOS Utility, press F2 during POST (while the TravelMate logo is being displayed).

PhoenixBIOS Setup Utility

Information Main Advanced Security Boot Exit

CPU Type	Mobile Intel (R) Celeron (R) CPU 1.60GHz
System Memory	640 KB
Extended Memory	121344 KB
HDD1 Serial Number	115188
System BIOS Version	V0.51 (BXB35WW)
VGA BIOS Version	2759
KBC Version:	02.29.25
Serial Number	8146W01008246015BFM000
Asset Tag Number	No Asset Tag
Product Name	TravelMate 230
Manufacture Name	Acer
UUID Number	5f8f5060-fd71-11d6-85f3-c5c61adec588

F1 Help ↑↓ Select Item **F5/F6** Change Values **F9** Setup Defaults
Esc Exit ←→ Select Menu **Enter** Select > Sub-Menu **F10** Save and Exit

PhoenixBIOS Setup Utility

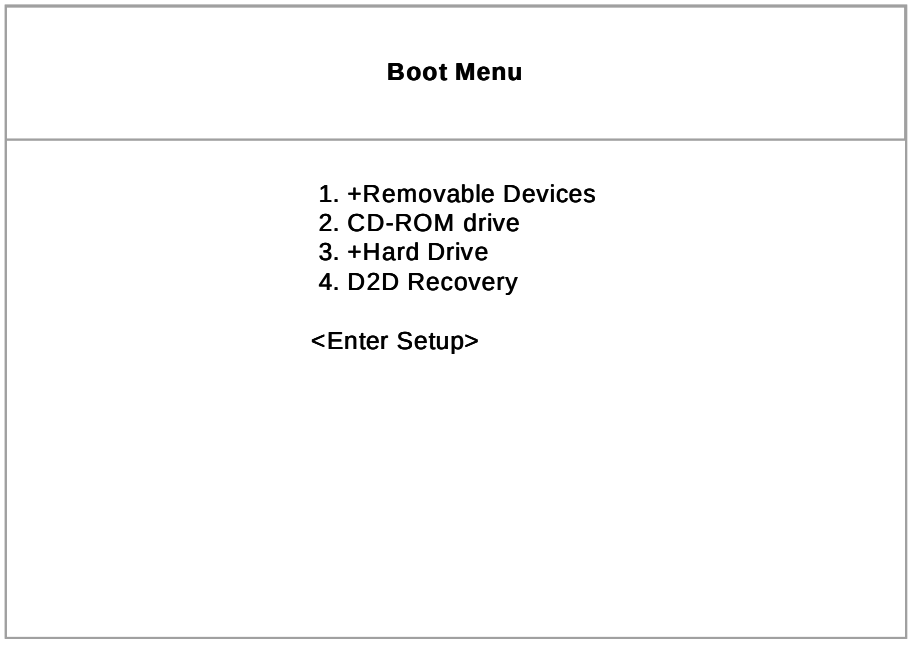
Information Main Advanced Security Boot Exit

CPU Type	Pentium (R) IV 1.4GHz
System Memory	640 KB
Extended Memory	121344 KB
HDD1 Serial Number	115188
System BIOS Version	V0.51 (BXB35WW)
VGA BIOS Version	2759
KBC Version:	02.29.25
Serial Number	8146W01008246015BFM000
Asset Tag Number	No Asset Tag
Product Name	TravelMate 280
Manufacture Name	Acer
UUID Number	5f8f5060-fd71-11d6-85f3-c5c61adec588

F1 Help ↑↓ Select Item **F5/F6** Change Values **F9** Setup Defaults
Esc Exit ←→ Select Menu **Enter** Select > Sub-Menu **F10** Save and Exit

Multi-Boot Menu

Users can press F12 during POST to enter the Multi Boot Selection Menu. In this menu users can change boot device without entering BIOS SETUP utility.



NOTE: If users disable the multi boot selection menu in BIOS SETUP utility, the message " Press F12 to enter the multi boot selection menu" will not appear during POST.

NOTE: If users disable the "Boot on LAN" option in BIOS SETUP utility, then the option of Realtek PXE2.0 Boot Agent will not appear.

Navigating the BIOS Utility

There are six menu options: System Information, Basic System Settings, Startup Configuration, Onboard Device Configuration, System Security and Loading Default Settings.

To enter a menu, highlight the item using the ↑ / ↓ keys, then press ENTER.

Within a menu, navigate through the BIOS Utility by following these instructions:

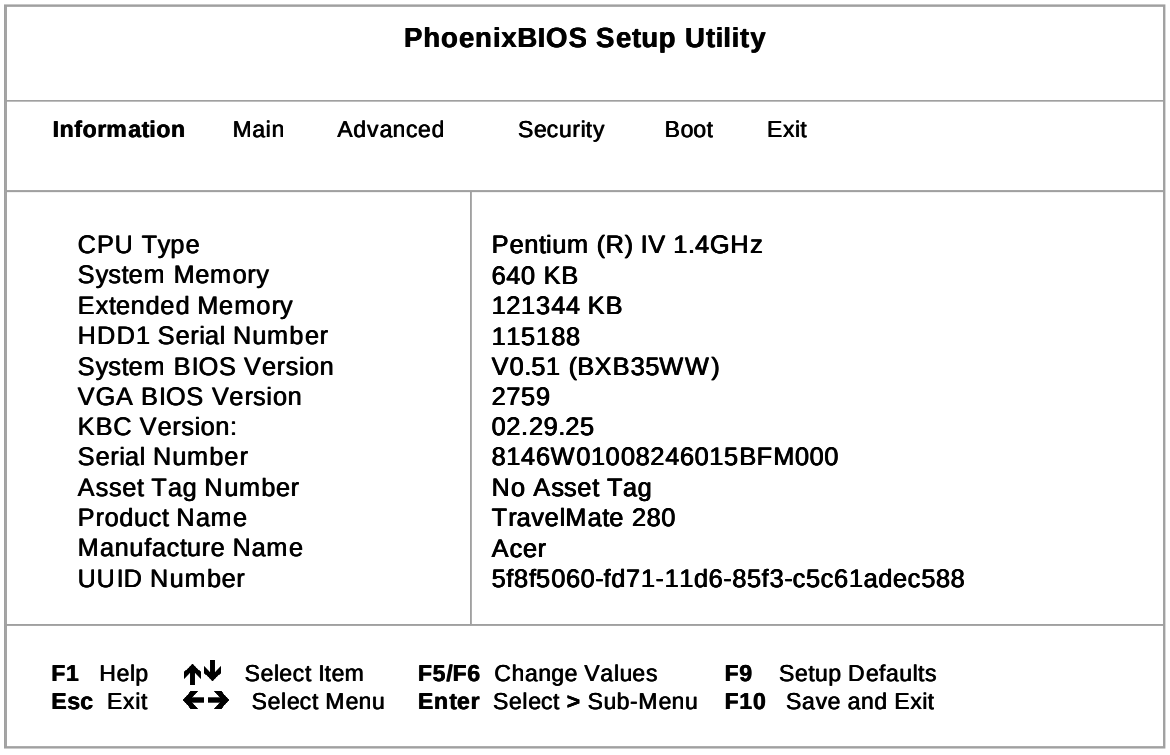
- Press the ↑ / ↓ keys to move between the parameters.
- Press the F5 / F6 keys to change the value of a parameter.
- Press the ESC key while you are in any of the menu options to return to the main menu.

NOTE: You can change the value of a parameter if it is enclosed in square brackets. Navigation keys are shown at the bottom of the screen.

System Information

The System Information screen displays a summary of your computer hardware information.

PhoenixBIOS Setup Utility	
Information Main Advanced Security Boot Exit	
CPU Type	Mobile Intel (R) Celeron (R) CPU 1.60GHz
System Memory	640 KB
Extended Memory	121344 KB
HDD1 Serial Number	115188
System BIOS Version	V0.51 (BXB35WW)
VGA BIOS Version	2759
KBC Version:	02.29.25
Serial Number	8146W01008246015BFM000
Asset Tag Number	No Asset Tag
Product Name	TravelMate 230
Manufacture Name	Acer
UUID Number	5f8f5060-fd71-11d6-85f3-c5c61adec588
F1 Help ↑↓ Select Item **F5/F6** Change Values **F9** Setup Defaults **Esc** Exit ←→ Select Menu **Enter** Select **>** Sub-Menu **F10** Save and Exit	



NOTE: The screen above is a sample and may not reflect the actual data on your computer. “X” may refer to a series of numbers and/or characters.

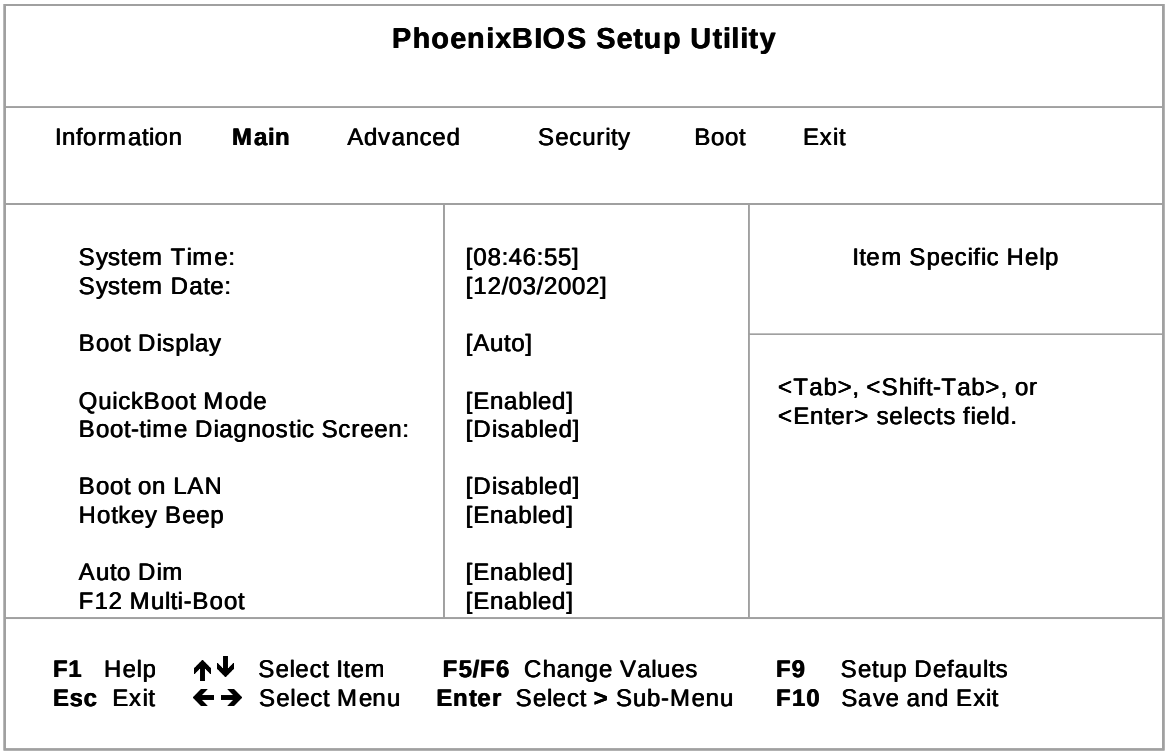
The following table describes the information in this screen.

Parameter	Description
CPU Type	Describe the type of CPU installed in the system.
System Memory	Display the current system memory.
Extended Memory	Display the current extended memory.
HDD Serial Number	Display the primary master HDD serial number. If there is no primary master HDD, then show “None”.
System BIOS Version	Show the current system BIOS version.
VGA BIOS Version	Show the video graphics accelerator BIOS version. It is obtained from VGA BIOS AX=5F01.
KBC Version	Display the current KBC version.
Serial Number	Show the serial number of the computer. (32 characters)
Asset Tag Number	Show the asset tag number of the computer. (16 characters)
Product Name	Show the official name of the product. (15 characters)
Manufacturer Name	Show the manufacturer of the computer. (15 characters)
UUID	Show the universally unique identifier of your computer. (16 Byte-Hex-Digital)

The items in this screen are important and vital information about your computer. If you experience computer problems and need to contact technical support, this data helps our service personnel know more about your computer.

Main System Settings

The Basic System Settings screen allows you to set the system date and time.



The following table describes the parameters in this screen.

Parameter	Description	Format
System Time	Sets the system time.	HH:MM:SS (hour:minute:second)
System Date	Sets the system date.	DDD MMM DD, YYYY (day-of-the-week month day, year)
Boot Display	Sets the display device on boot up. When set to **Auto**, the computer automatically determines the display device. If an external display device (e.g., monitor) is connected, it becomes the boot display. When set to **Both**, the computer outputs to both the computer display screen and an external display device if one is connected.	**Auto** or Both
Quick Boot Mode	Allow the system to skip certain tests while booting. This will decrease the time needed to boot the system.	**Enabled** or Disabled
Boot-time Diagnostic Screen	Boot-time diagnostic during boot. *Help:* Enable to show the BIOS logo picture screen on boot up.	**Disabled** or Enabled

Parameter	Description	Format
Boot on LAN	When it is enabled, a remote host with an appropriate boot image can boot this computer via the internal LAN.	**Disabled** or Enabled
Hotkey Beep	*Help:* Enable or disable hotkey beep.	**Enabled** or Disabled
Auto Dim	*Help:* The system will support an automatic dimming of the LCD backlight when the AC power is NOT available (running on battery power). Options: **Enabled** or Disabled *Help:* Users could choose if to display 'Fn-F12 for multi- boot' message during post	**Enabled** or Disabled
F12 Multi-Boot	When "Fn-F12" is pressed, a multi-boot message will be displayed during POST.	**Enabled** or Disabled

Setting the Boot Drive Sequence

The Boot Drive Sequence section lists boot priorities (1st, 2nd, 3rd, and 4th) for bootable drives in your computer.

For example, the default value (1st:Floppy Disk, 2nd:Hard Disk, and 3rd: CD-ROM, 4th: Realtek PXE2.0 Boot Agent) tells the computer to first search for a bootable floppy disk in the floppy drive. If it finds one present, it boots up from that floppy disk. If not, the computer continues to search for a bootable CD-ROM in the CD-ROM drive. If it cannot boot up from the CD-ROM drive, it continues by booting up from the hard disk and etc...

To set the boot drive sequence, use the  /  keys to select a priority level (1st, 2nd, 3rd, and 4th), then use the  /  keys to select the device for that priority level.

NOTE: When Boot on LAN is set Enabled, then the 4th option: Realtek PXE2.0 Boot Agent shows in the list.

Advanced Information

The Advanced Information screen contains parameter values that define how your computer behaves on system startup.

PhoenixBIOS Setup Utility		
Information Main **Advanced** Security Boot Exit		
Legacy Diskette A:	[1.44/1.25MB 3 ½"	Item Specific Help
>Primary Master >Secondary Master	[20004MB] [CD-ROM]	Selects floppy type. Note that 1.25MB 3 ½" references a 1024 byte/ sector Japanese media format. The 1.25MB 3 ½" diskette requires a 3-mode floppy-disk drive.
>I/O Device Configuration >PCI IRQ Routing		
Legacy USB Support: System Boot From Hard Disk Recovery Screen Expansion IGD-Memory type Battery Mode Performance	[Enabled] [Enable] [Enabled] [UMA=1MB] [Max Batt]	
F1 Help ↑↓ Select Item **F5/F6** Change Values **F9** Setup Defaults **Esc** Exit ←→ Select Menu **Enter** Select > Sub-Menu **F10** Save and Exit		

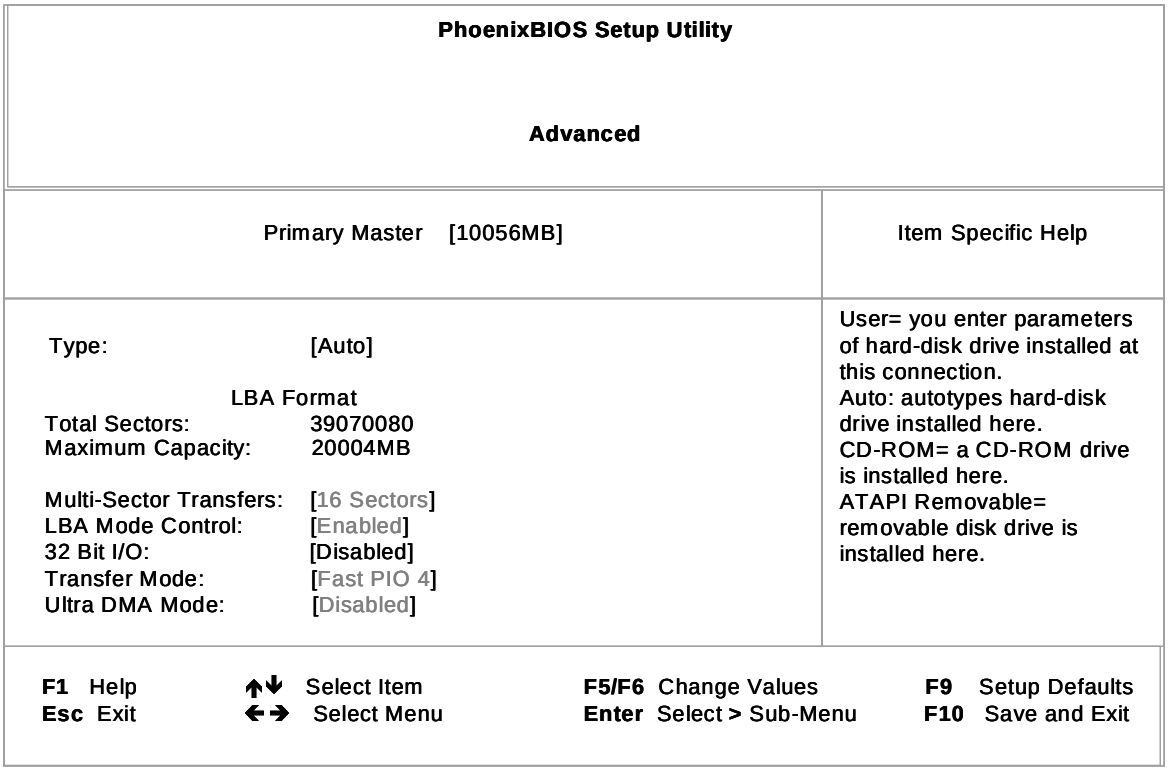
The following table describes the parameters in this screen. Settings in boldface are the default and suggested parameter settings.

Parameter	Description	Options
Legacy Diskette A	*Help:* Selects floppy type. Note that 1.25MB 3 1/2" references a 1024 byte/sector Japanese media format. The 1.25MB, 3 1/2" diskette requires a 3-Mode floppy-disk drive. Enable or Disable Legacy Diskette A	**1.44/1.25MB 3 1/2"** or Disabled
Primary Master	Show IDE Primary Master HDD size. User can enter submenu to set some detail functions	**Auto** or User or CD-ROM or ATAPI Removable
Secondary Master	Show IDE Secondary Master Device Status. User can enter submenu to set some detail functions.	**Auto** or User or CD-ROM or ATAPI Removable
I/O Device Configuration	Enter submenu to set onboard device configuration *Help: Peripheral Configuration.*	
PCI IRQ Routing	Set Default IRQ of PCI device. *Help: Menu used to set IRQ for PCI Devices.*	Auto/ User Select
Legacy USB Support	Enabled: Enable support for Legacy Universal Serial Bus.	**Enabled** or Disabled
System Boot from Hard Disk Recovery	Enable D2D function.	**Enable** or Disable
Screen Expansion	Help: Options: Enabled or Disabled	**Enabled** or Disabled
IGD-Memory Type	Select the amount of the main memory that the Internal Graphics Device will use. Let UMA= the amount of pre-allocated memory made available.	**UMA 1MB** or UMA8MB
Battery Mode Performance	This item allows you to select the performance while battery mode.	**Max Batt** or Maximum Performance

Primary Master

The Primary Master sub-menu contains parameters related to the primary hard disk.

CAUTION: The parameters in this screen are for the advanced users only. Typically, you do not need to change the values in this screen.The default setting of **Auto** optimizes all the settings for your hard disk.

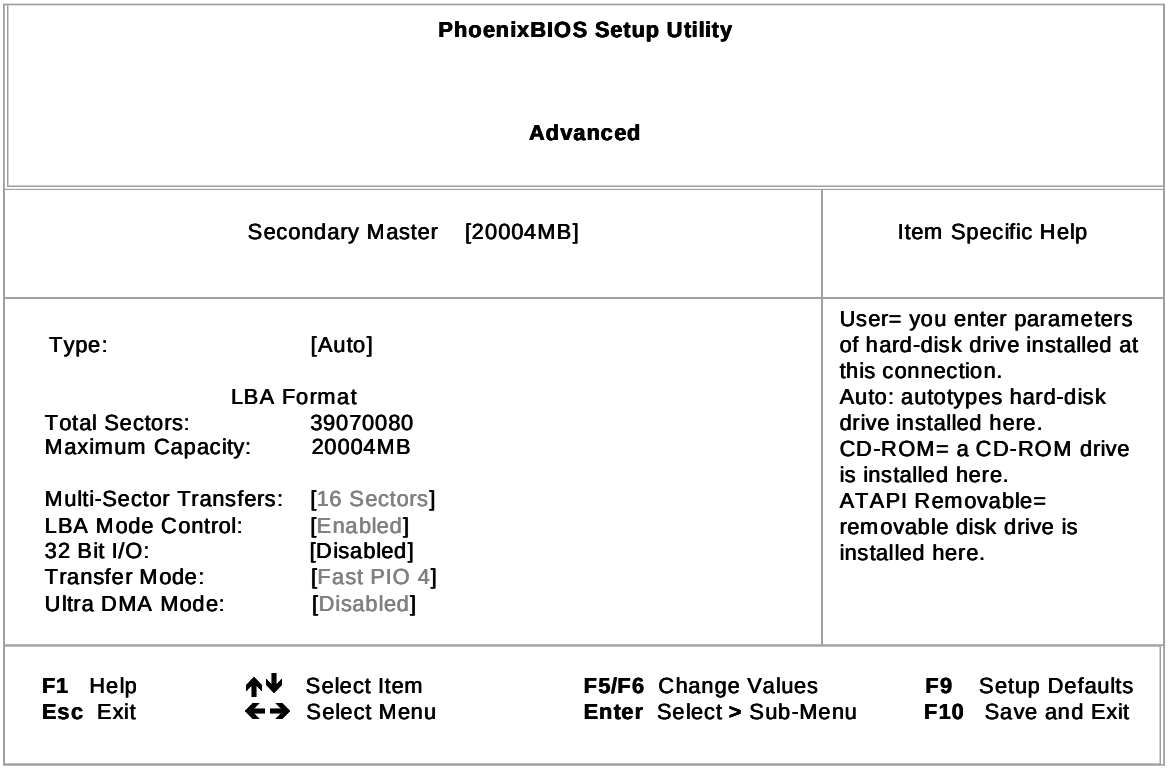


Parameter	Description	Options
Type	The setting of detail functions stands on type. *Help*: Auto= Autotype Hard-Disk drive installed here.	**Auto**/CD-ROM/ ATAPI Removable/User

Secondary Master

The Secondary Master sub-menu contains parameters related to the Media bay drive.

CAUTION: The parameters in this screen are for the advanced users only. Typically, you do not need to change the values in this screen. The default setting of Auto optimizes all the settings for your Media bay drive.

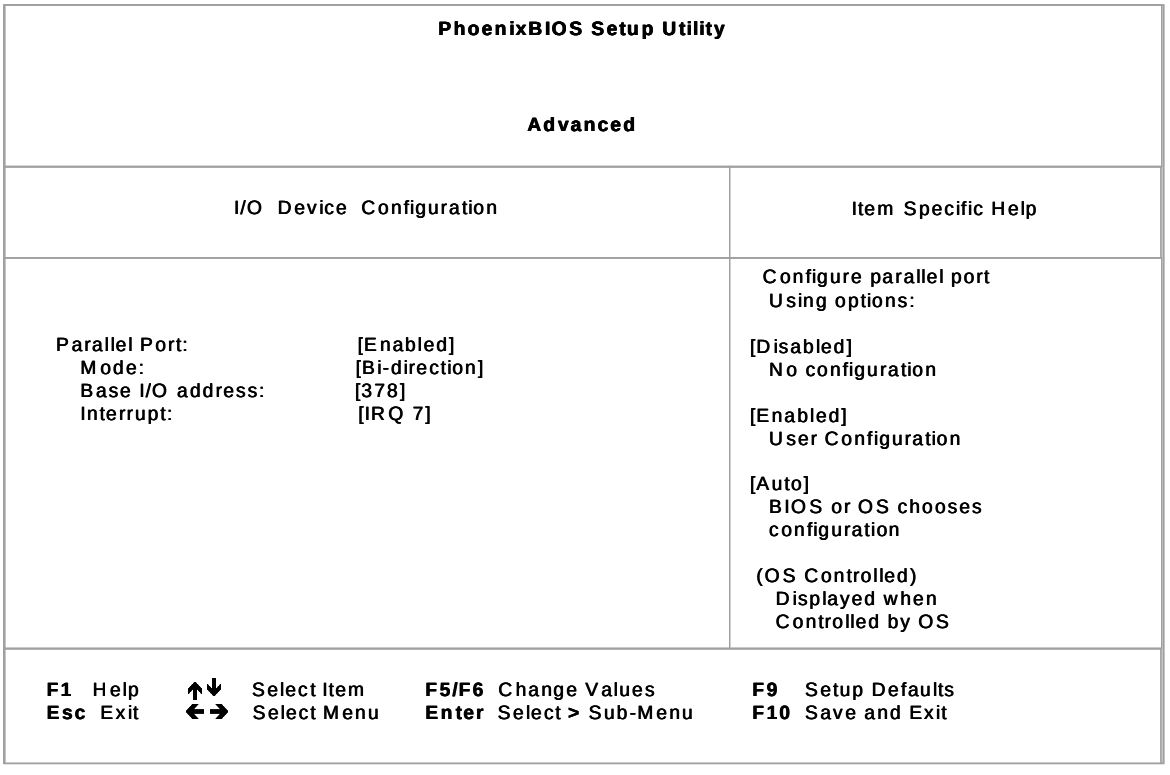


Parameter	Description	Options
Type	The setting of detail functions stands on type. *Help*: Auto= Autotype Hard-Disk drive installed here	**Auto**/ CD-ROM/ ATAPI Removable/ User

I/O Device Configuration

The parameters in this screen are for advanced users only. You do not need to change the values in this screen because these values are already optimized.

The I/O Device Configuration screen assigns resources to basic computer communication hardware.



The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

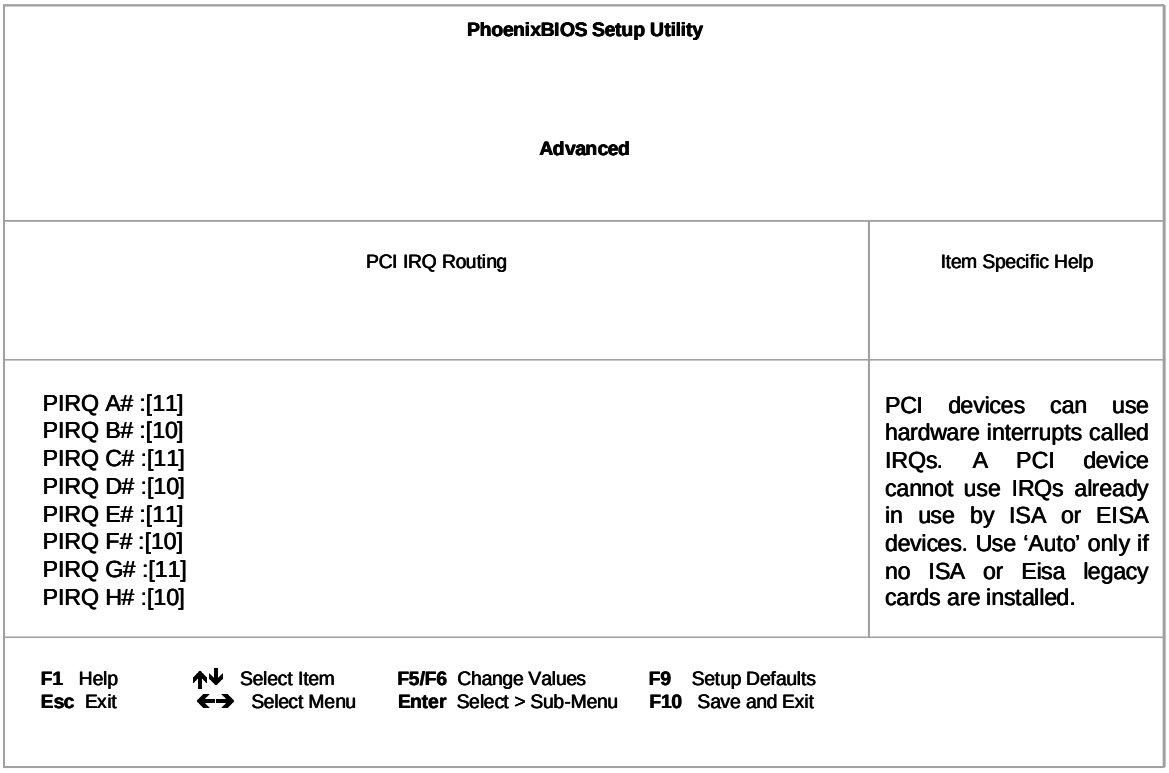
Parameter	Description	Options
Parallel Port	Enables or disable the parallel port. The parallel port is a PnP device. Enabled/Disabled setting won't affect the Windows Device Manager setting of the parallel port. Help: [Enable]: User configuration [Disable]: No configuration	**Enabled** or Disabled
	Mode: Sets operation mode of the parallel port. Only set the parallel post operation mode in BIOS setup. If set to be ECP mode, the Windows will assume the parallel port as the ECP port.	**Bi-directional**, Output only, EPP, ECP
	Base I/O address: If operation mode is set to Base I/O address, sets the base I/O address of the parallel port.	**378**, 3BC, 278
	Interrupt: If operation mode is set to interrupt, sets the interrupt request of the parallel port.	**IRQ7**, IQ5

NOTE: When the device is disabled, all the sub-items will be hidden.

PCI IRQ Routing

The PCI IRQ Routing sub-menu allows you to set IRQ for PCI devices.

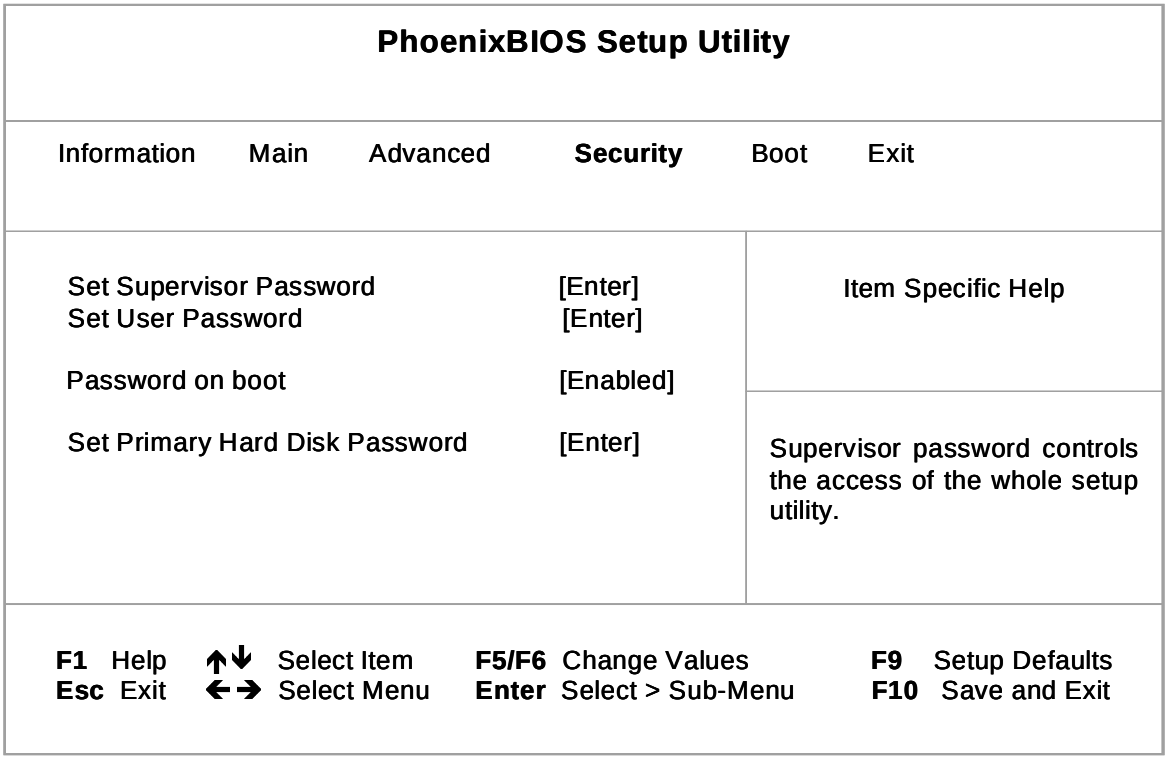
CAUTION: The parameters in this screen are for advanced users only. Typically, you do not need to change the values in this screen because these values are already optimized.



Parameter	Description	Options
PIRQ A-H#	Set default IRQ of PCI device. Help: PCI devices can use hardware interrupt called IRQs. A PCI device cannot use IRQs already in use by ISA or EISA devices. Use "Auto" only if no ISA or EISA legacy cards are installed.	**IRQ 10** or **IRQ11,** Disabled, Auto Select, IRQ3, IRQ7

System Security

The System Security screen contains parameters that help safeguard and protect your computer from unauthorized use.



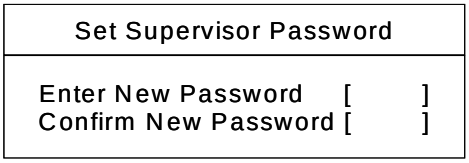
The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

Parameter	Description	Options
Set Supervisor Password	While entering SETUP, BIOS need to request user to enter supervisor password if set. This password protects the BIOS SETUP menu from unauthorized entry.	**Enter**
Set User Password	During POST, BIOS needs to check user password if set. This password protects the system from unauthorized user entry before OS boots up.	**Enter**
Password on Boot	During POST, BIOS need to check power on password if set. This password protects the computer from unauthorized entry during boot-up.	**Enabled** or Disabled
Set Primary Hard Disk Password	During POST, BIOS need to check Hard disk password if set. This password protects the computer from unauthorized entry during boot-up if a second Hard disk is inserted.	**Enter**

Setting a Password

Follow these steps:

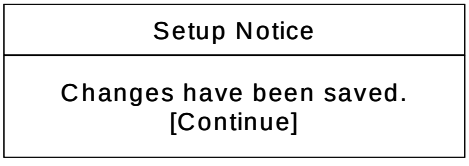
1. Use the cursor ↑/↓ keys to highlight a Password parameter (Supervisor Password, User Password, Password on boot or Primary Hard Disk Password) and press the ENTER key. The password box appears as below if choosing Set Supervisor Password:



2. Type a password. The password may consist of up to eight characters (A-Z, a-z, 0-9) and then press ENTER .

IMPORTANT: Be very careful when typing your password because the characters do not appear on the screen.

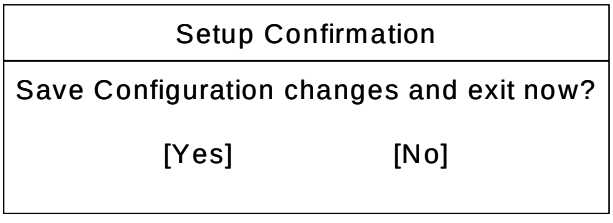
3. Retype password to verify your first entry and then press ENTER . The following screen appears:



4. After setting the password, the computer automatically sets the chosen password parameter to Present.

5. Press ESC to return to the main menu.

6. Press F10 . The following dialogue box appears.



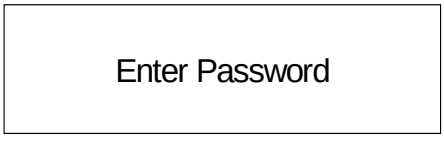
7. Select **Yes** and press ENTER to save the password and exit the BIOS utility.

Four password types protect your computer from unauthorized access. Setting these passwords creates several different levels of protection for your computer and data:

- Supervisor Password prevents unauthorized entry to the BIOS Utility. Once set, you must key-in this password to gain access to the BIOS Utility.
- User Password and Password On Boot secure your computer against unauthorized use. Combine the use of this password with password checkpoints on boot-up and resume from hibernation for maximum security.
- Hard Disk Password protects your data by preventing unauthorized access to your hard disk. Even if the hard disk is removed from the computer and moved to another computer, it cannot be accessed without the Hard Disk Password.

When a password is set, a password prompt appears on the left-hand corner of the display screen.

1. When the Supervisor Password is set, the following prompt appears when you press F2 to enter the BIOS Utility at boot-up.

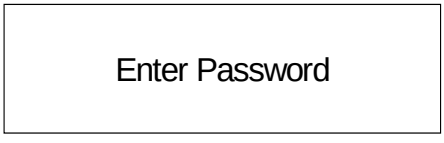


Type the Supervisor Password and press ENTER to access the BIOS Utility.

2. When the User Password is set and Power on boot is set enabled, the following prompt appears at boot-up when pressing F2.

Type the User Password (a symbol appears for each character you type) and press ENTER to use the computer. If you enter the password incorrectly, an **x** symbol appears. Try again and press ENTER.

3. When the Power on boot is set enabled, the following prompt appears at boot-up.



4. When the Hard Disk Password is set, the following prompt appears at boot-up.

Type the Hard Disk Password (a symbol appears for each character you type) and press ENTER to use the computer. If you enter the password incorrectly, an **x** symbol appears. Try again and press ENTER.

You have three chances to enter a password. If you successfully entered the password, the system starts Windows.

Removing a Password

If you fail to enter the password correctly after three tries, the system hangs.

To change a password, follow the same steps used to set a password.

1. Use the cursor ↑/↓ keys to highlight a Password parameter (Supervisor Password, User Password, Password on boot) and press ENTER. The following prompt appears:

2. Type Current Password, leave the " Enter New Password" blank and press ENTER. Leave " Confirm New Password" blank and press ENTER, then the password is removed.

Boot Options

Users can press F12 during POST to enter the Boot Options Menu. In this menu users can change boot device without entering BIOS SETUP utility.

PhoenixBIOS Setup Utility					
Information	Main	Advanced	Security	**Boot**	Exit
+Removable Devices +Hard Drive CD-ROM Drive D2D Recovery					Item Specific Help Keys used to view or configure devices: <Enter> expands or collapses devices <F5> and <F6> moves the device up or down.
F1 Help ↑↓ Select Item **F5/F6** Change Values **F9** Setup Defaults **Esc** Exit ←→ Select Menu **Enter** Select **>** Sub-Menu **F10** Save and Exit					

NOTE: There are three priorities that can let the user to specify the boot device sequence.

The priority of options from top to bottom is 1st, 2nd, 3rd ,and 4th.

If the Removable Device or Hard Drive option has multi devices, show '+' in front of option and show each device information.

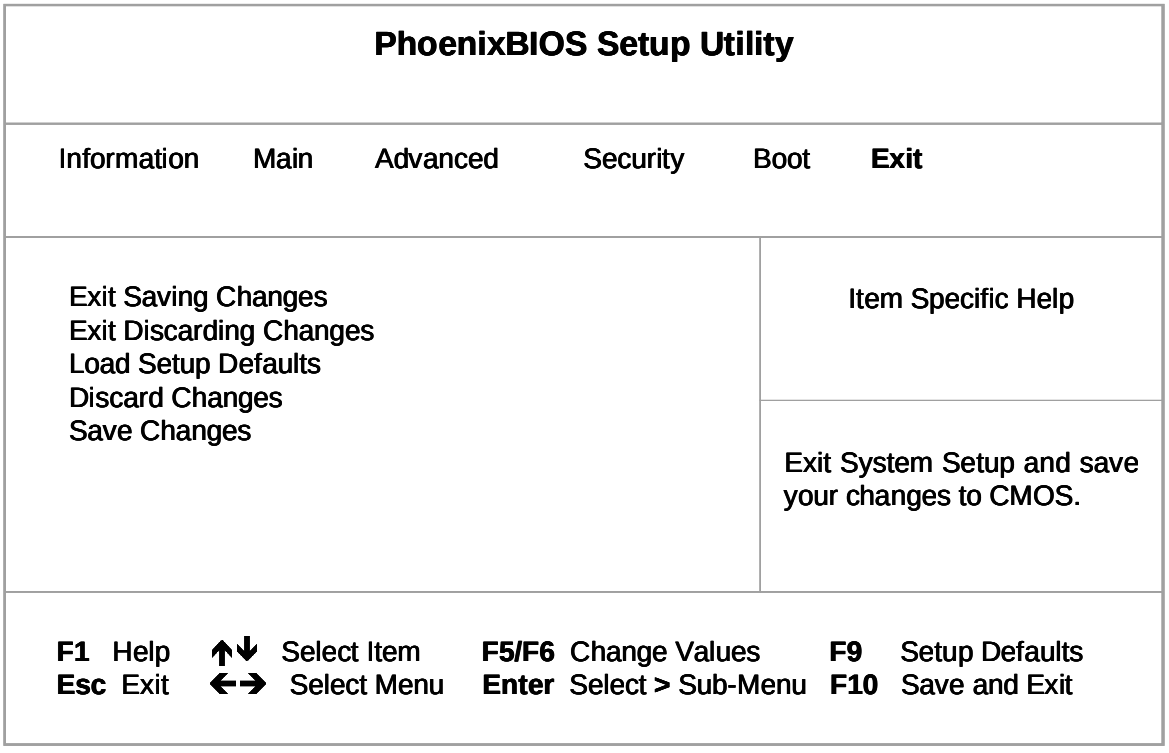
Help: Keys used to view or configure devices:

< ENTER > expands or collapses devices with a + or -

< F5 >and < F6 > moves the device up and or down.

Exit Setup

This menu contains exit options.

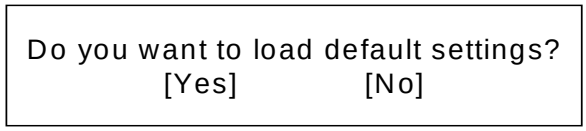


The following table describes the parameters in this screen. Setting in **boldface** are the defaults and suggested parameter settings.

Parameter	Description
Exit Saving Changes	Save any changes, and exit BIOS setup. *Help:* Exit System Setup and save your changes to CMOS.
Exit Discarding Changes	Discard any changes, and exit BIOS setup. *Help:* Exit utility without saving Setup data to CMOS.
Load Setup Defaults	Load Setup Defaults. *Help:* Load default values for all SETUP items.
Discard Changes	Discard any changes. *Help:* Load previous value from CMOS for all SETUP items.
Save Changes	Save changes. *Help:* Save Setup data to CMOS.

Load Setup Default

If you want to restore all parameter settings to their default values, select this menu item and press ENTER . The following dialog box displays.



If you would like to load factory- default settings for all parameters, use the cursor ← / → keys to select **Yes**; then press ENTER . Choose **No** if otherwise.

BIOS Flash Utility

The BIOS flash memory update is required for the following conditions:

- New versions of system programs
- New features or options

Use the WFlash utility to update the system BIOS flash ROM.

Executing the Flash Program

Please do the following to update BIOS.

To update BIOS:

1. Prepare the BIOS Flash Diskette
   a. Prepare the BIOS Flash Package.
2. Unzip this package
3. Run Update.bat
4. The system will ask you to reboot the computer after the BIOS is updated.

System Utility Diskette

This utility diskette is for the TravelMate 230/ 280 notebook machine. You can find the utility in Service CD kit. It provides the following functions:

1. Panel ID Utility
2. 1394 GUID Utility
3. Mother Board Data Utility

To use this diskette, first boot from this diskette, then a “Microsoft Windows ME Startup Menu” prompt you to choose the testing item. Follow the instructions on screen to proceed.

NOTE: This program contains a readme.txt file. This readme.txt file will introduce each test utility and its functions.

System Diagnostic Diskette

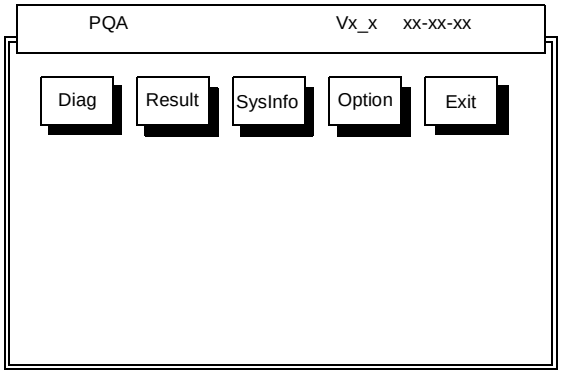
IMPORTANT: [1]The diagnostics program here that we used is called PQA (Product Quality Assurance) and is provided by Headquarters. You can utilize it as a basic diagnostic tool. To get this program, you can find it in the service CD kit.
To better fit local service requirements, your regional office MAY have other diagnostic program. Please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

NOTE: This program contains a readme.txt file. This readme.txt file will introduce each test and its functions.

[1] New added description. Please pay attention to it.

Running PQA Diagnostics Program

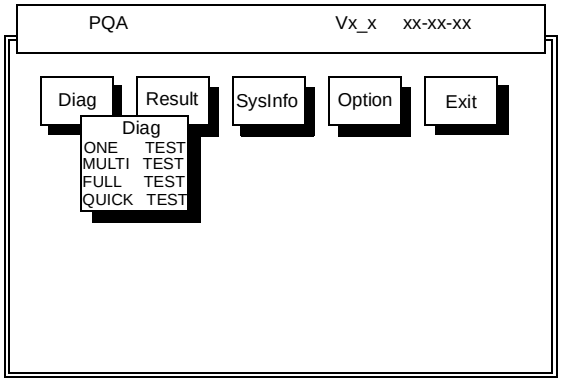
To run the program, simply type: PQA and press [ENTER] . The main menu appears on screen.



Press [←] / [→] to move around the main menu. Press [ENTER] to enable the selected option. The main options are Diag, Result, SysInfo, Option and Exit.

The Diag option lets you select testing items and times.

The following screen appears when you select Diag from the main menu.



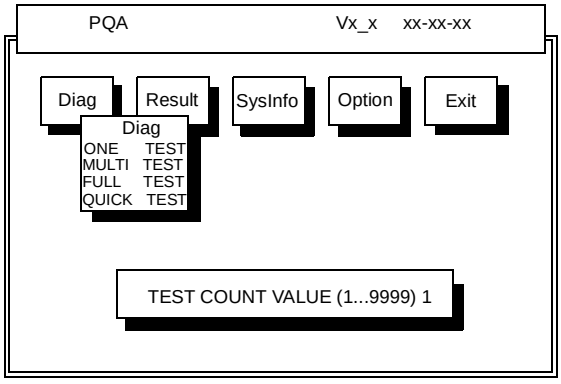
One Test performs a single test and Manual checks the selected test items in sequence.

Multi Test performs multiple tests of the selected items and check the selected test items in sequence.

Full Test performs all test items in detail for your system.

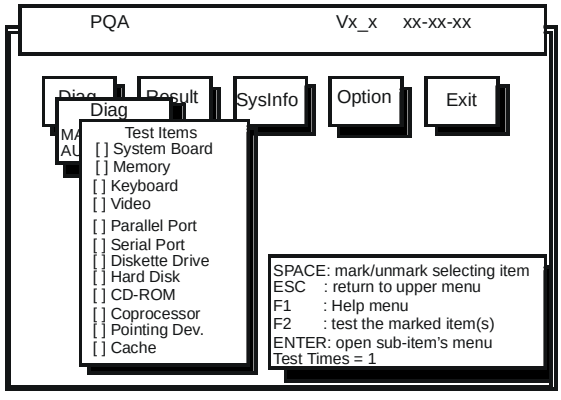
Quick Test performs all test items quickly for your system.

The screen below appears if you select Multi Test.



Specify the desired number of tests and press ENTER .

After you specify the number of tests to perform, the screen shows a list of test items (see below).



Move the highlight bar ↑ and ↓ from one item to another. Press SPACE to enable or disable the item. The triangle mark indicates that there are available sub-options. Press ENTER to view the available options of each selected item. Press ESC to close the submenu.

The right corner screen information gives you the available function keys and the specified test number.

- SPACE : Enables/disables the item
- ESC : Exits the program
- F1 : Help
- F2 : Tests the selected item(s)
- ENTER : Opens the available options
- Test Times: Indicates the number of tests to perform.

NOTE: The F1 and F2 keys function only after you finish configuring the Test option.

NOTE: When any errors are detected by diagnostic program, refer to “Index of PQA Diagnostic Error Code” for troubleshooting.

Machine Disassembly and Replacement

This chapter contains step-by-step procedures on how to disassemble the notebook computer for maintenance and troubleshooting.

To disassemble the computer, you need the following tools:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge
- Number 1 Flat-bladed screwdriver
- Phillips screwdriver
- Tweezers
- Plastic Flat-bladed screwdriver
- Number 5 Hexed screwdriver

NOTE: The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components.

General Information

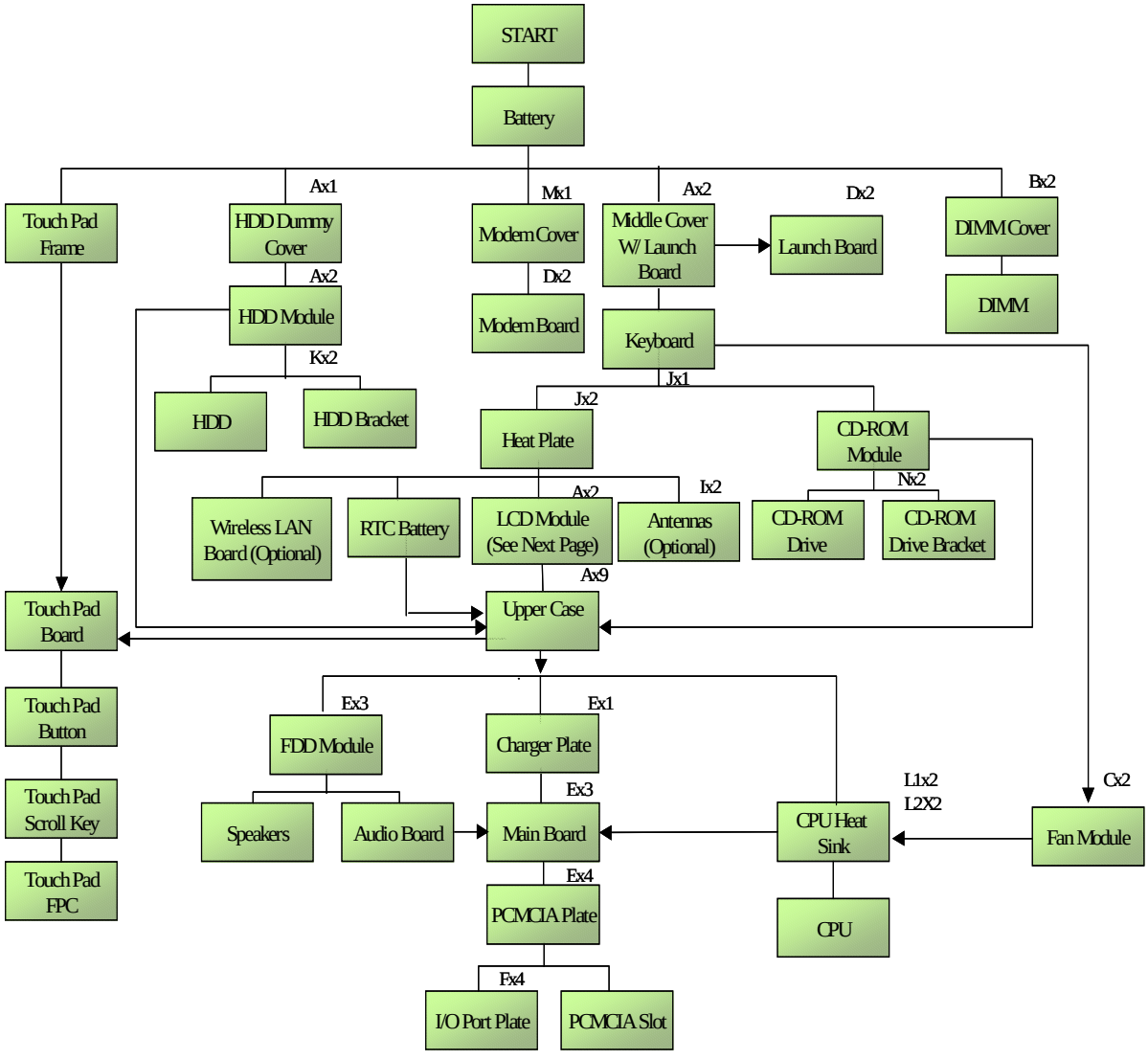
Before You Begin

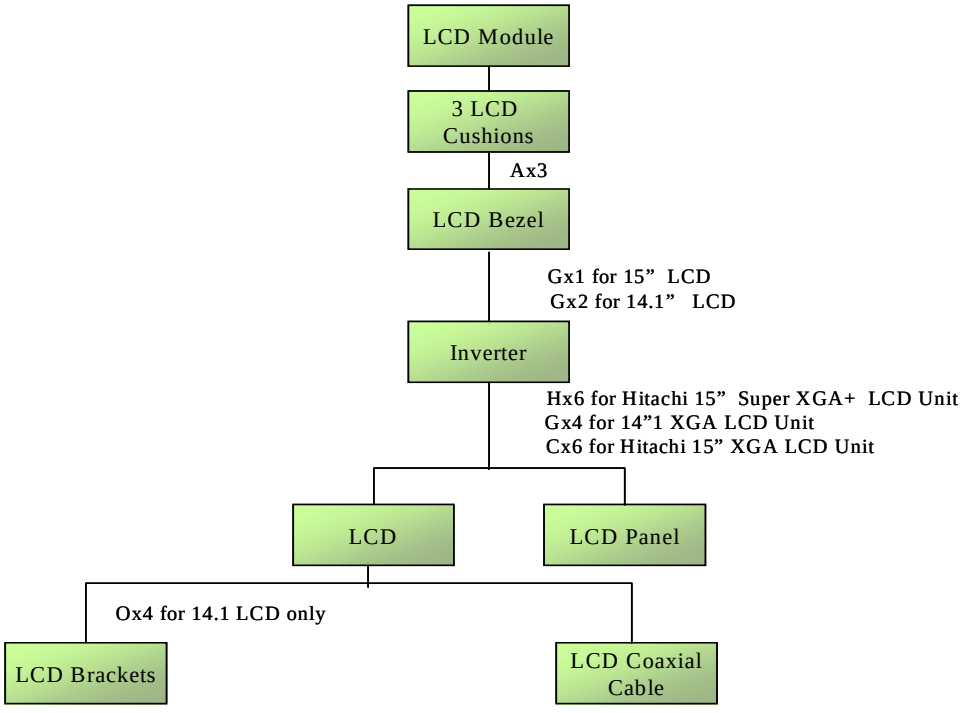
Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.

Disassembly Procedure Flowchart

The flowchart on the succeeding page gives you a graphic representation on the entire disassembly sequence and instructs you on the components that need to be removed during servicing. For example, if you want to remove the main board, you must first remove the keyboard, then disassemble the inside assembly frame in that order.




LCD Module
3 LCD Cushions
Ax3
LCD Bezel
Gx1 for 15” LCD
Gx2 for 14.1” LCD
Inverter
Hx6 for Hitachi 15” Super XGA+ LCD Unit
Gx4 for 14”1 XGA LCD Unit
Cx6 for Hitachi 15” XGA LCD Unit
LCD
LCD Panel
Ox4 for 14.1 LCD only
LCD Brackets
LCD Coaxial Cable

Screw List

Item	Description
A	Screw M2.5XL6 Flat Head (Black)
B	Screw M2XL3 Washer Flat Head (Black)
C	Screw M2XL4 Flat Head (Black)
D	Screw M2XL4 Round Head (Black)
E	Screw M2XL5 Round Head (Silver)
F	Hex Screw
G	Screw M2.5XL4 Flat Head (Silver)
H	Screw M2XL4.5 Flat Head (Silver)
I	Screw M2XL3 Flat Head (Black)
J	Screw M2XL12 Round Head (Black)
K	Screw M3XL4 Flat Head (Silver)
L1	CPU Sink Screw 3kg-cm (Upper
L2	CPU Sink Screw 2kg-cm (Lower)
M	Modem Special Screw M2XL4 Washer
N	M2XL3 Flat Head (Silver)
O	Screw M2XL3 Flat Head (Silver)

Removing the Battery

1. To remove the battery, push the battery release button, and then slide the battery out from the machine.

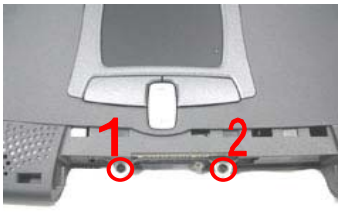
Removing the Hard Disk Drive Module

1. See “Removing the Battery” on page 62
2. To remove the hard disk drive, first remove the one screw from the hard disk drive cover, and then remove the cover.


3. Remove the two screws as shown and then pull the plastic tag to detach the hard disk drive module out from the machine carefully.



NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the hard disk drive module to the main unit. It is suggested that you reverse the sequence when you remove the screws.



Disassembling the Hard Disk Drive Module

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. To disassemble the hard disk drive module, first remove the two screws from the hard disk drive bracket.

4. Detach the hard disk drive from the hard disk drive bracket.

NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the hard disk drive bracket to the hard disk drive module. It is suggested that you reverse the sequence when you remove the screws.

Removing the Memory Module

1. See “Removing the Battery” on page 62
2. To remove the memory module from the machine, first remove the two screws from the memory cover.

3. Lift the cover off, then remove the memory cover.

4. Push out the latches on both sides of the socket and pull the memory module out from the socket.

Removing the Modem Board

1. See “Removing the Battery” on page 62
2. To remove the modem board, first remove the screw from the modem cover.

3. Remove the modem cover from the machine.

4. Remove two screws from the modem board as shown, then remove the modem board from the main unit carefully by using a plastic bladed screw driver.

5. Disconnect the modem cable from the modem board, then remove the modem board.

NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the modem board to the unit. It is suggested that you reverse the sequence when you remove the screws.


1
2

Disassembling the LCD

Removing the Middle Cover

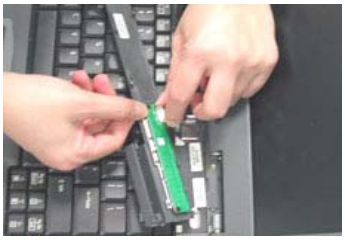
1. See “Removing the Battery” on page 62
2. To remove the middle cover, first remove the two screws from the rear of the unit and then pry up the middle cover with a plastic flat screwdriver in the way as shown.






3. Disconnect the launch board cable from the launch board and then detach the middle cover away from the main unit.

.



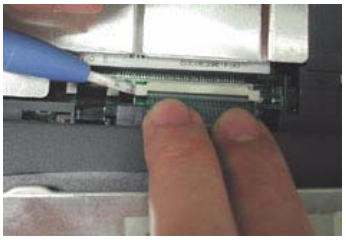
Removing the Launch Board

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. Remove the two screws and then detach the launch board from the middle cover.


Removing the Keyboard

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. To remove the keyboard, first pull out and upward to expose the keyboard.

4. Use a plastic flat screwdriver to help disconnect the keyboard cable from the main board carefully, then remove the keyboard from the main board.


Removing the CD-ROM Drive Module

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. Remove the one screw as shown here and then slide the CD-ROM drive module out from the main unit.



Disassembling the CD-ROM Drive Module

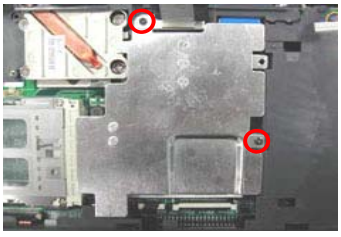
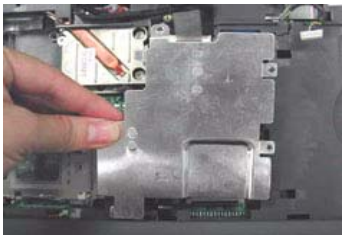
1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the CD-ROM Drive Module” on page 69
5. To disassemble the CD-ROM drive module, first remove two screws as shown.

6. Remove the CD-ROM drive bracket from the CD-ROM drive module.

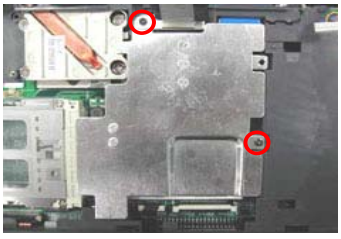
NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the CD-ROM drive bracket to the CD-ROM drive module. It is suggested that you reverse the sequence when you remove the screws.

Removing the Heat Plate

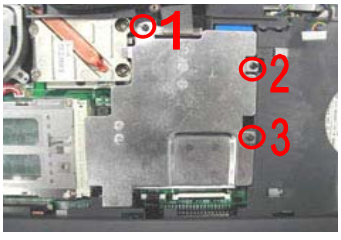
1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. Remove the three screws as shown and then detach the heat plate from the main unit.

NOTE: 1.Because the CD-ROM module and the heat plate share the common screw, you only have to remove the two screws as shown below If you detach the heat plate from the main unit after the step of removing the CD-ROM. The same principle applies to the assembly procedures.



NOTE: 2.Please follow the numeric orders such as 1, 2, 3, and 4 to screw the heat plate to the main unit. It is suggested that you reverse the sequence when you remove the screws.



Removing the LCD Module

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. Remove the two screws from the base of the unit.

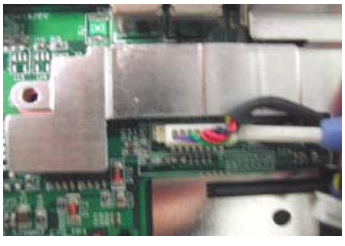
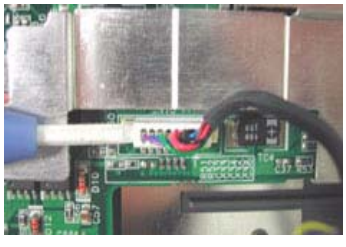

6. Disconnect the LCD coaxial cable from the main board.

7. Remove the inverter cable from the main board with a plastic flat screwdriver.

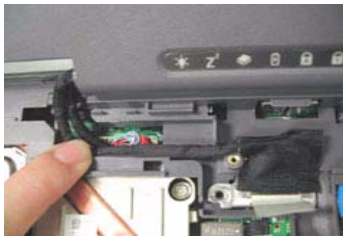


8. Remove the LCD module from the main unit carefully.

9. Disconnect the launch board cable from the main board and remove it.

NOTE: Please arrange the inverter cable and the coaxial cable well in the way as shown after you connect them to the main board.

Removing the LCD Bezel

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. Use plastic tweezers to remove the three LCD cushions on the LCD bezel, and then remove the three screws below from the LCD bezel.



7. Snap off the bezel carefully, and then remove the LCD bezel from the LCD module.



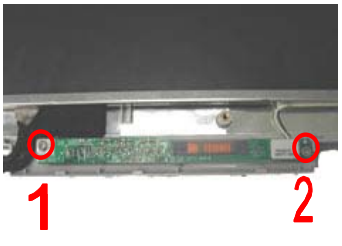

NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the LCD bezel to the LCD module It is suggested that you reverse the sequence when you remove the screws.

Removing the Inverter Board (14.1” LCD)

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. To remove the inverter board, first remove two screws from the inverter board.

8. Disconnect the LCD power cable and the inverter cable from the inverter board.

NOTE: 1. Please follow the numeric orders such as 1, 2, 3, and 4 to screw the inverter board to the LCD panel. It is suggested that you reverse the sequence when you remove the screws.



NOTE: 2. Please route the cables with the inverter cable placed at the right side of the coaxial cable as shown below before you attach the inverter board to the LCD panel.

Removing the Inverter Board (15” LCD)

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. To remove the inverter board, first remove one screw from the inverter board.

8. Disconnect the LCD power cable and the inverter cable from the inverter board.

NOTE: Please route the cables with the inverter cable placed at the right side of the coaxial cable as shown below before you attach the inverter board to the LCD panel.

Removing the 14.1” TFT LCD

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. See “Removing the Inverter Board (14.1” LCD)” on page 74
8. To remove the LCD, first remove the four screws from the LCD, then remove the LCD from the LCD panel.



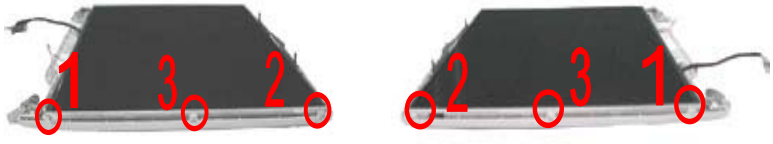


NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the LCD to the LCD panel. It is suggested that you reverse the sequence when you remove the screws.

Removing the 15” TFT LCD

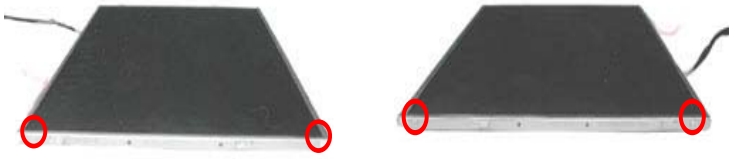
1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. See “Removing the Inverter Board (15” LCD)” on page 75
8. To remove the LCD, first remove the six screws from the LCD, then remove the LCD from the LCD panel.

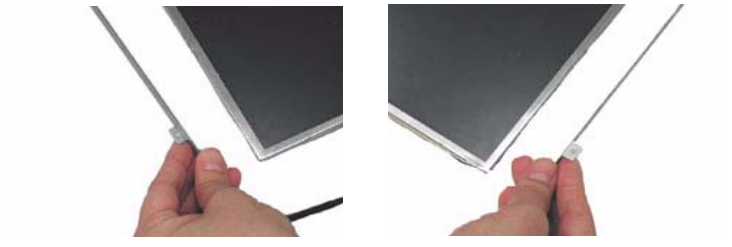
NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the LCD to the LCD panel. It is suggested that you reverse the sequence when you remove the screws.



Removing the 14.1” TFT LCD Brackets

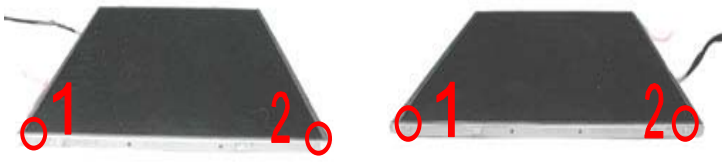
1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. See “Removing the Inverter Board (14.1” LCD)” on page 74
8. See “Removing the 14.1” TFT LCD” on page 76
9. Remove four screws on each side to remove the LCD brackets and then detach the LCD brackets from the LCD.





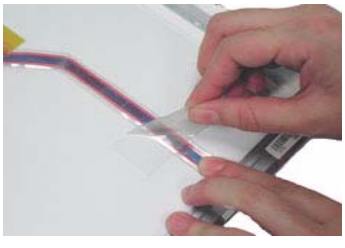
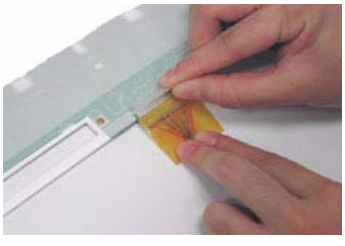
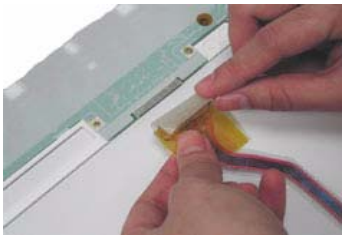
NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the LCD brackets to the LCD. It is

suggested that you reverse the sequence when you remove the screws.



Removing the LCD Coaxial Cable

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the LCD Module” on page 71
6. See “Removing the LCD Bezel” on page 73
7. See “Removing the Inverter Board (14.1” LCD)” on page 74
8. See “Removing the Inverter Board (15” LCD)” on page 75
9. Remove the tape then remove the LCD coaxial cable from the LCD.

Disassembling the Main Unit

Removing the RTC Battery

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. Disconnect the RTC cable and then remove the RTC battery from the upper case gently.


Removing the Touch Pad Frame

1. See “Removing the Battery” on page 62
2. Use a plastic flat screwdriver to pry up the touch pad frame very carefully.


3. Detach the touch pad frame from the upper case gently.

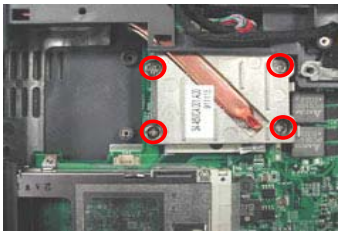

Removing the Fan Module

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. To remove the fan, first remove the screw from the fan and then disconnect the fan cable from the main board by using a plastic flat screwdriver.

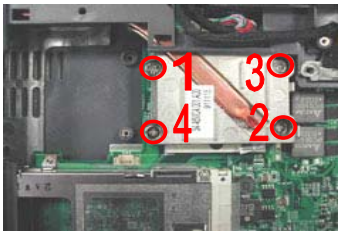
5. Remove the other screw from the base of the unit, then remove the fan from the lower case.

Removing the CPU Heat Sink

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the Audio Board” on page 85
6. Remove four screws and then detach the CPU heat sink from the main unit.



NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the CPU heat sink to the main board. It is suggested that you reverse the sequence when you remove the screws.

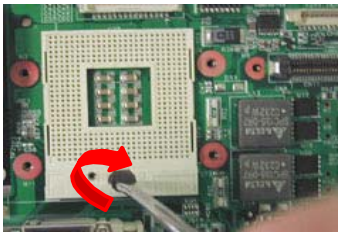


Removing the Processor

1. See “Removing the Battery” on page 62

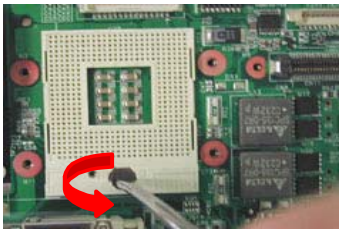
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the Audio Board” on page 85
6. See “Removing the CPU Heat Sink” on page 80
7. Use a flat screwdriver to unlock the CPU socket counter clockwise, detach the CPU from its socket and then lock the CPU socket clockwise with the flat screwdriver.

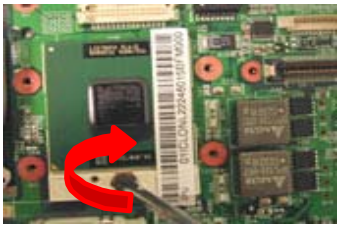




Installing the Processor

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70
5. See “Removing the Audio Board” on page 85
6. See “Removing the CPU Heat Sink” on page 80
7. Use a flat screwdriver to unlock the CPU socket counterclockwise, attach the CPU into its socket and then lock the CPU socket clockwise with the flat screwdriver



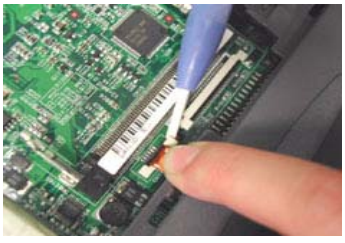


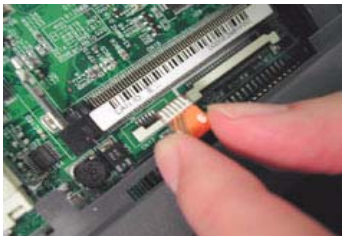
NOTE: Please make sure the triangle mark on the CPU aligns with the one on the CPU socket.

Removing the Upper Case

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63

3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. Use a plastic flat screwdriver to disconnect the touch pad cable from the main board.





10. To remove the upper case, first remove the nine screws from the base of the unit as shown.

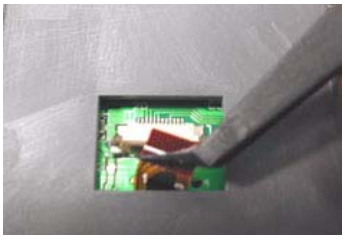
11. Pull the upper case from the unit gently.

NOTE: 1. **Important**: If the notebook is installed with antennas and wireless LAN board, please disconnect the two RF cables from the sockets on the wireless LAN board before removing the upper case from the lower case. Any failure to do so will cause the damage to the two RF cables.

2. Please follow the numeric orders such as 1, 2, 3, and 4 to screw the upper case to the lower case. It is suggested that you reverse the sequence when you remove the screws.

Removing the Touch Pad Board

1. See “Removing the Battery” on page 62
2. See “Removing the Touch Pad Frame” on page 79
3. See “Removing the Upper Case” on page 81
4. To detach the touch pad board, first disconnect the touch pad cable from the touch pad board with a plastic flat screwdriver and plastic tweezers, and then remove the touch pad board from the upper case.

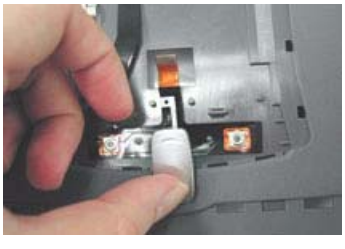




Removing the Touch Pad Button

1. See “Removing the Battery” on page 62
2. See “Removing the Touch Pad Frame” on page 79
3. See “Removing the Upper Case” on page 81
4. See “Removing the Touch Pad Board” on page 83
5. Remove the touch pad button.

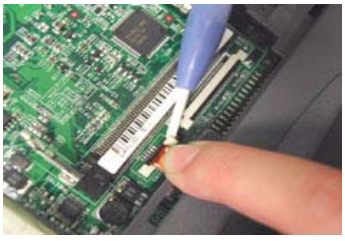
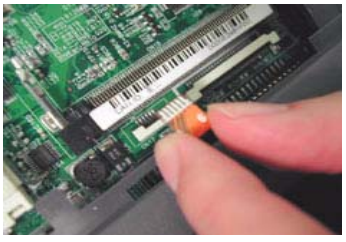
Removing the Touch Pad Scroll Key

1. See “Removing the Battery” on page 62
2. See “Removing the Touch Pad Frame” on page 79
3. See “Removing the Upper Case” on page 81
4. See “Removing the Touch Pad Board” on page 83
5. See “Removing the Touch Pad Button” on page 83
6. Release the scroll key by pressing it downward gently and then detach it from the upper case.

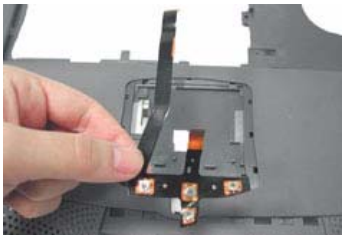



Removing the Touch Pad Cable

1. See “Removing the Battery” on page 62
2. See “Removing the Touch Pad Frame” on page 79
3. See “Removing the Upper Case” on page 81
4. See “Removing the Touch Pad Board” on page 83
5. See “Removing the Touch Pad Button” on page 83
6. See “Removing the Touch Pad Scroll Key” on page 83
7. Remove the touch pad cable from the main board carefully.

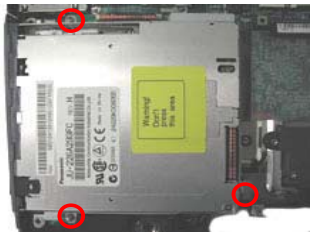



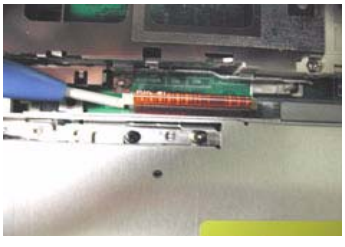
8. Detach the touch pad cable from the upper case carefully.

Removing the Floppy Disk Drive Module

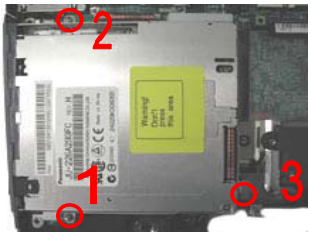
1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the Upper Case” on page 81
10. Remove the three screws as shown, and disconnect the FDD cable from the main board.





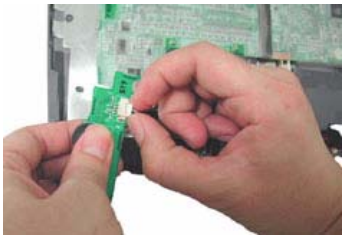
11. Detach the FDD module from the lower case.

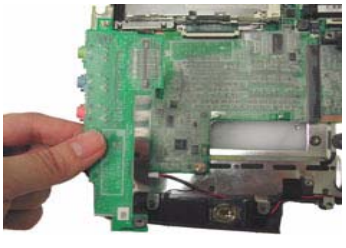
NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the FDD module to the main board. It is suggested that you reverse the sequence when you remove the screws.



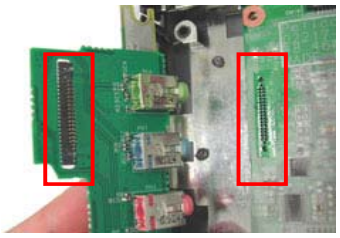
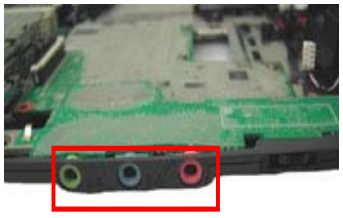
Removing the Audio Board

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the Upper Case” on page 81
10. See “Removing the Floppy Disk Drive Module” on page 84
11. Detach the audio board from the main board and turn it over to disconnect the speaker cable from the audio board and then remove the audio board from the main unit.



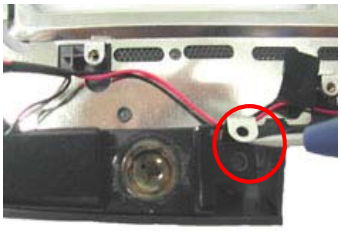
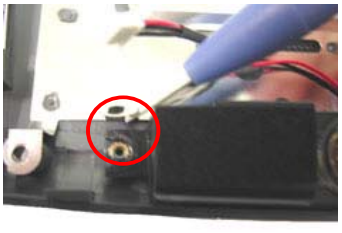


NOTE: When assembling the audio board to the main board and the lower case, please make sure the audio board is attached with the pins inserted and the ports installed properly.

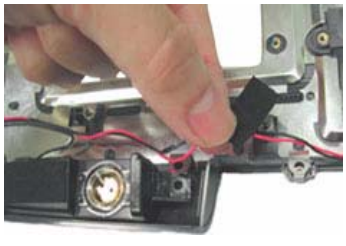
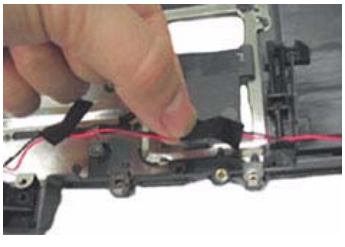




Removing the Speakers

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the Upper Case” on page 81
10. See “Removing the Floppy Disk Drive Module” on page 84
11. Release the two latches which fix the left speaker to the lower case.

12. Lift up the cables and then detach the speakers from the lower case.


Removing the Charger Plate

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70

7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the Upper Case” on page 81
10. To remove the charger plate, first remove the screw from the charger plate, and then remove the charger plate from the main board.

Removing the Main Board

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the CPU Heat Sink” on page 80
10. See “Removing the Upper Case” on page 81
11. See “Removing the Floppy Disk Drive Module” on page 84
12. See “Removing the Audio Board” on page 85
13. See “Removing the Charger Plate” on page 86
14. Remove the three screws from the main board as shown below.

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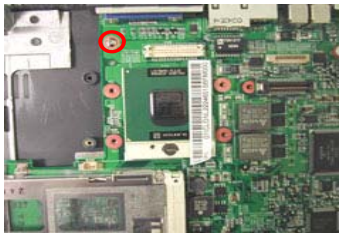
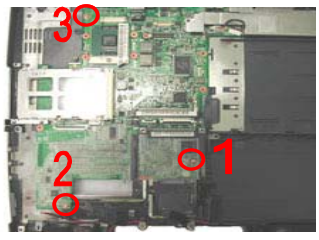


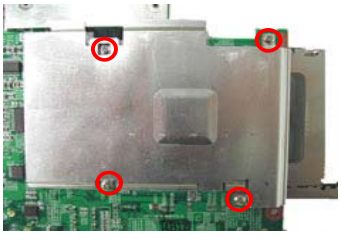
15. Detach the main board from the lower case carefully in the way as shown here.

NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the main board to the lower case. It is suggested that you reverse the sequence when you remove the screws.

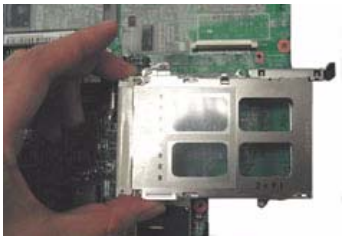


Removing the PCMCIA Slot

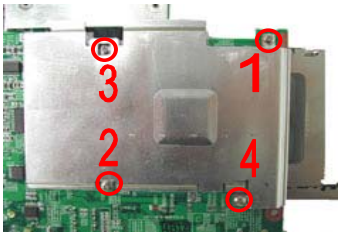
1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the CPU Heat Sink” on page 80
10. See “Removing the Upper Case” on page 81
11. See “Removing the Floppy Disk Drive Module” on page 84
12. See “Removing the Audio Board” on page 85
13. See “Removing the Charger Plate” on page 86
14. See “Removing the Main Board” on page 87
15. Remove four screws from the PCMCIA plate to remove the plate.



16. Detach the PCMCIA slot from the main board.



NOTE: 1. Please follow the numeric orders such as 1, 2, 3, and 4 to screw the PCMCIA plate to the main board. It is suggested that you reverse the sequence when you remove the screws.

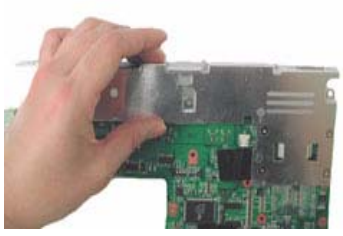


2. Please note that the I/O port bracket should be attached to the main board before assembling the PCMCIA slot to the main board.

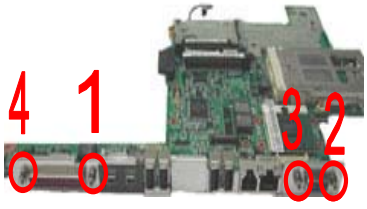
Removing the I/O Port Bracket

1. See “Removing the Battery” on page 62
2. See “Removing the Hard Disk Drive Module” on page 63
3. See “Removing the Middle Cover” on page 68
4. See “Removing the Keyboard” on page 69
5. See “Removing the CD-ROM Drive Module” on page 69
6. See “Removing the Heat Plate” on page 70
7. See “Removing the LCD Module” on page 71
8. See “Removing the RTC Battery” on page 79
9. See “Removing the CPU Heat Sink” on page 80
10. See “Removing the Upper Case” on page 81
11. See “Removing the Floppy Disk Drive Module” on page 84
12. See “Removing the Audio Board” on page 85
13. See “Removing the Charger Plate” on page 86
14. See “Removing the Main Board” on page 87
15. See “Removing the PCMCIA Slot” on page 88
16. Remove the four hex screws to detach the I/O port bracket from the main board.

17. Detach the I/O port bracket from the main board.



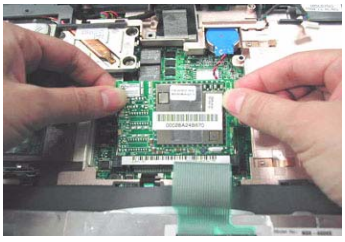
NOTE: Please follow the numeric orders such as 1, 2, 3, and 4 to screw the I/O port to the main board. It is suggested that you reverse the sequence when you remove the screws.



System Upgrade Procedure

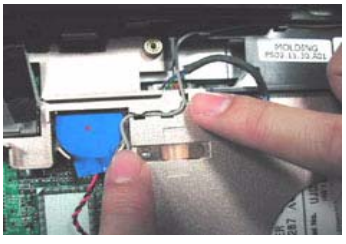
Base Unit to Wireless Unit

1. See “Removing the Battery” on page 62
2. See “Removing the Middle Cover” on page 68
3. See “Removing the Keyboard” on page 69
4. See “Removing the Heat Plate” on page 70 (Remove three screws here)
5. Note that the one with the white RF cable is for the right antenna and the one with the black RF cable is for the left antenna.
6. Insert the wireless LAN board into its socket and press it down to secure well.

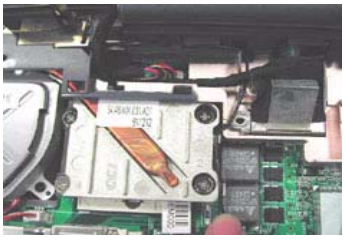



7. Attach the right antenna to the upper case and secure it with a screw. Route the cable as shown below.



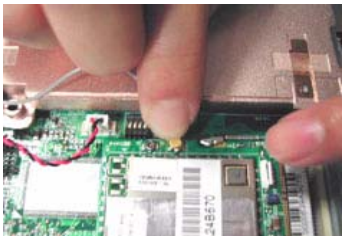



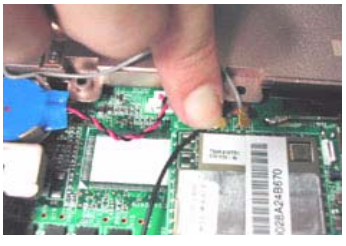
8. Attach the left antenna to the upper case and secure it with a screw. Route the cable as shown below.

9. Be careful to arrange the right and left RF cables well.

10. Connect the RF cables into the Wireless LAN board.





NOTE: Please note that the black RF cable should be routed beneath the coaxial cable.

Troubleshooting

Use the following procedure as a guide for computer problems.

NOTE: The diagnostic tests are intended to test only Acer products. Non-Acer products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.
3. Use the following table with the verified symptom to determine which page to go to.

Symptoms (Verified)	Go To
Power failure. (The power indicator does not go on or stay on.)	“Power System Check” on page 95.
POST does not complete. No beep or error codes are indicated.	“Power-On Self-Test (POST) Error Message” on page 98 “Undetermined Problems” on page 106
POST detects an error and displayed messages on screen.	“Error Message List” on page 99
The diagnostic test detected an error and displayed a FRU code.	“System Diagnostic Diskette” on page 54
Other symptoms (i.e. LCD display problems or others).	“Power-On Self-Test (POST) Error Message” on page 98
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to “Power-On Self-Test (POST) Error Message” on page 98 “Intermittent Problems” on page 105 “Undetermined Problems” on page 106

System Check Procedures

External Diskette Drive Check

Do the following to isolate the problem to a controller, driver, or diskette. A write-enabled, diagnostic diskette is required.

NOTE: Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or cause the drive to fail.

Do the following to select the test device. See “System Diagnostic Diskette” on page 54 for details.

1. Boot from the diagnostics diskette and start the PQA program (see “System Diagnostic Diskette” on page 54).
2. Go to the diagnostic Diskette Drive in the test items.
3. Press F2 in the test items.
4. Follow the instructions in the message window.

If an error occurs with the internal diskette drive, first turn off the power and then reconnect the diskette connector to the system board.

If the error still remains:

1. Reconnect the external diskette drive/CD-ROM module.
2. Replace the external diskette drive/CD-ROM module.
3. Replace the system board.

External CD-ROM Drive Check

Do the following to isolate the problem to a controller, drive, or CD-ROM. Make sure that the CD-ROM does not have any label attached to it. The label can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

1. Boot from the diagnostics diskette and start the PQA program (refer to “System Diagnostic Diskette” on page 54.
2. Go to the diagnostic CD-ROM in the test items.
3. Press F2 in the test items.
4. Follow the instructions in the message window.

If an error occurs, first turn off the power and then reconnect the connector to the system board. If the error still remains:

1. Reconnect the external diskette drive/CD-ROM module.
2. Replace the external diskette drive/CD-ROM module.
3. Replace the system board.

Keyboard or Auxiliary Input Device Check

Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the flexible cable extending from the keyboard is correctly seated in the connector on the system board.

If the keyboard cable connection is correct, run the Keyboard Test. See “System Diagnostic Diskette” on page 54 for details.

If the tests detect a keyboard problem, do the following one at a time to correct the problem. Do not replace a non-defective FRU:

1. Reconnect the keyboard cables.
2. Replace the keyboard.
3. Replace the system board.

The following auxiliary input devices are supported by this computer:

- Numeric keypad
- External keyboard

If any of these devices do not work, reconnect the cable connector and repeat the failing operation.

Memory Check

Memory errors might stop system operations, show error messages on the screen, or hang the system.

1. Boot from the diagnostics diskette and start the PQA program (please refer to “System Diagnostic Diskette” on page 54.
2. Go to the diagnostic memory in the test items.
3. Press F2 in the test items.
4. Follow the instructions in the message window.

NOTE: Make sure that the DIMM is fully installed into the connector. A loose connection can cause an error.

Power System Check

To verify the symptom of the problem, power on the computer using each of the following power sources:

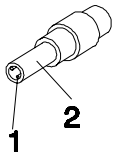
1. Remove the battery pack.
2. Connect the power adapter and check that power is supplied.
3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check in the following list:

- “Check the Power Adapter” on page 96
- “Check the Battery Pack” on page 97

Check the Power Adapter

Unplug the power adapter cable from the computer and measure the output voltage at the plug of the power adapter cable. See the following figure



Pin 1: +19 to +20.5V
Pin 2: 0V, Ground

1. If the voltage is not correct, replace the power adapter.
2. If the voltage is within the range, do the following:
   - ❑ Replace the System board.
   - ❑ If the problem is not corrected, see “Undetermined Problems” on page 106.
   - ❑ If the voltage is not correct, go to the next step.

NOTE: An audible noise from the power adapter does not always indicate a defect.

3. If the power-on indicator does not light up, check the power cord of the power adapter for correct continuity and installation.
4. If the operational charge does not work, see “Check the Battery Pack” on page 97.

Check the Battery Pack

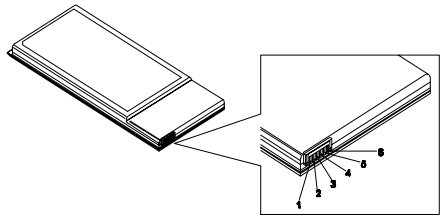
To check the battery pack, do the following:

From Software:

1. Check out the Power Management in control Panel
2. In Power Meter, confirm that if the parameters shown in the screen for Current Power Source and Total Battery Power Remaining are correct.
3. Repeat the steps 1 and 2, for both battery and adapter.
4. This helps you identify first the problem is on recharging or discharging.

From Hardware:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1(+) and 6(ground). See the following figure



3. If the voltage is still less than 7.5 Vdc after recharging, replace the battery.

To check the battery charge operation, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

If the battery status indicator does not light up, remove the battery pack and let it return to room temperature. Re-install the battery pack.

If the charge indicator still does not light up, replace the battery pack. If the charge indicator still does not light up, replace the DC/DC charger board.

Touchpad Check

If the touchpad doesn't work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU:

1. Reconnect the touchpad cables.
2. Replace the touchpad.
3. Replace the system board.

After you use the touchpad, the pointer drifts on the screen for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the touchpad pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

Power-On Self-Test (POST) Error Message

The POST error message index lists the error message and their possible causes. The most likely cause is listed first.

NOTE: Perform the FRU replacement or actions in the sequence shown in FRU/Action column, if the FRU replacement does not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also help you determine the next possible FRU to be replaced when servicing a computer.

If the symptom is not listed, see “Undetermined Problems” on page 106.

The following lists the error messages that the BIOS displays on the screen and the error symptoms classified by function.

NOTE: Most of the error messages occur during POST. Some of them display information about a hardware device, e.g., the amount of memory installed. Others may indicate a problem with a device, such as the way it has been configured.

NOTE: If the system fails after you make changes in the BIOS Setup Utility menus, reset the computer, enter Setup and install Setup defaults or correct the error.

Index of Error Messages

Error Code List

Error Codes	Error Messages
006	Equipment Configuration Error Causes: 1. CPU BIOS Update Code Mismatch 2. IDE Primary Channel Master Drive Error 3. IDE Secondary Channel Master Drive Error (THe causes will be shown before “Equipment Configuration Error”)
010	Memory Error at xxxx:xxxx:xxxxh (R:xxxxh, W:xxxxh)
070	Real Time Clock Error
071	CMOS Battery Bad
072	CMOS Checksum Error
110	Incorrect password specified, system disabled. (Text mode only)
<No error code>	Battery critical LOW In this situation BIOS will issue 4 short beeps then shut down system, no message will show.
<No error code>	Thermal critical High In this situation BIOS will issue 3 long beeps then shut down system.

Error Message List

Error Messages	FRU/Action in Sequence
Failure Fixed Disk	Reconnect hard disk drive connector. “Load Default Settings” in BIOS Setup Utility. Hard disk drive System board
Stuck Key	see “Keyboard or Auxiliary Input Device Check” on page 95.
Keyboard error	see “Keyboard or Auxiliary Input Device Check” on page 95.
Keyboard Controller Failed	see “Keyboard or Auxiliary Input Device Check” on page 95.
Keyboard locked - Unlock key switch	Unlock external keyboard
Monitor type does not match CMOS - Run Setup	Run “Load Default Settings” in BIOS Setup Utility.
Shadow RAM Failed at offset: nnnn	BIOS ROM System board
System RAM Failed at offset: nnnn	DIMM System board
Extended RAM Failed at offset: nnnn	DIMM System board
System battery is dead - Replace and run Setup	Replace RTC battery and Run BIOS Setup Utility to reconfigure system time, then reboot system.
System CMOS checksum bad - Default configuration used	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system.
System timer error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. System board

Error Message List

Error Messages	FRU/Action in Sequence
Real time clock error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. System board
Previous boot incomplete - Default configuration used	Run “Load Default Settings” in BIOS Setup Utility. RTC battery System board
Memory size found by POST differed from CMOS	Run “Load Default Settings” in BIOS Setup Utility. DIMM System board
Diskette drive A error	Check the drive is defined with the proper diskette type in BIOS Setup Utility See “External Diskette Drive Check” on page 94.
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility See “External Diskette Drive Check” on page 94.
System cache error - Cache disabled	System board
CPU ID:	System board
DMA Test Failed	DIMM System board
Software NMI Failed	DIMM System board
Fail-Safe Timer NMI Failed	DIMM System board
Device Address Conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery System board
Allocation Error for device	Run “Load Default Settings” in BIOS Setup Utility. RTC battery System board
Failing Bits: nnnn	DIMM BIOS ROM System board
Fixed Disk n	None
Invalid System Configuration Data	BIOS ROM System board
I/O device IRQ conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery System board
Operating system not found	Enter Setup and see if fixed disk and drive A: are properly identified. Diskette drive Hard disk drive System board

Error Message List

No beep Error Messages	FRU/Action in Sequence
No beep, power-on indicator turns off and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 95. Ensure every connector is connected tightly and correctly. Reconnect the DIMM. LED board. System board.
No beep, power-on indicator turns on and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 95. Reconnect the LCD connector Hard disk drive LCD inverter ID LCD cable LCD Inverter LCD System board
No beep, power-on indicator turns on and LCD is blank. But you can see POST on an external CRT.	Reconnect the LCD connectors. LCD inverter ID LCD cable LCD inverter LCD System board
No beep, power-on indicator turns on and a blinking cursor shown on LCD during POST.	Ensure every connector is connected tightly and correctly. System board
No beep during POST but system runs correctly.	Speaker System board

Error Beep List

Code	Beeps	Description
00h	Two long beeps, one short beep, then one long beep.	Success
F1h	One long and one short beeps.	BIOS file size mismatch
F2h	One long and two short beeps	BIOS reading error
D1h	Two short beeps.	Floppy drive not installed

Index of Symptom-to-FRU Error Message

LCD-Related Symptoms

Symptom / Error	Action in Sequence
LCD backlight doesn't work LCD is too dark LCD brightness cannot be adjusted LCD contrast cannot be adjusted	Enter BIOS Utility to execute “Load Setup Default Settings”, then reboot system. Reconnect the LCD connectors. Keyboard (if contrast and brightness function key doesn't work). LCD inverter ID LCD cable LCD inverter LCD System board
Unreadable LCD screen Missing pels in characters Abnormal screen Wrong color displayed	Reconnect the LCD connector LCD inverter ID LCD cable LCD inverter LCD System board
LCD has extra horizontal or vertical lines displayed.	LCD inverter ID LCD inverter LCD cable LCD System board

Indicator-Related Symptoms

Symptom / Error	Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly	Reconnect the inverter board Inverter board System board

Power-Related Symptoms

Symptom / Error	Action in Sequence
Power shuts down during operation	Power source (battery pack and power adapter). See “Power System Check” on page 95. Battery pack Power adapter Hard drive & battery connection board System board
The system doesn’t power-on.	Power source (battery pack and power adapter). See “Power System Check” on page 95. Battery pack Power adapter Hard drive & battery connection board System board
The system doesn’t power-off.	Power source (battery pack and power adapter). See “Power System Check” on page 95. Hold and press the power switch for more than 4 seconds. System board
Battery can’t be charged	See “Check the Battery Pack” on page 97. Battery pack System board

PCMCIA-Related Symptoms

Symptom / Error	Action in Sequence
System cannot detect the PC Card (PCMCIA)	PCMCIA slot assembly System board
PCMCIA slot pin is damaged.	PCMCIA slot assembly

Memory-Related Symptoms

Symptom / Error	Action in Sequence
Memory count (size) appears different from actual size.	Enter BIOS Setup Utility to execute “Load Default Settings, then reboot system. DIMM System board

Speaker-Related Symptoms

Symptom / Error	Action in Sequence
In Windows, multimedia programs, no sound comes from the computer.	Audio driver Speaker System board
Internal speakers make noise or emit no sound.	Speaker System board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
The system will not enter hibernation	Keyboard (if control is from the keyboard) Hard disk drive System board
The system doesn't enter hibernation mode and four short beeps every minute.	See “Hibernation Mode” on page 28. Press Fn+ F4 and see if the computer enters hibernation mode. Touchpad Keyboard Hard disk connection board Hard disk drive System board
The system doesn’t enter standby mode after closing the LCD	See “Hibernation Mode” on page 28. LCD cover switch System board
The system doesn't resume from hibernation mode.	See “Hibernation Mode” on page 28. Hard disk connection board Hard disk drive System board
The system doesn't resume from standby mode after opening the LCD.	See “Hibernation Mode” on page 28. LCD cover switch System board
Battery fuel gauge in Windows doesn’t go higher than 90%.	Remove battery pack and let it cool for 2 hours. Refresh battery (continue use battery until power off, then charge battery). Battery pack System board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
System hangs intermittently.	Reconnect hard disk/CD-ROM drives. Hard disk connection board System board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequence
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute “Load Default Settings”, then reboot system. Reconnect hard disk/CD-ROM/diskette drives.
External display does not work correctly.	Press Fn+F5, LCD/CRT/Both display switching See “System Diagnostic Diskette” on page 54. System board
USB does not work correctly	See “System Diagnostic Diskette” on page 54 System board
Print problems.	Ensure the “Parallel Port” in the “Onboard Devices Configuration” of BIOS Setup Utility is set to Enabled. Onboard Devices Configuration Run printer self-test. Printer driver Printer cable Printer System Board
Serial or parallel port device problems.	Ensure the “Serial Port” in the Devices Configuration” of BIOS Setup Utility is set to Enabled. Device driver Device cable Device System board

Keyboard/Touchpad-Related Symptoms

Symptom / Error	Action in Sequence
Keyboard (one or more keys) does not work.	Reconnect the keyboard cable. Keyboard System board
Touchpad does not work.	Reconnect touchpad cable. Touchpad board System board

Modem-Related Symptoms

Symptom / Error	Action in Sequence
Internal modem does not work correctly.	See “System Diagnostic Diskette” on page 54. Modem phone port modem combo board System board

NOTE: If you cannot find a symptom or an error in this list and the problem remains, see “Undetermined Problems” on page 106.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists.

When analyzing an intermittent problem, do the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do not replace any FRU.
3. If any error is detected, replace the FRU. Rerun the test to verify that there are no more errors.

Undetermined Problems

The diagnostic problems does not identify which adapter or device failed, which installed devices are incorrect, whether a short circuit is suspected, or whether the system is inoperative.

Follow these procedures to isolate the failing FRU (do not isolate non-defective FRU).

NOTE: Verify that all attached devices are supported by the computer.

NOTE: Verify that the power supply being used at the time of the failure is operating correctly. (See “Power System Check” on page 95):

1. Power-off the computer.
2. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
    - ❑ Non-Acer devices
    - ❑ Printer, mouse, and other external devices
    - ❑ Battery pack
    - ❑ Hard disk drive
    - ❑ DIMM
    - ❑ CD-ROM/Diskette drive Module
    - ❑ PC Cards
4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRU one at a time. Do not replace a non-defective FRU:
    - ❑ System board
    - ❑ LCD assembly

Index of Phlash16 Error Message

Error Codes	Error Message
-1 or // FF	Memory allocation for Backup file buffer failed.
-2 or // FE	BIOS.BAK already exists (rename or delete it)
-3 or // FD	File Create failed on BIOS.BAK
-4 or // FC	File Write failed on BIOS.BAK
-5 or // FB	File Close failed on BIOS.BAK
-6 or // FA	BIOS backup not supported in BIOS ROM file.
-7 or // F9	File Open failed on BIOS ROM file.
-8 or // F8	File Read failed on BIOS ROM file.
-9 or // F7	File Close failed on BIOS ROM file.
-10or // F6	Failed to locate signature bytes in BIOS ROM file.
-11 or // F5	Unsupported BIOS ROM file version.
-12 or // F4	V0.10 must fit ROM size and address within 1MB.
-13 or // F3	V2.00 must have block descriptor table and image buffer.
-14 or // F2	Device table has too many entries.
-15 or // F1	Device table has unsupported flash type.
-16 or // F0	Combined SAVE or RESTORE attributes in BIOS file.
-17 or // EF	SAVE block without matching RESTORE block in BIOS file.
-18 or // EE	V0.10 must have JMP table for platform procs.
-19 or // ED	V2.00 must have OFFSET table for platform procs.
-20 or // EC	BIOS file found errors in command line parameters.
-21 or // EB	Part ID not found in table of supported parts.
-22 or // EA	Allocation for BIOS ROM image failed.
-23 or // E9	Open failed on BIOS ROM file.
-24 or // E8	Read failed on BIOS ROM file.
-25 or // E7	Copy of REAL to EXTENDED memory buffer failed.
-26 or // E6	File close failed on BIOS.WPH.
-27or // E5	Cannot flash if Memory Managers (e.g. EMM 386) is present.
-28 or // E4	Attempt to read flash memory ID failed.
-29or // E3	BIOS ROM file failed to return flash memory ID.
-30 or // E2	Could not find BCP SYS block in BIOS.WPH file image.
-31 or // E1	File has different BIOS part number.
-32 or // E0	File contains same version of BIOS ROM image.
-33 or // DF	Data written to flash does not match BIOS ROM image.
-34 or // DE	Write to flash memory failed.
-35 or // DD	Erase flash memory block failed.
-36 or // DC	VPP is not at expected level.
-37 or // DB	Erase sequence failed.
-38 or // DA	New DMI string is too large.
-39 or // D9	Specified BIOS ROM file is not for this system.
-40 or // D8	Allocation for DMI OEM string failed.
-41 or // D7	No space for specified DMI OEM string in BIOS ROM.
-42 or // D6	DMI OEM strings require BCP DMI 0.1+.
-43 or // D5	Could not find BCP DMI block in BIOS ROM file image.

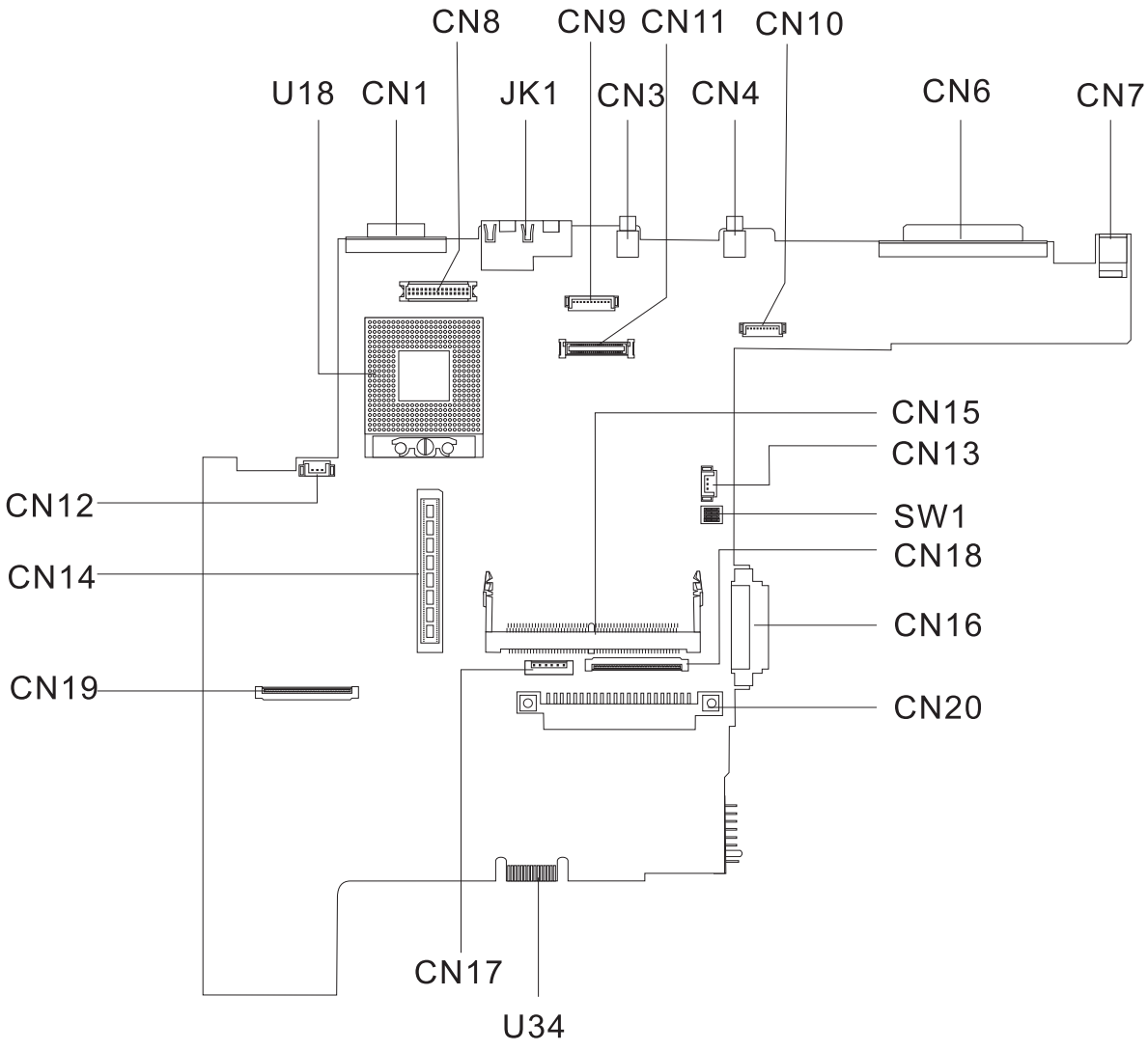
Error Codes	Error Message
-44 or // D4	Cannot flash if Memory Managers (e.g.HIMEM) is present.
-45 or // D3	BIOS ROM file maybe corrupt (checksum not zero).
-46 or // D2	BIOS ROM file size doesn't match flash part size.
-47 or // D1	DMI system and chassis strings require BCP DMI 2.1+.
-48 or // D0	BIOS ROM file is older than (or same as) BIOS ROM image.
-49 or // CF	Platform signature not found in the interface.
-50 or // CE	Device descriptor signature not found in the interface.
-51 or // CD	Part table signature not found in the interface.
-52 or // CC	Invalid part count found in the interface.
-53 or // CB	Invalid text descriptor size found in the interface.
-54 or // CA	Invalid part descriptor size found in the interface.
-55 or // C9	Cannot flash when DOSKEY is present.
-56 or // C8	Duplicate device support found in the interface.
-57 or // C7	Program terminated due to command line option.

Index of PQA Diagnostic Error Code, Message

Error Code	Message	Action in Sequence
01XXX	CPU or main board error	Reload BIOS default setting. System board
02XXX	Memory error	DIMM System board
03XXX	Keyboard error	Reset Keyboard Keyboard System board
04XXX	Video error	System board
05XXX	Parallel Port error	System board
06XXX	Serial port error	System board
07XXX	Diskette drive error	Diskette drive System board
08XXX	Hard disk error	Reload BIOS default setting Hard disk System board
09XXX	CD-ROM error	Reset CD-ROM cable CD-ROM drive System board
10XXX	Co-processor error	System board
11XXX	Pointing device error	Reset Keyboard Keyboard System board
12XXX	Cache test error	System board

Jumper and Connector Locations

Top View



PCB No. 02217-SB

CN1	CRT Port	CN14	CardBus Connector
CN3	USB Port 0	CN15	Mini-PCI Connector
CN4	USB Port 1	CN16	CD-ROM Connector
CN6	Parallel Port	CN17	Touch Pad Cable Connector
CN7	DC-in Port	CN18	Internal Keyboard Cable Connector
CN8	Inverter Connector	CN19	FDD Connector
CN9	Bluetooth Connector (Dummy)	CN20	HDD Connector
CN10	Launch Cable Connector	JK1	RJ45 + RJ11

CN11	LCD Coaxial Cable Connector	SW1	SW1 Setting (Please see below)
CN12	Fan Connector	U18	CPU Socket
CN13	RTC Battery Connector	U34	Golden Finger (or Debug Board)

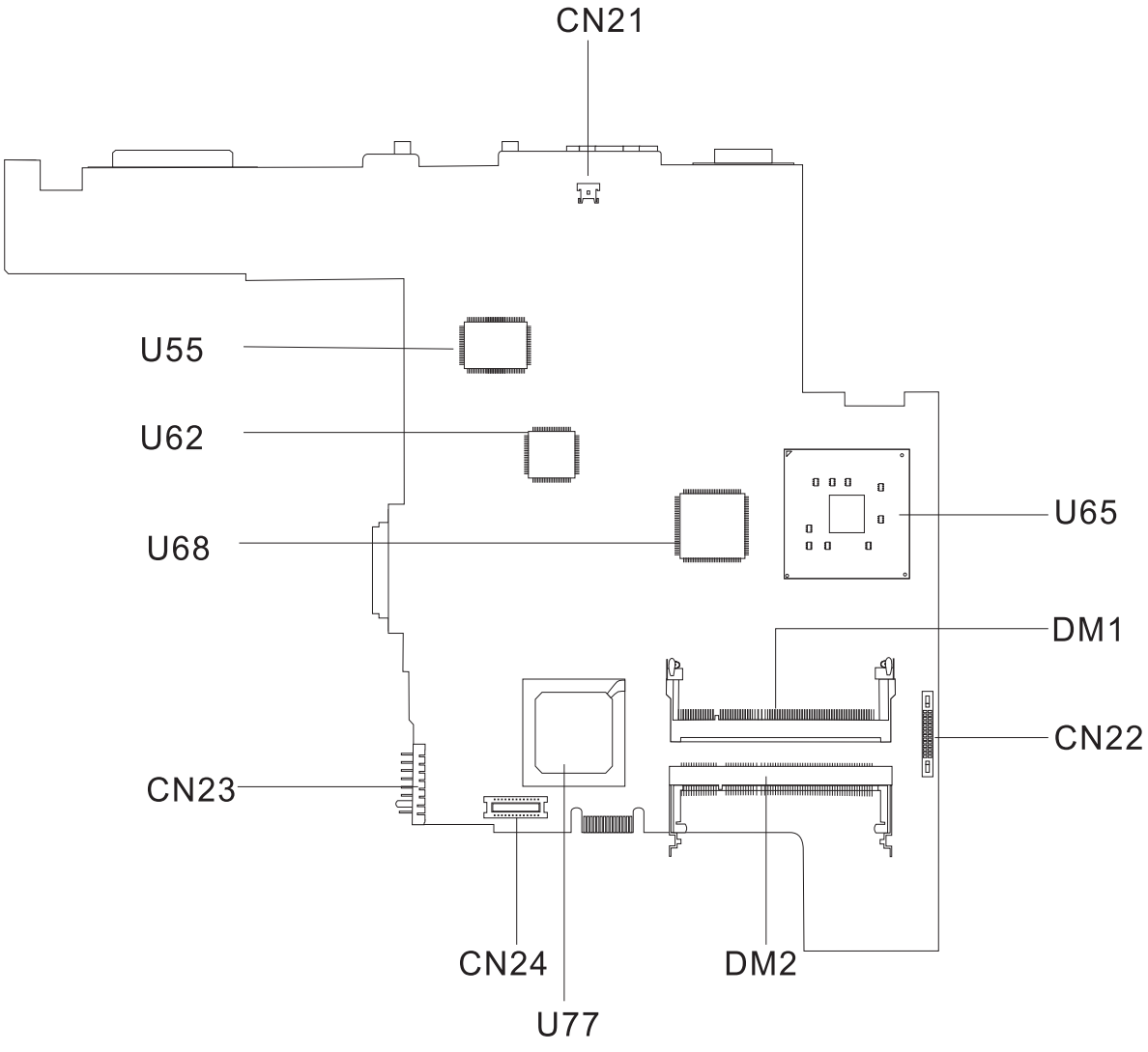
Keyboard Switch Settings

	SW1-1	SW1-2
English	OFF	OFF
Japanese	ON	OFF
Europe	ON	ON

Password Bypass Setting and BootBlock Setting

	SW1-3	SW1-4
Check Password Enable	ON	OFF
BootBlock Enable	OFF	ON

Bottom View



CN21	Modem Card Cable Connector	U65	North Bridge (845-GL)
CN22	Audio Board Connector	U68	Cardbus Controller (OZ6912T)
CN23	Battery Connector	U77	South Bridge (ICH4)
CN24	Modem Connector	DM1	DIMM 1 Socket
U55	LVDS	DM2	DIMM 2 Socket
U62	LAN Controller (RTL8100BL)		

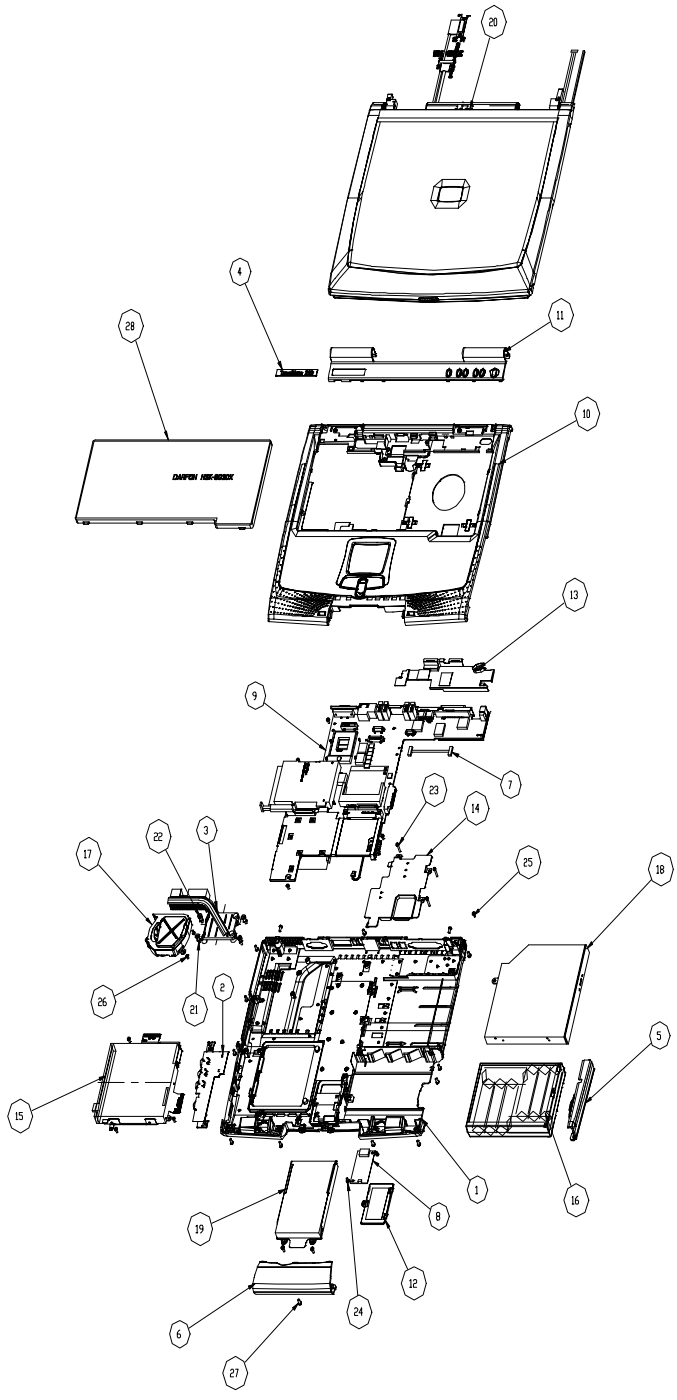
FRU (Field Replaceable Unit) List

This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of TravelMate 230/280. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

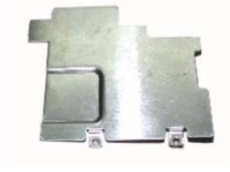
Please note that WHEN ORDERING FRU PARTS, you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted on the printed Service Guide. For ACER AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code from those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how to dispose it properly, or follow the rules set by your regional Acer office on how to return it.

TravelMate 230 Exploded Diagram



Picture	No.	Partname	Description
Cables			
	NS	LCD COAXIAL CABLE 14.1" XGA	CABLE LCD COAXIAL 14.1" XGA
	7	LAUNCH BOARD CABLE	CABLE LAUNCH BOARD S50
	NS	INVERTER CABLE	CABLE LED & INVERTER
	NS	POWER CORD 125V 3PIN	CORD 125V UL 3P K01081B1183WP
	NS	TOUCHPAD CABLE	CABLE TOUCH PAD FPC PELICAN
	NS	MODEM CABLE	CABLE MODEM 260MM

Picture	No.	Partname	Description
Case/Cover/Bracket Assembly			
	5	BATTERY COVER	COVER BATTERY PELICAN
	NS	LCD SUPPORT BRACKET LEFT 14"	BRACKET SUPPORT L 141 LCD S50
	NS	LCD SUPPORT BRACKET RIGHT 14"	BRACKET SUPPORT R 141 LCD S50
	NS	HDD BRACKET	ASSEMBLY HDD BRACKET PELICAN
	13	CHARGER PLATE	ASSEMBLY CHARGER PLATE PELICAN
	14	HEATSINK PLATE	ASSEMBLY HEAT PLATE PELICAN
	6	HDD COVER	COVER HDD PELICAN

Picture	No.	Partname	Description
	12	MODEM COVER W/SCREW	ASSEMBLY MODEM COVER PELICAN
	NS	CD-ROM BRACKET	BRACKET CD ROM PELICAN
	10	UPPER CASE W/ TOUCHPAD MODULE	ASSEMBLY UPPER CASE PELICAN
	NS	TOUCHPAD COVER	FRAME TOUCHPAD PELICAN
	11	MIDDLE COVER W/O LAUNCH BOARD	COVER MIDDLE PELICAN
	NS	LCD BEZEL 14.1" W/ NAME PLATE & RUBBER	ASSEMBLY BEZEL 14.1"
	NS	LCD PANEL W/ HINGE BRACKET, LATCH & LOGO	ASSEMBLY PANEL 14.1"

Picture	No.	Partname	Description
	1	LOWER CASE W/ DIMM COVER & SPEAKER PACK	ASSEMBLY LOWER CASE PELICAN
	NS	DIMM COVER W/ SCREW	ASSEMBLY DIMM COVER PELICAN
	NS	PCMCIA SLOT	CONN CARDPUSH 1CA91501-TC-F2
	NS	I/O BRACKET	ASSEMBLY I/O BRACKET PELICAN
	NS	PCMCIA PLATE	ASSEMBLY PCMCIA PLATE PELICAN
Boards			
	NS	AUDIO BOARD	PELICAN AUDIO BD (SMT) VER-0SA
	NS	INVERTER BOARD 14"/15"AMBIT	INVERTER 14"/15" T62I223.00

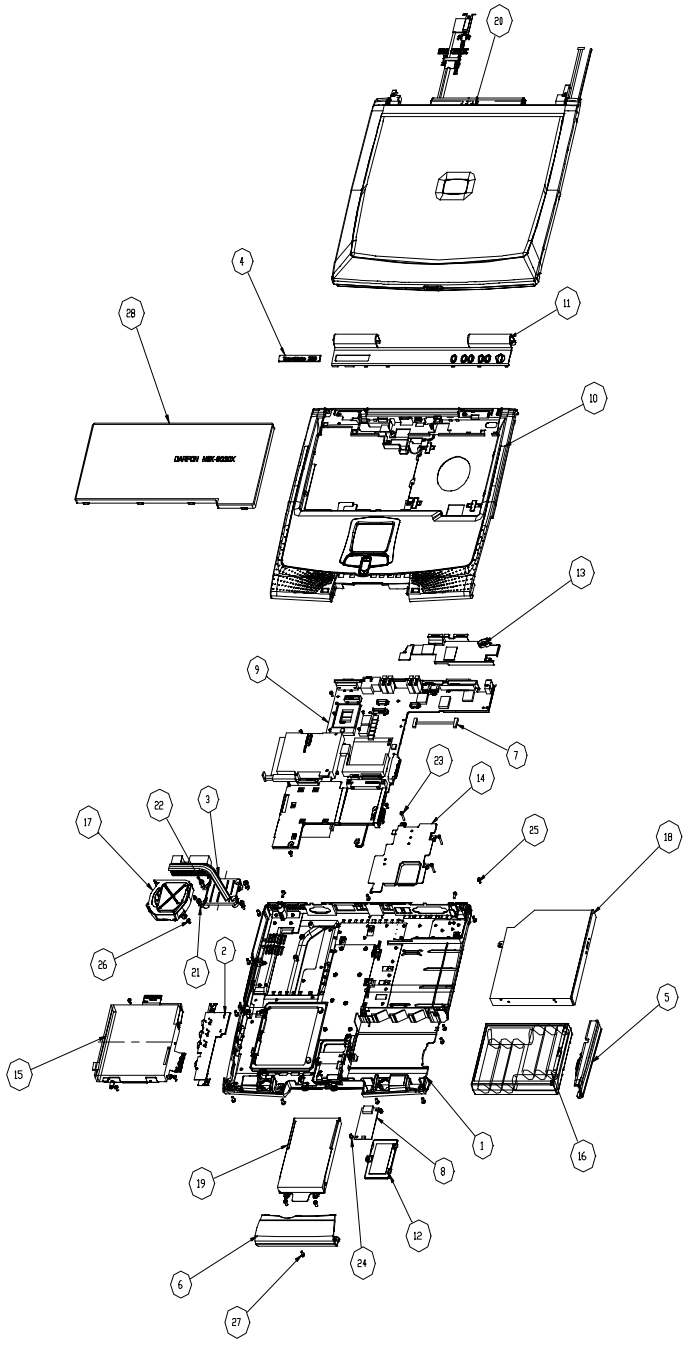
Picture	No.	Partname	Description
	8	MODEM BOARD AMBIT T60M283.00	MODEM MDC AMB/T60M283.00 3A/3B
	NS	LAUNCH BOARD	PELICAN LAUNCH KEY BD
	NS	WIRELESS BOARD AMBIT T60H656.00	LAN WLESS PCI AMBIT T60H656.00
	NS	TOUCHPAD BOARD	TOUCHPAD MULTI-SWITCH SYNAPTIC
Battery			
	NS	BATTERY MODULE 8CELL SAMSUNG	BATTERY MODULE 8CELL
	16	BATTERY 8CELL LI-ION SAMSUNG BTP-43D1	ASY BTY PACK LI+8C 2AH/SAM SMP

Picture	No.	Partname	Description
	NS	COIN BATTERY 3V 210MAH	BTY COIN 3V CR2032WKA2 210MAH
Adapter			
	NS	ADAPTER 70W 3PIN DELTA ADP-65DBBE	ADT 70W ADP-65DBBE 3P
Keyboard			
	NS	KEYBOARD NSK-84X21 US	KB US NSK-84X21
Speaker			
	NS	SPEAKER PACK LEFT/RIGHT	SPEAKER PELICAN
Heatsink			
	3	CPU HEATSINK	SINK HEAT CPU PELICAN
Fan			
	17	CPU FAN SINK W/ FAN	ASSEMBLY FAN PELICAN
FDD/Floppy Disk Drive			

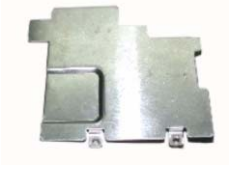
Picture	No.	Partname	Description
	15	FDD MODULE 1.44M MITSUMI	ASSY UNIT FDD MITSUMI PELICAN
CD-ROM DRIVE			
	18	CD-ROM 24X MITSUMI SR244W1	CD-ROM 24X MITSU/SR244W1 F4M
	NS	DVD-ROM 8X MKE/SR-8177-BAA6	DVD-ROM 8X MKE/SR-8177-BAA6 F4M
Main board			
	9	MAINBOARD PELICAN W/ COIN BATTERY, I/O BRACKET, MODEM CABLE, PCMCIA PLATE & PCMCIA SLOT	PELICAN MB (DIP) W/O CPU VER-SB
Miscellaneous			
	NS	TOUCHPAD BUTTON SCROLL	BUTTON TOUCHPAD SCROLL
	NS	TOUCHPAD BUTTON PAD	BUTTON TOUCHPAD PELICAN

Picture	No.	Partname	Description
	NS	SCREW RUBBER UPPER	RUBBER UP 14.1" BEZEL F3M
	NS	SCREW RUBBER LOWER	RUBBER SCREW DOWN F3M
	NS	NAME PLATE FOR BEZEL	MYLAR NAME PLATE PELICAN
	NS	LOGO LABEL FOR PANEL	LABEL LOGO ON PANEL PELICAN
	NS	NAME PLATE FOR MIDDLE COVER TM230	MYLAR PLATE NAME COVER MIDDLE
	NS	LAUNCH KEY	KEY LAUNCH PELICAN
Screws			
	NS	SCREW	SCR. HEX NUT W/WASHER&NYLOK #4
	NS	SCREW	SCREW M2L12 PH MSN+BZ
	21	SCREW	SCREW CPU MECH WAFER M2*L4 NI
	23	SCREW	SCREW M2.0*12 STEEL B
	24	SCREW	SCREW M2L4 BH MSN+BZ
	25	SCREW	SCREW M2L5 BH MSN+N
	NS	SCREW	SCREW M2*3 NYLON 1JMCPC-420325
	26	SCREW	SCREW
	27	SCREW	SCREW M2.5X6
	NS	SCREW	SCREW M3x4(86.9A524.4R0)
	NS	SCREW	SCREW WAFER NYLOK NI 2ML3
	NS	SCREW	SCREW M2.5*4L NI

TravelMate 280 Exploded Diagram



Picture	No.	Partname	Description
Cables			
	NS	LCD COAXIAL CABLE 15” XGA	CABLE LCD COAXIAL 15” XGA
	7	LAUNCH BOARD CABLE	CABLE LAUNCH BOARD S50
	NS	INVERTER CABLE	CABLE LED & INVERTER
	NS	POWER CORD 125V 3PIN	CORD 125V UL 3P K01081B1183WP
	NS	TOUCHPAD CABLE	CABLE TOUCH PAD FPC PELICAN
	NS	MODEM CABLE	CABLE MODEM 260MM

Picture	No.	Partname	Description
Case/Cover/Bracket Assembly			
	5	BATTERY COVER	COVER BATTERY PELICAN
	NS	HDD BRACKET	ASSEMBLY HDD BRACKET PELICAN
	13	CHARGER PLATE	ASSEMBLY CHARGER PLATE PELICAN
	14	HEATSINK PLATE	ASSEMBLY HEAT PLATE PELICAN
	6	HDD COVER	COVER HDD PELICAN
	12	MODEM COVER W/SCREW	ASSEMBLY MODEM COVER PELICAN
	NS	CD-ROM BRACKET	BRACKET CD ROM PELICAN

Picture	No.	Partname	Description
	10	UPPER CASE W/TOUCHPAD MODULE	ASSEMBLY UPPER CASE PELICAN
	NS	TOUCHPAD COVER	FRAME TOUCHPAD PELICAN
	11	MIDDLE COVER W/O LAUNCH BOARD	COVER MIDDLE PELICAN
	NS	LCD BEZEL 15" W/ NAME PLATE & RUBBER	ASSEMBLY BEZEL 15"
	NS	LCD PANEL W/ HINGE BRACKET LATCH & LOGO	ASSEMBLY PANEL 15"
	1	LOWER CASE W/ DIMM COVER & SPEAKER PACK	ASSEMBLY LOWER CASE PELICAN
	NS	DIMM COVER W/ SCREW	ASSEMBLY DIMM COVER PELICAN

Picture	No.	Partname	Description
	NS	PCMCIA SLOT	CONN CARDPUSH 1CA91501-TC-F2
	NS	I/O BRACKET	ASSEMBLY I/O BRACKET PELICAN
	NS	PCMCIA PLATE	ASSEMBLY PCMCIA PLATE PELICAN
Boards			
	NS	AUDIO BOARD	PELICAN AUDIO BD (SMT) VER-0SA
	NS	INVERTER BOARD 14"/15"AMBIT	INVERTER 14"/15" T62I223.00
	8	MODEM BOARD AMBIT T60M283.00	MODEM MDC AMB/T60M283.00 3A/3B
	NS	LAUNCH BOARD	PELICAN LAUNCH KEY BD

Picture	No.	Partname	Description
	NS	TOUCHPAD BOARD	TOUCHPAD MULTI-SWITCH SYNAPTIC
Battery			
	NS	BATTERY MODULE 8CELL SAMSUNG	BATTERY MODULE 8CELL
	16	BATTERY 8CELL LI-ION SAMSUNG BTP-43D1	ASY BTY PACK LI+8C 2AH/SAM SMP
	NS	BATTERY MODULE 8CELL LI-ION SANYO	BATTERY MODULE 8CELL
	16	BATTERY MODULE 8CELL LI-ION SANYO 4UR1865OF-2	BTY PACK LI+8CELL 2AKH SANYO
	NS	COIN BATTERY 3V 210MAH	BTY COIN 3V CR2032WKA2 210MAH

Picture	No.	Partname	Description
	NS	ADAPTER 70W 3PIN DELTA ADP-65DBBE	ADT 70W ADP-65DBBE 3P
Keyboard			
	NS	KEYBOARD NSK-84X21 US	KB US NSK-84X21
Speaker			
	NS	SPEAKER PACK LEFT/RIGHT	SPEAKER PELICAN
Heatsink			
	3	CPU HEATSINK	SINK HEAT CPU PELICAN
Fan			
	17	CPU FAN SINK W/ FAN	ASSEMBLY FAN PELICAN
FDD/Floppy Disk Drive			
	15	FDD MODULE 1.44M MITSUMI	ASSY UNIT FDD MITSUMI PELICAN
Combo Drive			

Picture	No.	Partname	Description
	NS	COMBO DRIVE 8/24/10/24X KME UJA74OAC6 F4	COMBO 8,24/10/24 UJA74OAC6 F4
Main board			
	9	MAINBOARD PELICAN W/ COIN BATTERY, I/O BRACKET, MODEM CABLE, PCMCIA PLATE & PCMCIA SLOT	PELICAN MB (DIP) W/O CPU VER-SB
Miscellaneous			
	NS	TOUCHPAD BUTTON SCROLL	BUTTON TOUCHPAD SCROLL
	NS	TOUCHPAD BUTTON PAD	BUTTON TOUCHPAD PELICAN
	NS	SCREW RUBBER UPPER	RUBBER UP 14.1" BEZEL F3M
	NS	SCREW RUBBER LOWER	RUBBER SCREW DOWN F3M
	NS	NAME PLATE FOR BEZEL	MYLAR NAME PLATE PELICAN

Picture	No.	Partname	Description
	NS	LOGO LABEL FOR PANEL	LABEL LOGO ON PANEL PELICAN
	4	NAME PLATE FOR MIDDLE COVER TM280	MYLAR PLATE NAME TM280 MIDDLE
Screws			
	21	SCREW	SCREW CPU MECH WAFER M2*L4 NI
	23	SCREW	SCREW M2.0*12 STEEL B
	24	SCREW	SCREW M2L4 BH MSN+BZ
	25	SCREW	SCREW M2L5 BH MSN+N
	NS	SCREW	SCREW M2*3 NYLON 1JMCPC-420325
	26	SCREW	SCREW
	27	SCREW	SCREW M2.5X6
	NS	SCREW	SCREW M3x4(86.9A524.4R0)
	NS	SCREW	SCREW WAFER NYLOK NI 2ML3
	NS	SCREW	SCREW M2.5*4L NI

Model Definition and Configuration

Model Number Definition

Model Number	LCD	CPU	Memory	HDD	CD/DVD	Battery
230X	14.1” TFT	Celeron 1.7G	128/256MB	20GB	24X CD-ROM	Li-ion
230FX	14.1” TFT	Celeron 1.7G	128MB	20GB	24X CD-ROM	Li-ion
230XV	14.1” TFT	Celeron 1.7G	128/256MB	20GB/ 30GB	8X DVD-ROM	Li-ion
230FXV	14.1” TFT	Celeron 1.7G	128MB	20GB	8X DVD-ROM	Li-ion
230XC	14.1” TFT	Celeron 1.7G	256MB	30GB	Combo	Li-ion
230LC	15” TFT	Celeron 1.7G	256MB	30GB	Combo	Li-ion
231X	14.1” TFT	Celeron 1.8G	128MB	20GB	24X CD-ROM	Li-ion
231XV	14.1” TFT	Celeron 1.8G	128MB	20GB	8X DVD-ROM	Li-ion
281X	14.1” TFT	Pentium 4M 1.8G	256MB	20GB/ 30GB	24X CD-ROM	Li-ion
280FX	14.1” TFT	Pentium 4M 1.8G	256MB	20GB	24X CD-ROM	Li-ion
281XC	14.1” TFT	Pentium 4M 1.8G	256MB	20GB/ 30GB	Combo	Li-ion
281XV	14.1” TFT	Pentium 4M 1.8G	256MB	20GB/ 30GB	8X DVD-ROM	Li-ion
280FXV	14.1” TFT	Pentium 4M 1.8G	256MB	20GB	8X DVD-ROM	Li-ion
283X	14.1” TFT	Pentium 4M 2.0G	256MB	20GB	24X CD-ROM	Li-ion
283XC	14.1” TFT	Pentium 4M 2.0G	256MB	20GB	Combo	Li-ion
281LC	15” TFT	Pentium 4M 1.8G	256MB	30GB	Combo	Li-ion

Test Compatible Components

This computer's compatibility is a test plan released by Acer Internal Testing Department. Once the final report is available, this chapter will be revised accordingly.

Microsoft Windows XP Environment Test

Item	Specifications
Processor	Intel Pentium IV Northwood 1.7 GHz, Intel Pentium IV Northwood 1.8 GHz, Intel Pentium IV Northwood 1.9 GHz, Intel Pentium IV Northwood 2.0 GHz, Intel Pentium IV Northwood 2.1 GHz, Intel Pentium IV Northwood 2.2 GHz, Intel Celeron Northwood 1.6 GHz, Intel Celeron Northwood 1.7 GHz, Intel Celeron Northwood 1.8 GHz, Intel Celeron Northwood 1.9 GHz, Intel Celeron Northwood 2.0 GHz,
Memory DDR SDRAM PC1600/2100	128MB Infineon HYS64D16000GDL-7-B 128MB Nan-Ya NT128D64SH4B0GM-75B 128MB Micron MT4VDDT1664HG-265B2 256MB Mitsubishi MH2D64AKS-75-JE 256MB Infineon HYS64D32020GDL-7-B 256MB Nan-Ya NT256D64SH8B0GM-75B 256MB Micron MT8VDDT3264HDG-265B3 512MB Mitsubishi MH64D64AKQH-75 512MB Infineon HYS64D64020GDBL-7-B
LCD	14.1” XGA TFT IDT ITXG77C AU B141XN04 V2/4 XXX LG LP141X-AH 15” XGA TFT Hitachi TX38D85VC1CAB AU B150XG01 V.0 CMO N150X3-L01 15” SXGA TFT Hitachi TX38D95VC1CAM
Hard Disk Drive	20GB Hitachi DK23EA-20F 20GB Toshiba MK2018GAP 30GB Hitachi DK23EA-30F 30GB Toshiba MK3021GAP 30GB Fujitsu HN-16L/30 40GB Hitachi DK2EA-40 40GB Toshiba MK4021GAP 40GB Fujitsu HN-16L/40 60GB Hitachi DK23EA-60 60GB Toshiba MK6021GAP
Floppy Disk Drive	Mitsumi D353G MCI JU-226A033
DVD-ROM Drive 8X	MKE SR-8177-BAA6

Item	Specifications
CD-ROM Drive	Mitsumi SR-244W1
DVD/CD-RW Combo	KME UJDA740
AC Adapter (3 pin)	Delta 70W Liteon 70W
Power Cord	King Cord
Battery Li-Ion, 8 cells	Samsung, Li-Ion 8cells Sanyo, Li-Ion 8cells
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com Etherlink III 3C589D IBM EtherJet CardBus Adapter 10/100 Intel Ether Express Pro/100 Mobile Adapter MBLA3200 Xircom CardBus Ethernet 10/100 32 Bit CBE-10/100BTX
Multifunction Card (Combo)	10/100 EtherJet CardBus Real Port w/ 56K modem 34L1301 3Com Megahertz 10/100 LAN + 56K Modem PC Card Xircom Realport CardBus Ethenet 10/100 + Modem 56
LAN Token Ring	IBM Token Ring 16/4 Adapter II IBM Turbo 16/4 Token Ring Olicom Token Ring GoCard
Wireless LAN Card	IBM Wireless LAN Cardbus Adapter Intel Pro-Wireless LAN PC Card Proxim Skyline 802.11a Cardbus PC Card
Modem Adapters	
Modem (up to 56K)	3Com Megahertz 56K Modem PC Card Xircom Credit Card Modem 56 IBM 56K Double Jack Modem
ISDN	US Robotics Megahertz 128K ISDN Card 405R17T7117M IBM OBI International ISDN PC Card IBM ISDN Card D5K3320
I/O Peripheral	
I/O - Display	Acer 211c 21” Viewsonic PF790 19” Acer FP751 17” TFT LCD IBM Color TFT LCD 14” Compaq Color Monitor NET Color Monitor 20” Mozo 17” TFT LCD (DVI)
I/O - Projector	NEC MultiSync MT-1040
I/O - Parallel (Printer/Scanner)	Canon BJC-600J Epson Stylus Color 740 Parallel Interface HP DeskJet 890CDEskjet 880C Parallel Interface HP LaserJet 6MP HP LaserJet 2200 AcerScan Prisa 620P

Item	Specifications
I/O - USB Keyboard/Mouse	Chicony USB Keyboard IBM USB Numeric Keypad Microsoft Natural Keyboard Pr Acer Aspire USB mouse Logicool US Mouse Logitech Cordless Mouseman Wheel USB Interface Logitech USB Wheel Mouse Microsoft IntelliMouse Optical USB Interface
I/O - USB (Printer/Scanner)	Epson Stylus Color 740 USB interface HP DeskJet 880C USB interface Canon CanonScan D1250 (USB 2.0, JP OS only) HP ScanJet 3300C Color Scanner
I/O - USB (Speaker/Joystick))	JS USB Digital Speaker Panasonic USB Speaker EAB-MPC57USB AIWA Multimedia Digital Speaker Microsoft SideWinder Precision Pro Joystick Logitech WingMan RumblePad
I/O - USB Camera	Intel Easy PC Camera Logitech QuickCam Express Internet Nikon Supernign-Performance 3X Zoom
I/O - USB Storage Drive	Logitech CDRW +DVDROM combo USB interface Iomega USB Zip 250MB Argosy Ultra Slim CDRW (USB 2.0) Plextor Burn-Proof CDRW (USB 2.0) Fujitsu MO-1300 1.3G (USB 2.0) Fujitsu 20GB HDD (USB 2.0) Sony DVD-ROM (USB 2.0) IO-Data DVDROM (USB 2.0) IBM 32MB USB Memory Key Trek 32MB USB Memory
I/O - USB Hub	Belkin 4 Port USB Hub Eizo I Station USB Hub Elecom USB Hub 4 Port Sanwa USB Hub 4 Port 4 Port Hub USB 2.0
I/O - 1394 Storage Drive	Logitec Firmware CDRW + DVDROM Combo Yamaha Firewire 8824 CDRW Buffalo Firewire HD I.LINK 20GB I-O Data Firewire HD I.LINK 30GB Lacie Firewire HD I.LINK 30GB VST Firewire HD
I/O - 1394 Scanner	UMAX Firewire PowerLook 110
I/O - 1394 Camera	Sony DV DCR-TRV10
I/O - Access Point (802.11b)	Hitachi DC-CN3300 Lucent RG-1000 Lucent WavePoint-II Cisco Aironet 350 Orinoco AP-500
I/O Acess Point (802.11a/b)	Intel Dual Pro/Wireless 5000
I/O Acess Point (802.11a)	Intel Pro/Wireless 5000
PCMCIA	

Item	Specifications
PCMCIA - ATA	IBM Microdrive 340MB IBM Microdrive 1G Iomega Click! 40MB
PCMCIA - USB 2.0	Apricorn EZ-USB2.0 Cardbus PC Card
PCMCIA - 1394	Buffalo 1394 Interface Cardbus IFC-ILCB/DV I-O Data 1394 Interface Cardbus CB1394/DVC Pixela 1394 Cardbus PC Card PIX-PCMC/FW1
PCMCIA - Bluetooth	IBM Community Bluetooth PC Card Toshiba Bluetooth PC Card

Microsoft Windows 2000 Environment Test

Item	Specifications
Processor	Intel Pentium IV Northwood 1.7 GHz, Intel Pentium IV Northwood 1.8 GHz, Intel Pentium IV Northwood 1.9 GHz, Intel Pentium IV Northwood 2.0 GHz, Intel Pentium IV Northwood 2.1 GHz, Intel Pentium IV Northwood 2.2 GHz, Intel Celeron Northwood 1.6 GHz, Intel Celeron Northwood 1.7 GHz, Intel Celeron Northwood 1.8 GHz, Intel Celeron Northwood 1.9 GHz, Intel Celeron Northwood 2.0 GHz,
Memory DDR SDRAM PC1600/2100	128MB Infineon HYS64D16000GDL-7-B 128MB Nan-Ya NT128D64SH4B0GM-75B 128MB Micron MT4VDDT1664HG-265B2 256MB Mitsubishi MH2D64AKS-75-JE 256MB Infineon HYS64D32020GDL-7-B 256MB Nan-Ya NT256D64SH8B0GM-75B 256MB Micron MT8VDDT3264HDG-265B3 512MB Mitsubishi MH64D64AKQH-75 512MB Infineon HYS64D64020GDBL-7-B
LCD	14.1” XGA TFT IDT ITXG77C AU B141XN04 V2/4 XXX LG LP141X-AH 15” XGA TFT Hitachi TX38D85VC1CAB AU B150XG01 V.0 CMO N150X3-L01 15” SXGA TFT Hitachi TX38D95VC1CAM
Hard Disk Drive	20GB Hitachi DK23EA-20F 20GB Toshiba MK2018GAP 30GB Hitachi DK23EA-30F 30GB Toshiba MK3021GAP 30GB Fujitsu HN-16L/30 40GB Hitachi DK2EA-40 40GB Toshiba MK4021GAP 40GB Fujitsu HN-16L/40 60GB Hitachi DK23EA-60 60GB Toshiba MK6021GAP
Floppy Disk Drive	Mitsumi D353G MCI JU-226A033
DVD-ROM Drive 8X	MKE SR-8177-BAA6

Item	Specifications
CD-ROM Drive	Mitsumi SR-244W1
DVD/CD-RW Combo	KME UJDA740
AC Adapter (3 pin)	Delta 70W Liteon 70W
Power Cord	King Cord
Battery Li-Ion, 8 cells	Samsung, Li-Ion 8cells Sanyo, Li-Ion 8cells
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com Etherlink III 3C589D IBM EtherJet CardBus Adapter 10/100 Intel Ether Express Pro/100 Mobile Adapter MBLA3200 Xircom CardBus Ethernet 10/100 32 Bit CBE-10/100BTX
Multifunction Card (Combo)	10/100 EtherJet CardBus Real Port w/ 56K modem 34L1301 3Com Megahertz 10/100 LAN + 56K Modem PC Card Xircom Realport CardBus Ethenet 10/100 + Modem 56
LAN Token Ring	IBM Token Ring 16/4 Adapter II IBM Turbo 16/4 Token Ring Olicom Token Ring GoCard
Wireless LAN Card	IBM Wireless LAN Cardbus Adapter Intel Pro-Wireless LAN PC Card Proxim Skyline 802.11a Cardbus PC Card
Modem Adapters	
Modem (up to 56K)	3Com Megahertz 56K Modem PC Card Xircom Credit Card Modem 56 IBM 56K Double Jack Modem
ISDN	US Robotics Megahertz 128K ISDN Card 405R17T7117M IBM OBI International ISDN PC Card IBM ISDN Card D5K3320
I/O Peripheral	
I/O - Display	Acer 211c 21” Viewsonic PF790 19” Acer FP751 17” TFT LCD IBM Color TFT LCD 14” Compaq Color Monitor NET Color Monitor 20” Mozo 17” TFT LCD (DVI)
I/O - Projector	NEC MultiSync MT-1040
I/O - Parallel (Printer/Scanner)	Canon BJC-600J Epson Stylus Color 740 Parallel Interface HP DeskJet 890CDEskjet 880C Parallel Interface HP LaserJet 6MP HP LaserJet 2200 AcerScan Prisa 620P

Item	Specifications
I/O - USB Keyboard/Mouse	Chicony USB Keyboard IBM USB Numeric Keypad Microsoft Natural Keyboard Pr Acer Aspire USB mouse Logicool US Mouse Logitech Cordless Mouseman Wheel USB Interface Logitech USB Wheel Mouse Microsoft IntelliMouse Optical USB Interface
I/O - USB (Printer/Scanner)	Epson Stylus Color 740 USB interface HP DeskJet 880C USB interface Canon CanonScan D1250 (USB 2.0, JP OS only) HP ScanJet 3300C Color Scanner
I/O - USB (Speaker/Joystick))	JS USB Digital Speaker Panasonic USB Speaker EAB-MPC57USB AIWA Multimedia Digital Speaker Microsoft SideWinder Precision Pro Joystick Logitech WingMan RumblePad
I/O - USB Camera	Intel Easy PC Camera Logitech QuickCam Express Internet Nikon Supernign-Performance 3X Zoom
I/O - USB Storage Drive	Logitech CDRW +DVDROM combo USB interface Iomega USB Zip 250MB Argosy Ultra Slim CDRW (USB 2.0) Plextor Burn-Proof CDRW (USB 2.0) Fujitsu MO-1300 1.3G (USB 2.0) Fujitsu 20GB HDD (USB 2.0) Sony DVD-ROM (USB 2.0) IO-Data DVDROM (USB 2.0) IBM 32MB USB Memory Key Trek 32MB USB Memory
I/O - USB Hub	Belkin 4 Port USB Hub Eizo I Station USB Hub Elecom USB Hub 4 Port Sanwa USB Hub 4 Port 4 Port Hub USB 2.0
I/O - 1394 Storage Drive	Logitec Firmware CDRW + DVDROM Combo Yamaha Firewire 8824 CDRW Buffalo Firewire HD I.LINK 20GB I-O Data Firewire HD I.LINK 30GB Lacie Firewire HD I.LINK 30GB VST Firewire HD
I/O - 1394 Scanner	UMAX Firewire PowerLook 110
I/O - 1394 Camera	Sony DV DCR-TRV10
I/O - Access Point (802.11b)	Hitachi DC-CN3300 Lucent RG-1000 Lucent WavePoint-II Cisco Aironet 350 Orinoco AP-500
I/O Acess Point (802.11a/b)	Intel Dual Pro/Wireless 5000
I/O Acess Point (802.11a)	Intel Pro/Wireless 5000
PCMCIA	

Item	Specifications
PCMCIA - ATA	IBM Microdrive 340MB IBM Microdrive 1G Iomega Click! 40MB
PCMCIA - USB 2.0	Apricorn EZ-USB2.0 Cardbus PC Card
PCMCIA - 1394	Buffalo 1394 Interface Cardbus IFC-ILCB/DV I-O Data 1394 Interface Cardbus CB1394/DVC Pixela 1394 Cardbus PC Card PIX-PCMC/FW1
PCMCIA - Bluetooth	IBM Community Bluetooth PC Card Toshiba Bluetooth PC Card

Microsoft Windows 98 Environment Test

Item	Specifications
Processor	Intel Pentium IV Northwood 1.7 GHz, Intel Pentium IV Northwood 1.8 GHz, Intel Pentium IV Northwood 1.9 GHz, Intel Pentium IV Northwood 2.0 GHz, Intel Pentium IV Northwood 2.1 GHz, Intel Pentium IV Northwood 2.2 GHz, Intel Celeron Northwood 1.6 GHz, Intel Celeron Northwood 1.7 GHz, Intel Celeron Northwood 1.8 GHz, Intel Celeron Northwood 1.9 GHz, Intel Celeron Northwood 2.0 GHz,
Memory DDR SDRAM PC1600/2100	128MB Infineon HYS64D16000GDL-7-B 128MB Nan-Ya NT128D64SH4B0GM-75B 128MB Micron MT4VDDT1664HG-265B2 256MB Mitsubishi MH2D64AKS-75-JE 256MB Infineon HYS64D32020GDL-7-B 256MB Nan-Ya NT256D64SH8B0GM-75B 256MB Micron MT8VDDT3264HDG-265B3 512MB Mitsubishi MH64D64AKQH-75 512MB Infineon HYS64D64020GDBL-7-B
LCD	14.1” XGA TFT IDT ITXG77C AU B141XN04 V2/4 XXX LG LP141X-AH 15” XGA TFT Hitachi TX38D85VC1CAB AU B150XG01 V.0 CMO N150X3-L01 15” SXGA TFT Hitachi TX38D95VC1CAM
Hard Disk Drive	20GB Hitachi DK23EA-20F 20GB Toshiba MK2018GAP 30GB Hitachi DK23EA-30F 30GB Toshiba MK3021GAP 30GB Fujitsu HN-16L/30 40GB Hitachi DK2EA-40 40GB Toshiba MK4021GAP 40GB Fujitsu HN-16L/40 60GB Hitachi DK23EA-60 60GB Toshiba MK6021GAP
Floppy Disk Drive	Mitsumi D353G MCI JU-226A033
DVD-ROM Drive 8X	MKE SR-8177-BAA6

Item	Specifications
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DVD/CD-RW Combo	KME UJDA740
AC Adapter (3 pin)	Delta 70W Liteon 70W
Power Cord	King Cord
Battery Li-Ion, 8 cells	Samsung, Li-Ion 8cells Sanyo, Li-Ion 8cells
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com Etherlink III 3C589D IBM EtherJet CardBus Adapter 10/100 Intel Ether Express Pro/100 Mobile Adapter MBLA3200 Xircom CardBus Ethernet 10/100 32 Bit CBE-10/100BTX
Multifunction Card (Combo)	10/100 EtherJet CardBus Real Port w/ 56K modem 34L1301 3Com Megahertz 10/100 LAN + 56K Modem PC Card Xircom Realport CardBus Ethenet 10/100 + Modem 56
LAN Token Ring	IBM Token Ring 16/4 Adapter II IBM Turbo 16/4 Token Ring Olicom Token Ring GoCard
Wireless LAN Card	IBM Wireless LAN Cardbus Adapter Intel Pro-Wireless LAN PC Card Proxim Skyline 802.11a Cardbus PC Card
Modem Adapters	
Modem (up to 56K)	3Com Megahertz 56K Modem PC Card Xircom Credit Card Modem 56 IBM 56K Double Jack Modem
ISDN	US Robotics Megahertz 128K ISDN Card 405R17T7117M IBM OBI International ISDN PC Card IBM ISDN Card D5K3320
I/O Peripheral	
I/O - Display	Acer 211c 21” Viewsonic PF790 19” Acer FP751 17” TFT LCD IBM Color TFT LCD 14” Compaq Color Monitor NET Color Monitor 20” Mozo 17” TFT LCD (DVI)
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I/O - USB Storage Drive	Logitech CDRW +DVDROM combo USB interface Iomega USB Zip 250MB Argosy Ultra Slim CDRW (USB 2.0) Plextor Burn-Proof CDRW (USB 2.0) Fujitsu MO-1300 1.3G (USB 2.0) Fujitsu 20GB HDD (USB 2.0) Sony DVD-ROM (USB 2.0) IO-Data DVDROM (USB 2.0) IBM 32MB USB Memory Key Trek 32MB USB Memory
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I/O - 1394 Camera	Sony DV DCR-TRV10
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Item	Specifications
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PCMCIA - USB 2.0	Apricorn EZ-USB2.0 Cardbus PC Card
PCMCIA - 1394	Buffalo 1394 Interface Cardbus IFC-ILCB/DV I-O Data 1394 Interface Cardbus CB1394/DVC Pixela 1394 Cardbus PC Card PIX-PCMC/FW1
PCMCIA - Bluetooth	IBM Community Bluetooth PC Card Toshiba Bluetooth PC Card

Online Support Information

This section describes online technical support services available to help you repair your Acer Systems.

If you are a distributor, dealer, ASP or TPM, please refer your technical queries to your local Acer branch office. Acer Branch Offices and Regional Business Units may access our website. However some information sources will require a user i.d. and password. These can be obtained directly from Acer CSD Taiwan.

Acer's Website offers you convenient and valuable support resources whenever you need them.

In the Technical Information section you can download information on all of Acer's Notebook, Desktop and Server models including:

- Service guides
- User's manuals
- Training materials
- Main manuals
- Bios updates
- Software utilities
- Spare parts lists
- Chips
- TABs (Technical Announcement Bulletin)

For these purposes, we have included an Acrobat File to facilitate the problem-free downloading of our technical material.

Also contained on this website are:

- Detailed information on Acer's International Traveller's Warranty (ITW)
- Returned material authorization procedures
- An overview of all the support services we offer, accompanied by a list of telephone, fax and email contacts for all your technical queries.

We are always looking for ways to optimize and improve our services, so if you have any suggestions or comments, please do not hesitate to communicate these to us.

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