

Acer Aspire 1610 Series

Service Guide

PRINTED IN TAIWAN

Revision History

Please refer to the table below for the updates made on Aspire 1610 service guide.

Date	Chapter	Updates

Copyright

Copyright © 2004 by Acer Incorporated. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of Acer Incorporated.

Disclaimer

The information in this guide is subject to change without notice.

Acer Incorporated makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties of merchantability or fitness for any particular purpose. Any Acer Incorporated software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not Acer Incorporated, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software.

Intel is a registered trademark of Intel Corporation.

Pentium and Pentium II/III are trademarks of Intel Corporation.

Other brand and product names are trademarks and/or registered trademarks of their respective holders.

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.

Chapter 1	System Introduction	1
Features		1
System Block Diagram		3
Board Layout		4
Top View		4
Bottom View		5
Panel		6
Front Panel		6
Left Panel		8
Right Panel		9
Rear Panel		10
Bottom Panel		11
Indicators		12
Indicator on cover		13
Keyboard		14
Special keys		14
Hardware Specifications and Configurations		20
Chapter 2	System Utilities	30
BIOS Setup Utility		30
Navigating the BIOS Utility		31
Information		32
Main		33
Advanced		35
Security		36
Boot		40
Exit		41
BIOS Flash Utility		42
Chapter 3	Machine Disassembly and Replacement	44
General Information		45
Before You Begin		45
Disassembly Procedure Flowchart		46
Removing the Battery		48
Removing the Memory Module		49
Removing the Modem Board		50
Removing the Hard Disk Drive Module		51
Disassembling the Hard Disk Drive Module		51
Removing the LCD Module		52
Removing the Middle Cover		52
Removing the Launch Board		52
Removing the LCD Module		53
Disassembling the LCD Module		55
Removing the LCD Bezel		55
Removing the Inverter Board (15" LCD)		55
Removing the 15" TFT LCD		56
Removing the LCD Brackets		57
Removing the LCD Coaxial Cable		57
Removing the LCD Hinges		58
Disassembling the Main Unit		59
Removing the Keyboard		59
Removing the RTC Battery		59
Removing the MimiPCI Card Plate		59
Removing the Thermal Module		60

Table of Contents

Removing the Processor	60
Installing the Processor	61
Removing the Upper Case Assembly	61
Removing the Touchpad Board	62
Removing the Touchpad Cable	62
Removing the Floppy Disk Drive Module	63
Disassembling the Floppy Disk Drive Module	63
Removing the VGA Heatsink Plate	64
Removing the CPU Heatsink Plate	64
Removing the ODD Module(1)	65
Removing the ODD Module(2)	65
Removing the HDD Bracket	65
Removing the Main Board	66
Removing the DC Board	66
Removing the I/O Port Bracket	67
Removing the PCMCIA Slot	67
Removing the Speaker Set	68
System Upgrade Procedure	69
Base Unit to Wireless Unit	69
Assembling the Main Unit	70
Installing the Speaker Set	70
Installing the DC Board	70
Installing the PCMCIA Slot	70
Installing the Main Board	70
Installing the HDD Bracket	71
Installing the ODD Module	71
Installing the CPU Heatsink Plate	72
Installing the VGA Heatsink Plate	72
Installing the Floppy Disk Drive Module	73
Installing the Touchpad Cable	73
Installing the Touchpad Board	73
Installing the Upper Case Assembly	74
Installing the Processor	75
Installing the Thermal Module	75
Installing the MimiPCI Card Plate	76
Installing the RTC Battery	77
Installing the Keyboard	77
Assembling the LCD Module	79
Installing the LCD Hinges	79
Installing the LCD Coaxial Cable	79
Installing the LCD Brackets	79
Installing the 15" TFT LCD	80
Installing the Inverter Board (15" LCD)	80
Installing the LCD Bezel	81
Installing the LCD Module	83
Installing the LCD Module	83
Installing the Launch Board	83
Installing the Middle Cover	84
Installing the Hard Disk Drive Module	86
Removing the Modem Board	87
Installing the Memory Module	88
Installing the Battery	89

Chapter 4 Troubleshooting 90

System Check Procedures	91
-----------------------------------	----

Table of Contents

External Diskette Drive Check	91
External CD-ROM Drive Check	91
Keyboard or Auxiliary Input Device Check	91
Memory check	92
Power System Check	92
Touchpad Check	94
Power-On Self-Test (POST) Error Message	95
Index of Error Messages	96
Index of Symptom-to-FRU Error Message	99
Intermittent Problems	102
Undetermined Problems	103
Chapter 5 Jumper and Connector Locations	104
Top View	104
Bottom View	106
Chapter 6 FRU (Field Replaceable Unit) List	107
Aspire 1610 Exploded Diagram	108
Appendix A Model Definition and Configuration	117
Model Name Definition	117
Appendix B Test Compatible Components	119
Microsoft Windows XP Environment Test	120
Appendix C Online Support Information	123
Index	125

System Introduction

Features

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

Performance

- ☐ Intel® Pentium® 4 processor 3.06 GHz with 512 KB L2 cache
- ☐ Two memory slots supporting 333 MHz DDR, upgradeable to 2GB
- ☐ High-capacity, Enhanced-IDE hard disk

Display

- ☐ 15.0" SXGA+ (1400X1050 resolution) TFT LCD panel provides a large viewing area for maximum efficiency and ease-of-use
- ☐ 3D graphics support
- ☐ Supports simultaneous display between LCD and CRT display
- ☐ S-video for out put to a television or display device that supports S-video input
- ☐ "Automatic LCD dim" feature that automatically selects the best setting for the display in order to conserve power
- ☐ DualView™ support

Multimedia

- ☐ High-speed built-in optical drive: DVD-Dual
- ☐ MS DirectSound compatible
- ☐ Built-in dual speakers
- ☐ Audio ports for microphone-in and headphones

Connectivity

- ☐ Integrated 10/100 Mbps Ethernet connection
- ☐ Built-in 56Kbps fax/data modem
- ☐ Four universal serial bus (USB) 2.0 ports
- ☐ One IEEE 1394 port
- ☐ IEEE 802.11g

Expansion

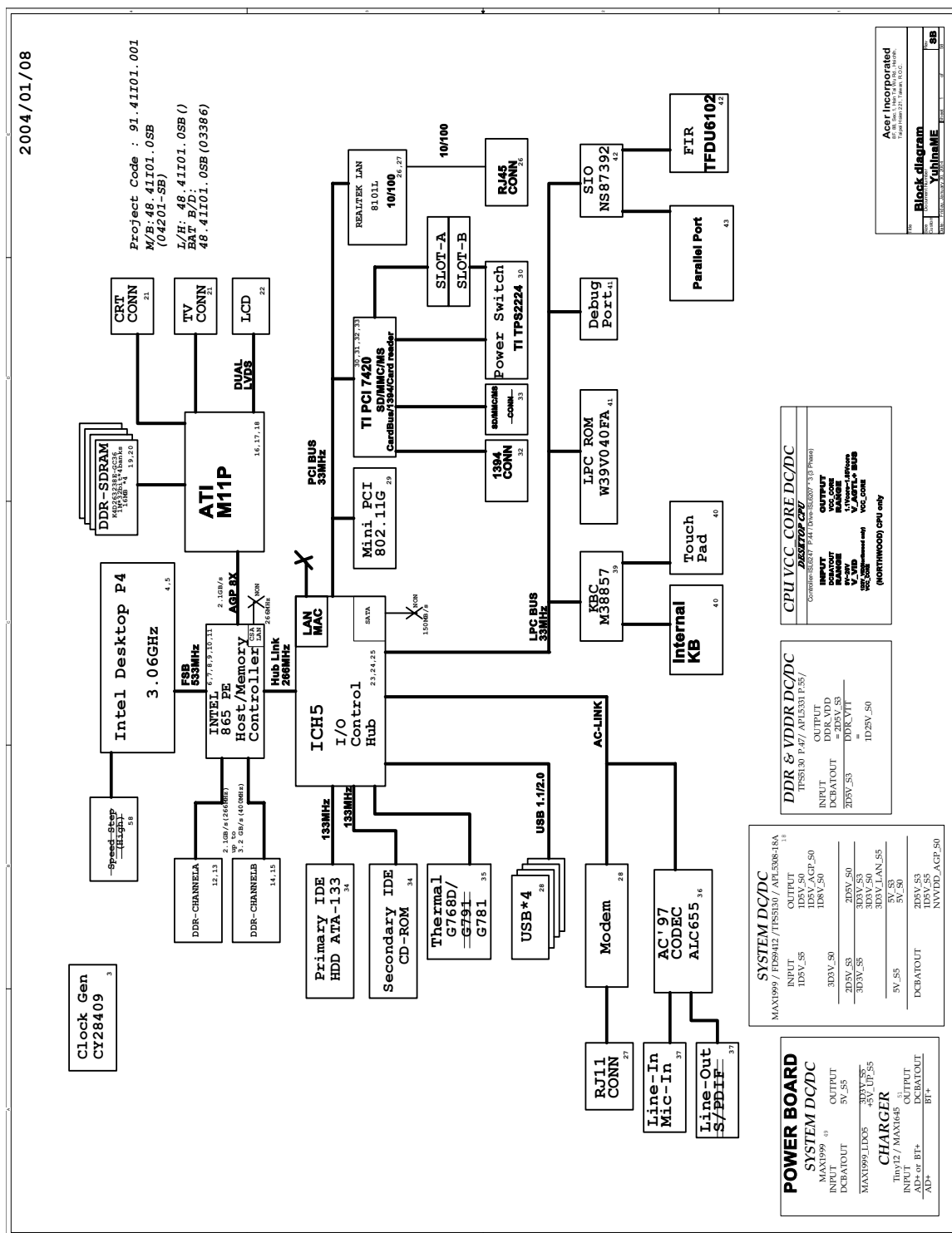
- ☐ PC card slot enabling a range of add-on options
- ☐ Upgradeable hard disk and memory modules

I/O Ports

- ☐ Two Type II or one Type III PC CardBus (PCMCIA) slot
- ☐ One IEEE 1394 port
- ☐ One FIR port
- ☐ One RJ-11 modem jack (V.90/V.92, 56K)

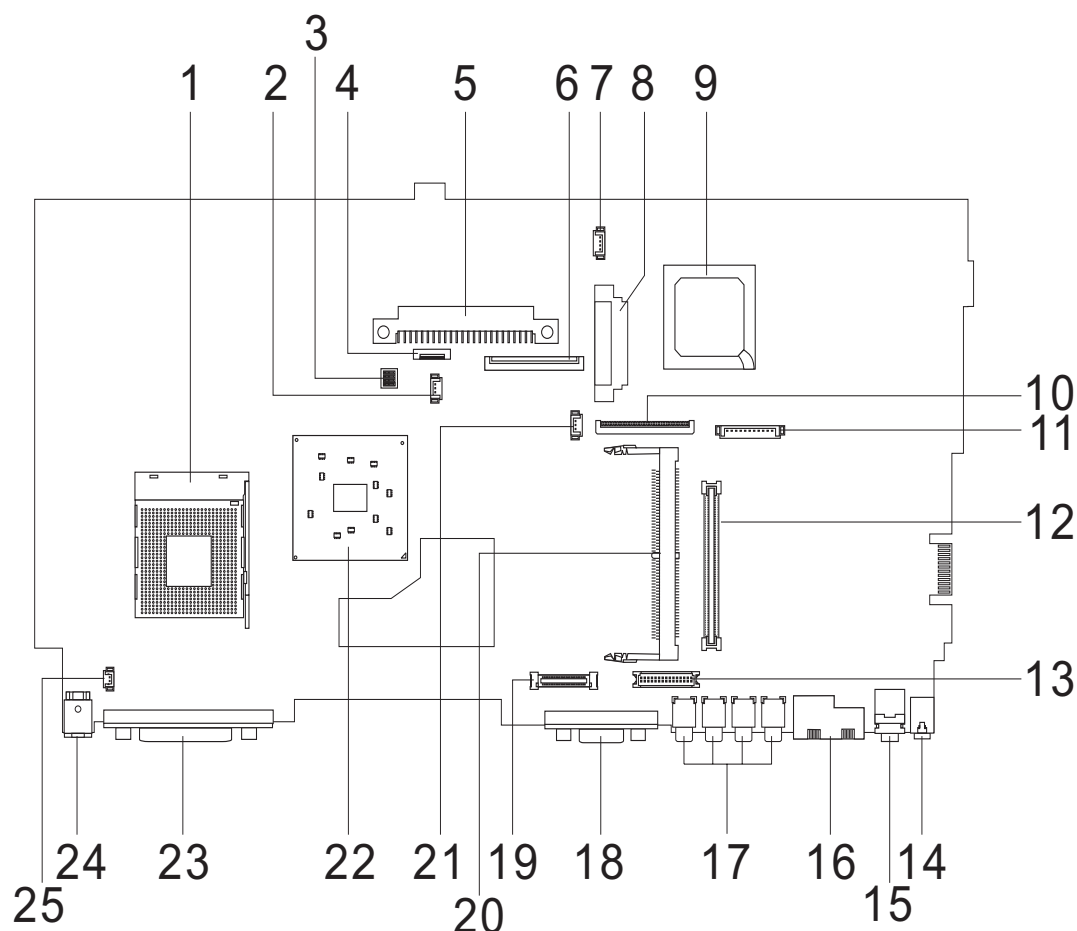
-
- ☐ One RJ-45 network jack
 - ☐ One DC-in jack
 - ☐ One parallel port (ECP/EPP)
 - ☐ One S-video port
 - ☐ One external monitor port
 - ☐ One microphone-in jack (3.5mm mini jack)
 - ☐ One headphone jack (3.5mm mini jack)
 - ☐ Four USB 2.0 ports

System Block Diagram



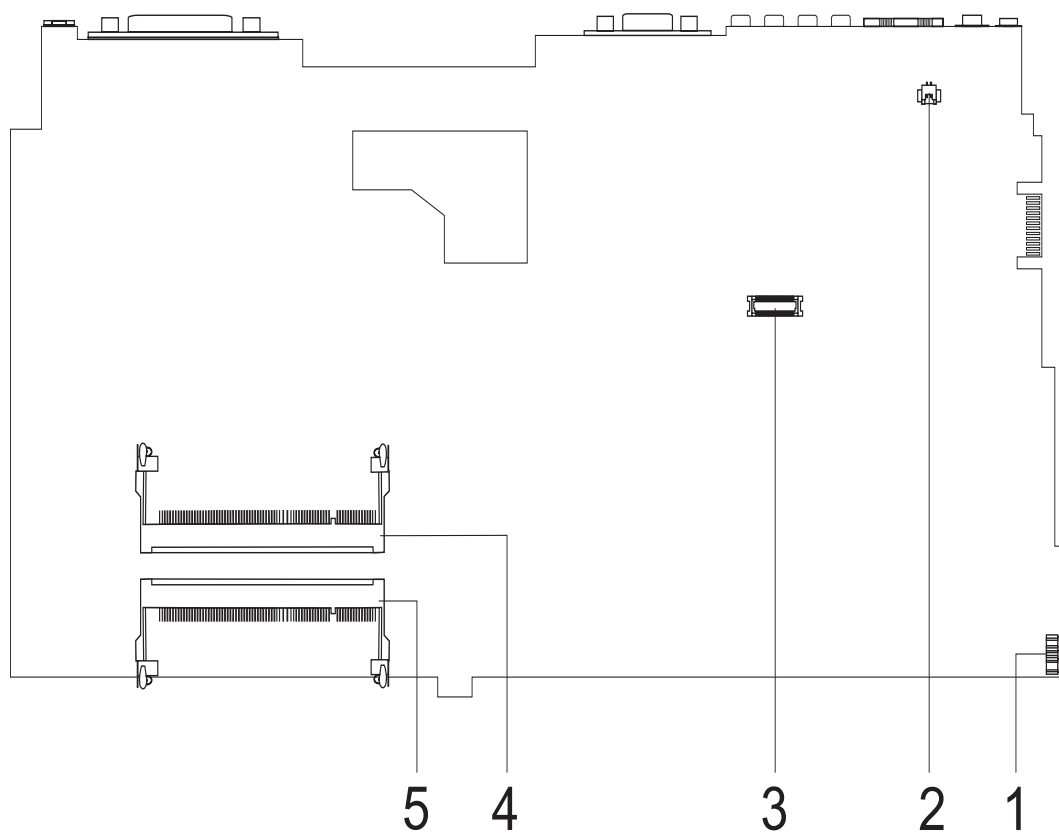
Board Layout

Top View



- | | | | |
|----|--|----|-----------------------------|
| 1 | CPU Socket | 14 | Line-in Port |
| 2 | Fan Connector | 15 | Line-out Port |
| 3 | SW1 (Please see Chapter 5 for detailed settings) | 16 | RJ45+RJ11 |
| 4 | Touchpad Cable Connector | 17 | Four USB Ports |
| 5 | HDD Connector | 18 | VGA Port |
| 6 | Keyboard Connector | 19 | LCD Coaxial Cable Connector |
| 7 | Speaker Cable Connector | 20 | Mini PCI Connector |
| 8 | Optical Drive Connector | 21 | RTC Battery Connector |
| 9 | South Bridge | 22 | North Bridge |
| 10 | FDD Connector | 23 | Parallel Port |
| 11 | Launch Cable Connector | 24 | DC-in Port |
| 12 | PCMCIA Slot | 25 | LCD Lid Switch |
| 13 | LCD Inverter Cable Connector | | |

Bottom View



- 1 FIR Port
- 2 Modem Cable Connector
- 3 Modem Card Connector
- 4 DIMM Socket 2
- 5 DIMM Socket 1

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.

#	Item	Description
3	Launch Keys	Buttons for launching frequently used programs. See "Launch keys" on page 17 for more details.
4	Power button	Turns the computer on and off.
5	Palmrest	Comfortable support area for your hands when you use the computer.
6	Click buttons and 4-way scroll key	The left and right buttons function like the left and right mouse buttons; the 4-way scroll key scrolls the contents of a window up, down, left and right.
7	Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
8	Keyboard	Inputs data into your computer.
9	Ventilation Slot	Enables the computer to stay cool, even after the prolonged use.

Left Panel



#	Icon	Item/ Port	Description
1		PC Card slots	Support two Type II or one Type III CardBus PC Card(s).
2		Eject buttons	Eject PC cards from the card slots.
3		IEEE 1394 port	Connects to IEEE 1394 devices.
4		Infrared port	Interfaces with infrared devices (e.g., infrared printer, IR-aware computer).
5		Eject button	Ejects the optical drive tray from the drive.
6		LED indicator	Lights up when the optical drive is active.
7		Emergency eject slot	Ejects the optical drive tray when the computer is turned off. There is a mechanical eject button on the CD-ROM or DVD-ROM drive. Simply insert the tip of a pen or paperclip and push to eject the tray.
8		Optical drive	Internal optical drive; accepts CDs or DVDs depending on the optical drive type.
9		Speaker	Delivers stereo audio output.

Right Panel












#	Icon	Item/ Port	Description
1		Speaker	Delivers stereo audio output.
2		Security keylock	Connects to a Kensington-compatible computer security lock.

Rear Panel

I



#	Icon	Port	Description
1		Power Jack	Connects to an AC adapter
2		Parallel port	Connects to a parallel device (e.g., parallel printer)
3		S-video port	Connect to a television or display device with S-video input.
4		External display port	Connects to a display device (e.g., external monitor, LCD projector) and displays up to 16M colors at 1024x768 resolution
5		Four USB port (four)	Connects to Universal Serial Bus devices (e.g., USB mouse, USB camera).
6		Network jack	Connects to an Ethernet Gigabit LAN network.
7		Modem jack	Connects to the phone line.
8		Speaker/Line-out/headphone jack	Connects to audio line-out devices (e.g., speakers and headphones).
9		Line-in/mic-in jack	Connects to audio line-out devices (e.g., speakers, headphones).

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	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
	Wireless Communication Button	Lights when the Wireless LAN capability is enabled.
	Power	Lights when the computer is on.
	Sleep	Lights when the computer enters Standby mode and blinks when it enters into or resumes from hibernation mode.
	Media Activity	Lights when the floppy drive, hard disk or optical drive is active.
	Battery Charge	Lights when the battery is being charged.
	Caps Lock	Lights when Caps Lock is activated.
	Num Lock (Fn-F11)	Lights when Num Lock is activated.

Indicator on cover

When the cover of your computer is closed, 2 easy-to-read icons are shown, indicating which state or feature is enabled or disabled.



#	Icon	Function	Description
1		Power	Lights up when the computer is on.
2	Z^Z	Sleep	Lights when the computer enters Standby mode and blinks when it enters into or resumes from hibernation mode.

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

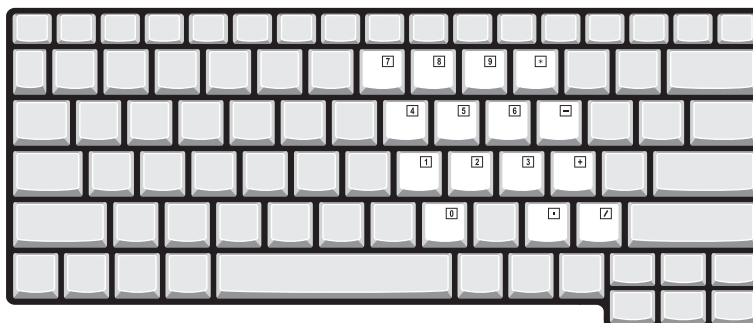
The keyboard has three lock keys which you can toggle on and off.



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
<p>Windows logo key</p> 	<p>Start button. Combinations with this key perform shortcut functions. Below are a few examples:</p> <ul style="list-style-type: none"> + Tab (Activates next taskbar button) + E (Explores My Computer) + F (Finds Document) + M (Minimizes All) +  + M (Undoes Minimize All) + R (Displays the Run... dialog box)
<p>Application key</p> 	<p>Opens a context menu (same as a right-click).</p>











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.

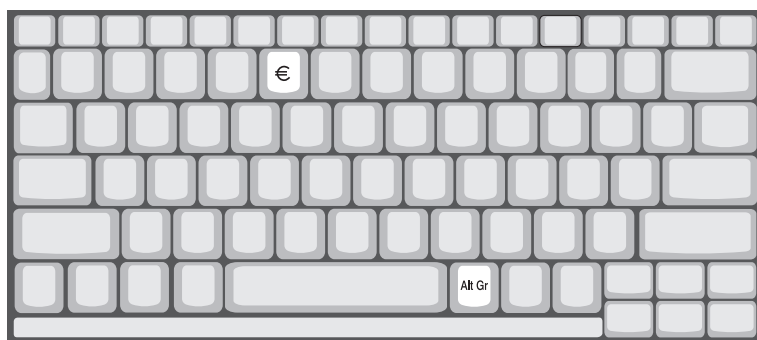


Hot Key	Icon	Function	Description
Fn- F1	?	Hotkey help	Displays a list of the hotkeys and their functions.
Fn- F2		Setup	Accesses the notebook configuration utility.
Fn- F3		Power Management Scheme Toggle	Switches between the power management scheme used by the computer (function available if supported by operating system).
Fn- F4	Zz	Sleep	Puts the computer in Sleep mode.
Fn- F6		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-		Volume up	Increases the sound volume.
Fn-		Volume down	Decreases the sound volume.
Fn-		Brightness up	Increases the screen brightness.

Hot Key	Icon	Function	Description
Fn- 		Brightness down	Decreases the screen brightness.
Fn- 		Home	Functions as the  key.
Fn- 		End	Functions as the  key.
 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  Gr and press the Euro symbol.

Launch Keys

Located at the top of the keyboard are six buttons. These buttons are called launch keys. They are designated as mail button, Web browser button, P1, P2, Bluetooth and Wireless buttons. The Wireless and Bluetooth buttons cannot be set by the user. To set the other four launch keys, run the Acer Launch Manager.



#	Icon	Function	Description
1		Mail	Launches your email application
2		Web browser	Launch your Internet browser.
3	P1	P1	User-programmable
4	P2	P2	User-programmable
5		Bluetooth	Starts (optional) Bluetooth functionality and indicates that (optional) Bluetooth is enabled.
6		InviLin	Enables your 802.11g Wireless LAN.

Hardware Specifications and Configurations

System Board Major Chips

Item	Controller
System core logic	Intel 865PE+ICH5
Super I/O controller	NS PC87392
Audio controller	REALTEK ALC655
Video controller	ATI M11+P on board
Hard disk drive controller	Embedded in Intel ICH5
Keyboard controller	Mitsubishi LPC keyboard controller M38857
CardBus controller	TI PCI7420GHK
RTC	Intel ICH5

Processor

Item	Specification
CPU type	Intel Petium 4 processor
CPU package	To 3.06GHz uFCBGA
CPU core voltage	1.525V
CPU I/O voltage	1.525V

BIOS

Item	Specification
BIOS vendor	Phoenix BIOS
BIOS Version	
BIOS ROM type	Flash ROM (WINBOND W39V040FAP)
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	512KB
1st level cache control	Always Enabled
2nd level cache control	Always Enabled
Cache scheme control	Fixed-in write back

System Memory

Item	Specification
Memory controller	Intel 865PE
Onboard memory size	0MB

System Memory

Item	Specification
DIMM socket number	2 Sockets
Supports memory size per socket	512MB
Supports maximum memory size	1024MB
Supports DIMM type	DDR-DRAM
Supports DIMM Speed	400 MHz
Supports DIMM voltage	2.5 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
512MB	512MB	1024MB
0MB	512MB	512MB
1024MB	0MB	1024MB
1024MB	128MB	1152MB
1024MB	256MB	1280MB
1024MB	512MB	1536MB
0MB	1024MB	1024MB
128MB	1024MB	1152MB
256MB	1024MB	1280MB
512MB	1024MB	1536MB

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

LAN Interface

Item	Specification
Chipset	RealTek 8101L
Supports LAN protocol	10/100Mbps
LAN connector type	RJ45

LAN Interface

Item	Specification
LAN connector location	Rear side

Modem Interface

Item	Specification
Chipset	Internal Agere Scorpio chipset (Scorpio+CSP1037B)
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

Hard Disk Drive Interface

Item	Specification		
Vendor & Model Name	HGST IC25N060ATMR04	HGST DK23FA-60 A0A0	TOSHIBA MK6021GAS
Capacity (MB)	60000	60000	60000
Bytes per sector	512	512	512
Logical heads	16	16	16
Logical sectors	63	63	63
Drive Format			
Logical cylinders	16383	54229	47080
Physical read/write heads	3	3	3
Disks	2	2	2
Spindle speed (RPM)	4200RPM	4200RPM	4200RPM
Performance Specifications			
Buffer size	8MB	8MB	8MB
Interface	ATA-6	ATA-5	ATA-5
Data transfer rate (disk-buffer, Mbytes/s)	350	23.4-43.9	350
Data transfer, rate (host-buffer, Mbytes/s)	100 MB/Sec	100 MB/Sec	100 MB/Sec
DC Power Requirements			
Voltage tolerance	5 +/- 5%	5 +/- 5%	5 +/- 5%

DVD Dual Interface

Items	Specification
Vendor & Model Name	HLDS GWA-4040N

DVD Dual Interface

Items	Specification
DVD Data Transfer Rate	<p>Sustained:</p> <p>DVD-ROM 3.3-8X CAV: 4.5-11MB/sec</p> <p>Dual 2.4-6X CAV: 3.3-8.3MB/sec</p> <p>DVD-Video 2.4-6X CAV: 3.3-8.3MB/sec</p> <p>DVD+R/-R 2.4-6X CAV: 3.3-8.3MB/sec</p> <p>Write:</p> <p>DVD+R 2.4X CLV: 3.3MB/sec, 4X ZCLV: 5.5MB/sec</p> <p>DVD-R 2X CLV: 2.77MB/sec</p> <p>DVD+RW 2.4X CLV: 3.3MB/sec</p> <p>DVD-RW 1X CLV: 1.37MB/sec, 2X CLV: 2.77MB/sec</p>
CD Data Transfer Rate	<p>Sustained:</p> <p>CD-R/ROM 10-24X CAV: 1500-3600KB/sec</p> <p>CD-RW 8-20X CAV: 1200-3000KB/sec</p> <p>CD-DA (Audio Out) 4-10X CAV: 600-1500KB/sec</p> <p>CD-DA (DAE) 6-15X CAV: 900-2250KB/sec</p> <p>Write:</p> <p>CD-R 10-16XZCLV: 1500-2400KB/sec, 8-12X ZCLV: 1200-1800KB/sec, 8X CLV: CD-RW 1200KB/sec</p> <p>DVD-R 2X CLV: 2.77MB/sec</p> <p>USRW 10X CLV: 1500KB/sec, 4X CLV: 600KB/sec</p> <p>10X CLV: 1500KB/sec</p> <p>DVD-RW 1X CLV: 1.37MB/sec, 2X CLV: 2.77MB/sec</p> <p>Burst (ATAPI):</p> <p>33.3MB/sec (Ultra DMA33 Mode2)</p> <p>16.67MB/sec (PIO Mode 4, MULTI-DMA Mode 2)</p>
Access time (typ.)	<p>DVD Random 160m sec. <typical></p> <p>CD Random 150m sec. <typical></p>
DAE (Digital Audio Extraction) transfer rate	6-15X CAV: 1200-3000KB/sec
Data Buffer Memory	2MB
Interface	Enhanced-IDE (ATAPI)
Applicable disc format	<p>Read/Play: DVD-ROM, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-Audio, CD-DA, CD-Extra, CD-ROM, CD-R, CD-RW, Video CD, CD Text</p> <p>Write: DVD+R, DVD+RW, DVD-R, DVD-RW, CD-R, CD-RW,</p>
Loading mechanism	Drawer with soft eject and emergency eject hole
Power Requirement	
Input Voltage	+5V[DC]

Audio Interface

Item	Specification
Audio Controller	REALTEK ALC655
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	<p>20 bit stereo Digital to Analog converter</p> <p>18 bit stereo Analog to Digital converter</p>
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

Audio Interface

Item	Specification
Internal microphone	Yes
Internal speaker / Quantity	Yes
Supports PnP DMA channel	DMA channel 0 DMA channel 1
Supports PnP IRQ	IRQ10, IRQ11

Video Interface

Item	Specification
Vendor & Model Name	ATI M11+P
Chip voltage	Core / 2.5V, 1.5V, 1.2V
Supports ZV (Zoomed Video) port	NO
Graph interface	8X AGP (Accelerated Graphic Port) Bus
Maximum resolution (LCD)	1600 x1200 (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	64MB

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	NS PC87392
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

Parallel Port

Item	Specification
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
USB Compliance Level	2.0
OHCI	USB 2.0
Number of USB port	4
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

PCMCIA Port

Item	Specification
PCMCIA controller	TI PCI7420GHK
Supports card type	Type II, Type III
Number of slots	Two type II, one type III
Access location	Left side
Supports ZV (Zoomed Video) port	No
Supports 32 bit CardBus	Yes (IRQ17)

Keyboard

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

Battery

Item	Specification
Vendor & model name	SIMPLO/SANYO
Battery Type	Li-ION
Pack capacity	2000mAh
Cell voltage	3.8V / 1.2V
Number of battery cell	8
Package configuration	4529 / 8S
Package voltage	41.8V / 9.6V

DC-DC/Charger Converter

Item	Specification
Vendor & Model Name	MAX IM1645/MAXIM1715/MAX1 999/MAXI 545
Input Voltage	AC Adapter or Battery: 8V - 19VDC
DC-DC Converter Output	

DC-DC/Charger Converter

Item	Specification	
Output Rating	+5V	3.3V
Current (w/load, A)	0~5A	0~4A
Charger Output	Li-ION	
Normal charge (charge while system is not operative)	2.8A	
Background charge (charge even system is still operative)	Constant power mode (2.8A~0A)	
Battery-low 2 level (V)	12.5V	
Battery-low 3 level (V)	11.5V	
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.

LCD

Item	Specification
Vendor & model name	15" AU B150PG01 15" LG LP150E02-A2P1
Mechanical Specifications	
LCD display area (diagonal, inch)	15
Display technology	TFT
Resolution	SXGA+ (1400x1050)
Support colors	262K (RGB 6-bit data driver)
Display Characteristics	
Screen Diagonal	381mm
Active Area	304.5x228.375mm
Pixel Pitch	0.2175X0.2175mm
Pixel Arrangement	R.G.B. Vertical Stripe

LCD

Item	Specification
Typical White Luminance (cd/m ²)	150 (5 point average)
Luminance Uniformity	1.25 max. (5pts) 1.65 max. (13pts)
Contrast Ratio	250
Optical Rise Tim/Fall Time	15/35 (msec)
Nominal Input Voltage VDD	3.3V Typ.
Typical Power Consumption (VDD line+VCFL line)	5.7watt
Electrical Interface	2 Channel LVDS
Optical Specification	
Brightness control	Keyboard hotkey
Contrast control	None
Response Time (msec) (Room Temp.) (msec)	Rising 15 Note: 45 (Max.) Falling 35 Note: 45 (Max.)
Electrical Specification	
Supply voltage for LCD display (V)	3.3 (typ.)
Supply voltage for LCD backlight (Vrms)	650 (typ.)

AC Adapter

Item	Specification
Vendor & model name	LITEON
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)	90-240
Inrush current	The adapter inrush current shall be less than the ratings of its critical components for all conditions of line voltage.
Efficiency	The power supply efficiency shall not less than 83% measure at the maximum load as specified in paragraph 3.1 with the AC input set at the nominal voltage.
Output Ratings (CV mode)	
DC output voltage	20V
Noise + Ripple	300mVp-pmax (Use 20 MHz bandwidth frequency scope).
Load	0(min) 3.16A(max)
Output Ratings (CC mode)	
DC output voltage	20V +/-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	

AC Adapter

Item	Specification
Primary to secondary	3000Vac
Leakage current	0.25 mA max. (@ 254Vac, 60Hz)
Regulatory Requirements	<p>Safety Requirements:</p> <ol style="list-style-type: none">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. <p>EMI Requirements:</p> <ol style="list-style-type: none">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.	<input type="checkbox"/> The buzzer beeps <input type="checkbox"/> 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.	<input type="checkbox"/> All power shuts off
Display Standby Mode Keyboard, built-in touchpad, and an external PS/2 pointing device are idle for a specified period.	<input type="checkbox"/> The display shuts off
Hard Disk Standby Mode Hard disk is idle within a specified period of time.	<input type="checkbox"/> Hard disk drive is in standby mode. (spindle turned-off)

Environmental Requirements

Item	Specification
Temperature	
Operating	+5~+35 °C
Non-operating	-20~+65 °C
Package storage	-20~+65 °C
Humidity	
Operating	20% to 80% RH
Non-operating	10% to 90% RH (Unpacked)

Environmental Requirements

Item	Specification
Non-operating	10% to 90% RH (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 290(D) x 42.9(H)mm
Weight	7.75lbs for 15.0" TFT LCD model with battery
I/O Ports	Two type II or one type III PCMCIA (PC Card) port, one IEEE 1394 port, one FIR port, one RJ-11 port, one RJ-45 port, one DC-in port, one ECP parallel port, One S-video port, One external monitor port, four USB ports, one microphone-in/line-in jack, one headphone jack
Drive Bays	One
Material	Plastic
Indicators	Power-on, Standby, Battery Status, Media Access, CapsLock and NumLock
Switch	Power

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 (when "Press <F2> to enter Setup" message is prompted on the bottom of screen).

Press **F2** to enter setup. Press <F12> during POST to enter multi-boot menu. In this menu, user can change boot device without entering BIOS SETUP Utility.

PhoenixBIOS Setup Utility					
Information	Main	Advanced	Security	Boot	Exit
CPU Type	Intel® Pentium® 4				
CPU Speed	3.06GHz				
HDD Model Name:	IC25B060ATMR04-0-(PM)				
HDD Serial Number:	HITACHI_DK23EA-40-(PM)				
ATAPI Model Name:	PIONEER DVD-RW DVR-K12RA-(SM)				
ATAPI Serial Number:	None				
System BIOS Version:	TM1610_V1.02				
VGA BIOS Version:	BK-ATI VER008.017M.049.000				
KBC Version:	02.13.29				
Serial Number:	xxxxxxxxxxxxxxxxxxxx				
Asset Tag Number:	N/A				
Product Name:	Aspire 1610				
Manufacturer Name:	Acer				
UUID:	00000000-0000-0000-0000-00000000				
F1 Help	↑↓ Select Item	F5/F6 Change Values	F9 Setup defaults		
Esc Exit	←→ Select Menu	Enter Select Sub-Menu	F10 Save and Exit		

Navigating the BIOS Utility

There are six menu options: Info., Main, System Devices, Security, Boot, and Exit.

Follow these instructions:

- ❑ To choose a menu, use the cursor left/right keys (← →).
- ❑ To choose a parameter, use the cursor up/down keys (↑ ↓).
- ❑ To change the value of a parameter, press F5 or F6.
- ❑ A plus sign (+) indicates the item has sub-items. Press ENTER to expand this item.
- ❑ Press ESC while you are in any of the menu options to go to the Exit menu.
- ❑ In any menu, you can load default settings by pressing F8. You can also press F9 to save any changes made and exit the BIOS Setup Utility.

NOTE: You can change the value of a parameter if it is enclosed in square brackets. Navigation keys for a particular menu are shown on the bottom of the screen. Help for parameters are found in the Item Specific Help part of the screen. Read this carefully when making changes to parameter values.

This menu provides you the information of the system.

Information

PhoenixBIOS Setup Utility

InformationMainAdvancedSecurityBootExit

CPU TypeIntel® Pentium® 4

CPU Speed3.06GHz

HDD Model Name:IC25B060ATMR04-0-(PM)

HDD Serial Number:HI TACHI _DK23EA-40-(PM)

ATAPI Model Name:PIONEER DVD-RW DVR-K12RA-(SM)

ATAPI Serial Number:None

System BIOS Version:TM1610_V1.02

VGA BIOS Version:BK-ATI VER008.017M.049.000

KBC Version:02.13.29

Serial Number:xxxxxxxxxxxxxxxxxxxx

Asset Tag Number:N/A

Product Name:Aspire 1610

Manufacturer Name:Acer

UUID:00000000-0000-0000-0000-00000000

F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup defaults

Esc Exit ←→ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Parameter	Description
Serial Number	This field displays the serial number of this unit.
UUID Number	UUID=32bytes

Main

The Main screen displays a summary of your computer hardware information, and also includes basic setup parameters.

PhoenixBIOS Setup Utility			
Information	Main	Advanced	Security
Boot	Exit	Item specific Help	
System Time:	[00:12:45]		
System Date:	[02/05/2004]	<Tab>, <Shift-Tab>, or <Enter> selects field.	
System Memory:	640 KB	Show System Memory Size	
Extended Memory:	254 MB	Show Extended Memory Size	
VGA Memory:	64 MB	Video Memory Size	
Quiet Boot:	[Enabled]		
Power on display:	[Auto]		
LCD Auto Dim:	[Enabled]		
Network Boot:	[Enabled]		
F12 Boot Menu:	[Disabled]		
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 for reference only. Actual values may differ.

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

Parameter	Description	Format/Option
System Time	Sets the system time.	Format: HH:MM:SS (hour:minute:second) System Time
System Date	Sets the system date.	Format MM/DD/YYYY (month/day/year) System Date
System Memory	This field reports the memory size of the system. Memory size is fixed to 640MB	
Extended Memory	This field reports the memory size of the extended memory in the system. Extended Memory size=Total memory size-1MB	
Video Memory	Shows the VGA memory size.	
Quiet Boot	Determines if Customer Logo will be displayed or not; shows Summary Screen is disabled or enabled. Enabled: Customer Logo is displayed, and Summary Screen is disabled. Disabled: Customer Logo is not displayed, and Summary Screen is enabled.	Option: Enabled or Disabled
Power on display	Auto: During power process, the system will detect if any display device is connected on external video port. If any external display device is connected, the power on display will be in CRT (or projector) only mode. Otherwise it will be in LCD only mode. Both: Simultaneously enable both the integrated LCD screen and the system's external video port (for an external CRT or projector).	Option: Auto or Both
LCD Auto Dim	Determines if the system will automatically dim the LCD brightness in order to save power when AC is not present.	Option: Enabled or Disabled
Network Boot	Enables, disables the system boot from LAN (remote server).	Option: Enabled or Disabled
F12 Boot Menu	Enables, disables Boot Menu during POST.	Option: Disabled or Enabled

NOTE: The sub-items under each device will not be shown if the device control is set to disable or auto. This is because the user is not allowed to control the settings in these cases.

Advanced

The Advanced menu screen contains parameters involving your hardware devices. It also provides advanced settings of the system.

PhoenixBIOS Setup Utility					
Information	Main	Advanced	Security	Boot	Exit
				Item specific Help	
Infrared Port (FIR):		[Disabled]			
Base I/O address:		[2F8]	Configure Infrared Port		
Interrupt		[IRQ 3]	using options:		
DMA channel:		[DMA 1]	[Disabled]		
			No configuration		
Parallel Port:		[Enabled]			
Mode:		[ECP]	[Enabled]		
			User configuration		
Base I/O address:		[378]			
Interrupt		[IRQ 7]	[Auto]		
			BIOS or OS chooses		
DMA channel:		[DMA 3]	configuration		
			(OS Controlled)		
Hyper Threading Technology:		[Enabled]	Displayed when		
			controlled by OS		
Legacy USB Support		[Disabled]			
F1	Help	↑↓	Select Item	F5/F6	Change Values
F9	Setup defaults				
Esc	Exit	←→	Select Menu	Enter	Select ▶ Sub-Menu
F10	Save and Exit				

NOTE: Please visit Intel’s website to get more detailed information on Hyper Threading Technology-- <http://www.intel.com/technology/hyperthread/index.htm?iid=sr+hyper&>

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

Parameter	Description	Options
Infrared Port	Enables, disables or auto detects the infrared port.	Disabled /Disabled/Auto
Parallel Port	Enables, disables or auto detects the parallel port.	Enabled /Disabled/Auto
Mode	Sets the operation mode of the parallel port.	ECP , EPP, Normal or Bi-directional
Base I/O address	Sets the I/O address of the parallel port.	378h /278h/3BCH
Interrupt	Sets the interrupt request of the parallel port.	IRQ7 /IRQ5
DMA channel	Sets a DMA channel for the printer to operate in ECP mode. This parameter is enabled only if Mode is set to ECP.	DMA3 /DMA1
Hyper Threading Technology	Enables or disables Hyper Threading Technology	Option: Enabled or Disabled
Legacy USB Support	Enables, disables USB interface devices support under DOS mode.	Option: Enabled or Disabled

Security

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

PhoenixBIOS Setup Utility					
Information	Main	Advanced	Security	Boot	Exit
			Item specific Help		
User Password Is		Clear			
Supervisor Password Is		Clear		Supervisor Password controls access of the whole setup utility. It can be used to boot up when Password on boot enabled.	
Set User Password		[Enter]			
Set Supervisor Password		[Enter]			
Primary HardDisk Security		[Disabled]			
Password on Boot:		[Disabled]			
F1	Help	↑↓ Select Item	F5/F6 Change Values	F9	Setup defaults
Esc	Exit	←→ Select Menu	Enter Select ▸ Sub-Menu	F10	Save and Exit

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

Parameter	Description	Option
User Password is	Shows the setting of the user password.	Clear or Set
Supervisor Password is	Shows the setting of the Supervisor password	Clear or Set
Set User Password	Press Enter to set the user password. When set, this password protects the BIOS Setup Utility from unauthorized access.	
Set Supervisor Password	Press Enter to set the supervisor password. When set, this password protects the BIOS Setup Utility from unauthorized access.	
Primary Harddisk Security	This feature is available to user when Supervisor password is set. Password can be written on HDD only when Supervisor password or user password is set and password on HDD is set to enabled. Supervisor Password is written to HDD only when Supervisor password is being set. User password is written to HDD when both passwords are set. When both Supervisor and user password are present, both passwords can unlock the HDD.	Disabled or Enabled
Password on Boot	Defines whether a password is required or not while the events defined in this group happened. The following sub-options are all requires the Supervisor password for changes and should be grayed out if the user password was used to enter setup.	Disabled or Enabled

NOTE: When you are prompted to enter a password, you have three tries before the system halts. Don't forget your password. If you forget your password, you may have to return your notebook computer to your dealer to reset it.

Setting a Password

Follow these steps as you set the user or the supervisor password:

1. Use the **↑** and **↓** keys to highlight the Set Supervisor Password parameter and press the **ENTER** key. The Set Supervisor Password box appears:

Set Supervisor Password

Enter New Password []

Confirm New Password []




2. Type a password in the "Enter New Password" field. The password length can not exceeds 8 alphanumeric characters (A-Z, a-z, 0-9, not case sensitive). Retype the password in the "Confirm New Password" field.

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




3. Press **ENTER**.
After setting the password, the computer sets the User Password parameter to "Set".
4. If desired, you can opt to enable the Password on boot parameter.
5. When you are done, press **F10** to save the changes and exit the BIOS Setup Utility.

Removing a Password




Follow these steps:

1. Use the  and  keys to highlight the Set Supervisor Password parameter and press the  key. The Set Password box appears:




Set Supervisor Password		
Enter current password	[]
Enter New Password	[]
Confirm New Password	[]

2. Type the current password in the Enter Current Password field and press .
3. Press  twice **without** typing anything in the Enter New Password and Confirm New Password fields. The computer then sets the Supervisor Password parameter to “Clear”.
4. When you have changed the settings, press  to save the changes and exit the BIOS Setup Utility.

Changing a Password

1. Use the  and  keys to highlight the Set Supervisor Password parameter and press the  key. The Set Password box appears:

Set Supervisor Password		
Enter current password	[]
Enter New Password	[]
Confirm New Password	[]

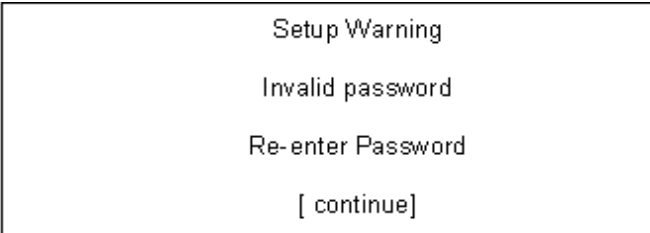
2. Type the current password in the Enter Current Password field and press .
3. Type a password in the Enter New Password field. Retype the password in the Confirm New Password field.
4. Press . After setting the password, the computer sets the User Password parameter to “Set”.
5. If desired, you can enable the Password on boot parameter.
6. When you are done, press  to save the changes and exit the BIOS Setup Utility.

If the verification is OK, the screen will display as following.

Setup Notice
Changes have been saved.
[continue]

The password setting is complete after the user presses .

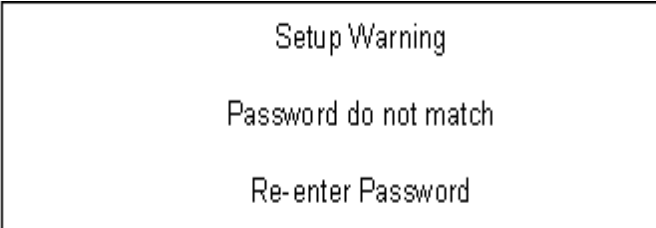
If the current password entered does not match the actual current password, the screen will show you the Setup Warning.



A rectangular dialog box with a black border. It contains the following text centered vertically and horizontally: "Setup Warning", "Invalid password", "Re-enter Password", and "[continue]" on separate lines.

Setup Warning
Invalid password
Re-enter Password
[continue]

If the new password and confirm new password strings do not match, the screen will display the following message.

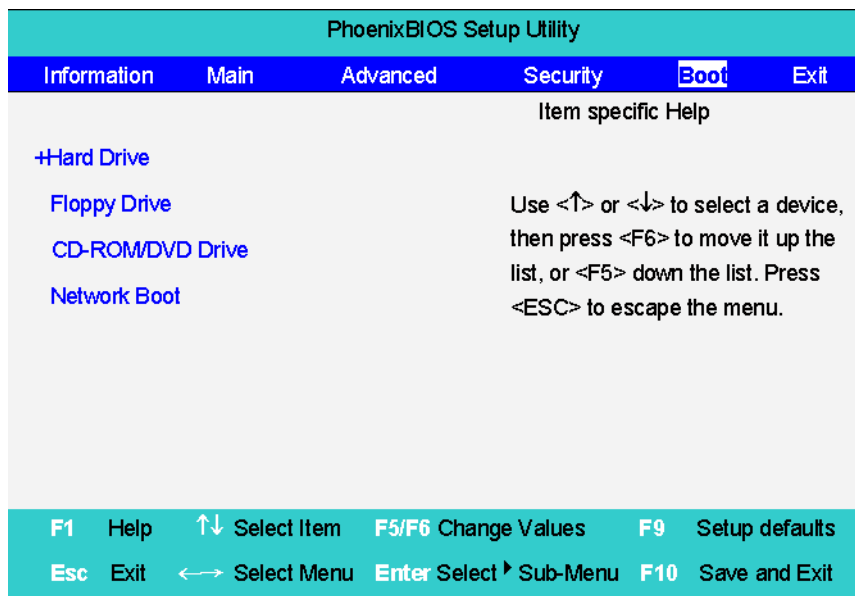


A rectangular dialog box with a black border. It contains the following text centered vertically and horizontally: "Setup Warning", "Password do not match", and "Re-enter Password" on separate lines.

Setup Warning
Password do not match
Re-enter Password

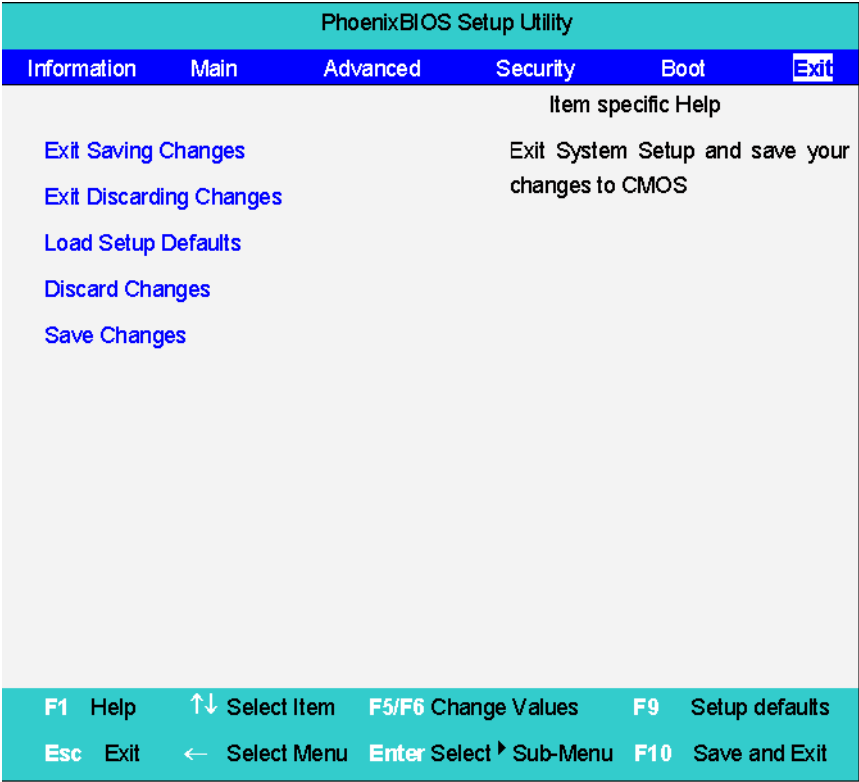
Boot

This menu allows the user to decide the order of boot devices to load the operating system. Bootable devices includes the distette drive in module bay, the onboard hard disk drive and the CD-ROM in module bay.



Exit

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



The table below describes the parameters in this screen.

Parameter	Description
Exit Saving Changes	Exit System Setup and save your changes to CMOS.
Exit Discarding Changes	Exit utility without saving setup data to CMOS.
Load Setup Default	Load default values for all SETUP item.
Discard Changes	Load previous values from CMOS for all SETUP items.
Save Changes	Save Setup Data to CMOS.

BIOS Flash Utility

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

- ☐ New versions of system programs
- ☐ New features or options
- ☐ Restore a BIOS when it becomes corrupted.

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

NOTE: If you do not have a crisis recovery diskette at hand, then you should create a **Crisis Recovery Diskette** before you use the Phlash utility.

NOTE: Do not install memory-related drivers (XMS, EMS, DPML) when you use the Phlash.

NOTE: Please use the AC adaptor power supply when you run the Phlash utility. If the battery pack does not contain enough power to finish BIOS flash, you may not boot the system because the BIOS is not completely loaded.

Follow the steps below to run the Phlash.

1. Prepare a bootable diskette.
2. Copy the Phlash utilities to the bootable diskette.
3. Then boot the system from the bootable diskette. The Phlash utility has auto-execution function.

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
- ☐ Flat-bladed screw driver
- ☐ Phillips screw driver
- ☐ Tweezers
- ☐ Plastic Flat-bladed screw driver
- ☐ Hexed Screw Driver

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

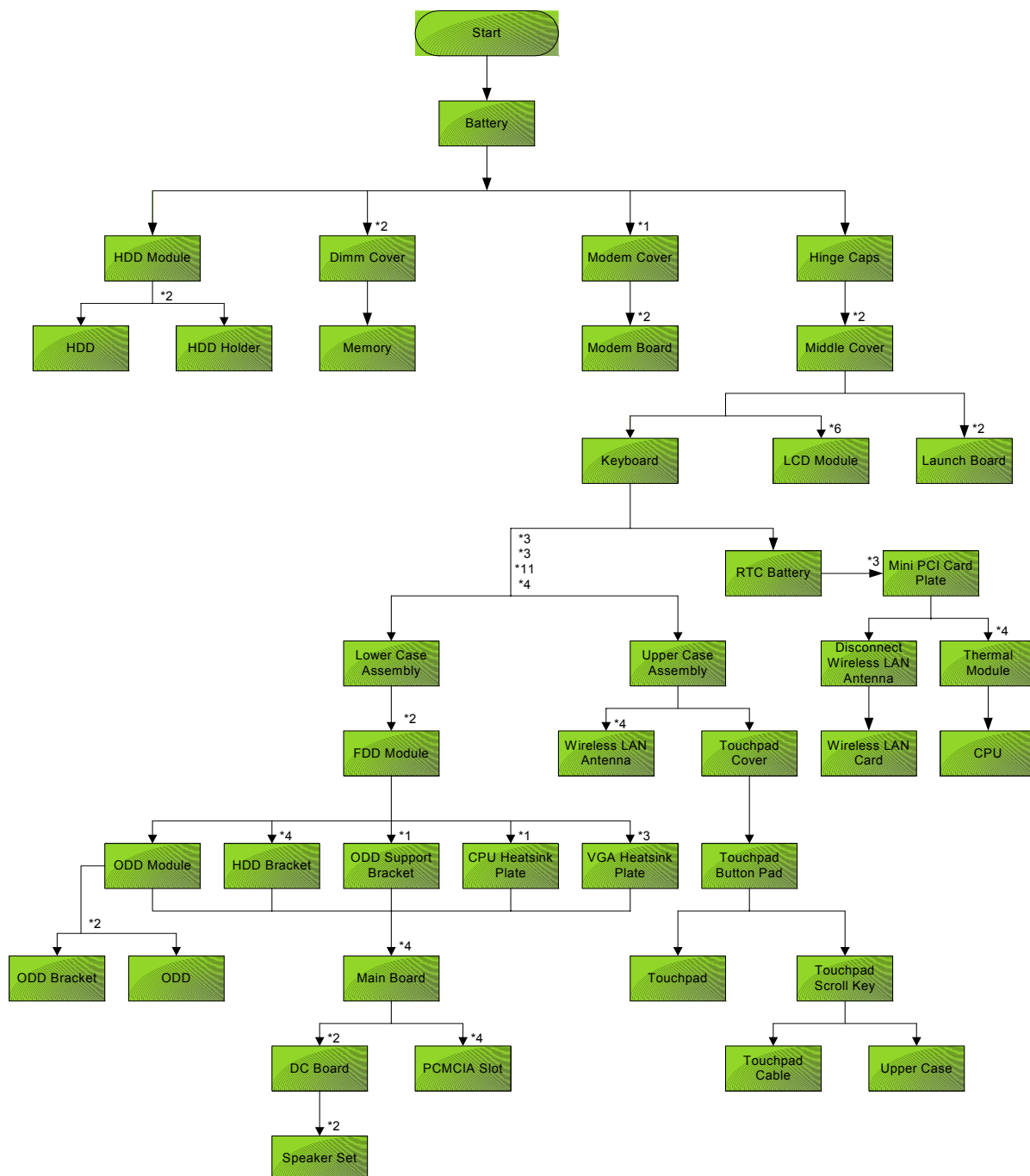
Before You Begin

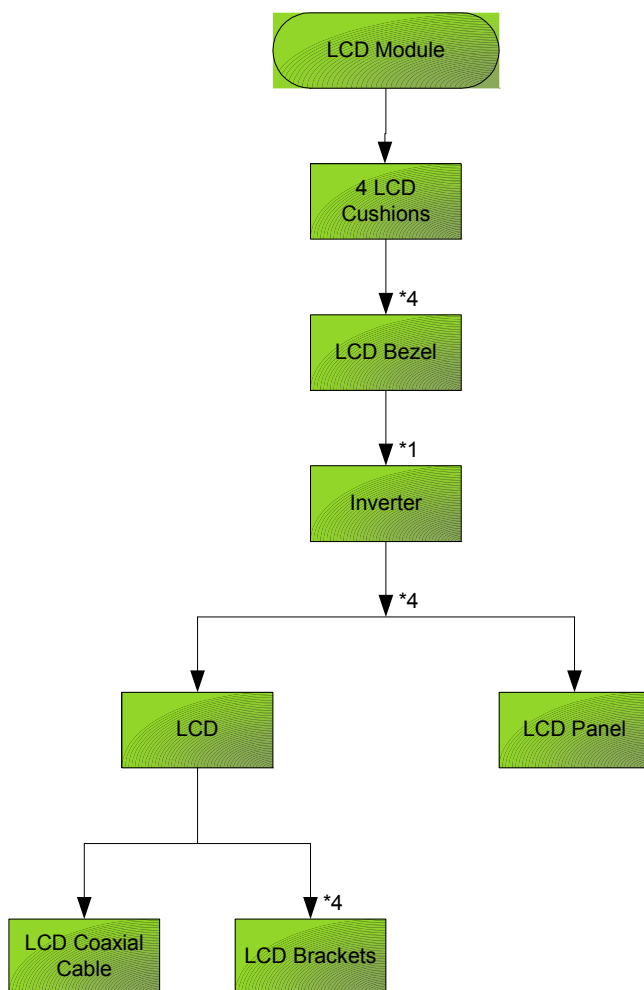
Before proceeding with the disassembly procedure, make sure that you do the following:

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.





Screw List

Item	Description
A	SCRW MAC FLAT M2.5*L4 NI NYLOK
B	SCREW M2.0*L10 NYLOK
C	SCREW M2*3 NYLON 1JMCPC-420325
D	SCREW M2.5X6
E	SCREW M3x4(86.9A524.4R0)
F	SCREW M2X2.0
G	SCREW WAFER NYLOK NI 2ML3
H	SCRW M2*4 WAFER NI
I	SCRW M2.5*3 WAFER NI
J	SCREW M2.5*4L NI
K	SCW HEX NYL I#R-40/O#4-40 L5.5

Removing the Battery

1. To remove the battery, push the battery release latch.
2. Then slide the battery out from the machine.



Removing the Memory Module

1. See “Removing the Battery” on page 48.
2. To remove the memory module from the machine, first remove the two screws holding the dimm cover.



3. Remove the dimm cover.



4. Pop up the memory.
5. Then remove the memory.



Removing the Modem Board

1. See “Removing the Battery” on page 48.
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. Please remove the screws according to the number on the picture indicate.
5. Then remove the modem board from the main unit carefully by using a plastic bladed screw driver.



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

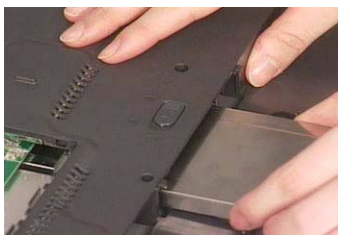


Removing the Hard Disk Drive Module

1. See “Removing the Battery” on page 48.
2. To remove the hard disk drive, pull the hard disk drive carefully.



3. Then take the hard disk drive out of the main unit.



Disassembling the Hard Disk Drive Module

1. See “Removing the Battery” on page 48.
2. See “Removing the Hard Disk Drive Module” on page 51.
3. Remove the two screws that fasten the HDD holder.



4. Detach the hard disk drive from the HDD holder.



Removing the LCD Module

Removing the Middle Cover

1. See “Removing the Battery” on page 48.
2. To remove the middle cover, first use a plastic flat screwdriver to remove the right hinge cap.
3. Remove the screw that secures the middle cover.



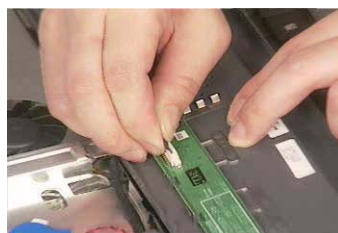
4. Remove the left hinge cap.
5. Then remove the screw holding the middle cover on the other side.



6. Detach the middle cover from the machine.



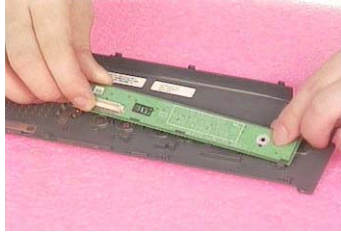
7. Disconnect the launch board cable then remove the middle cover off the main unit.



Removing the Launch Board

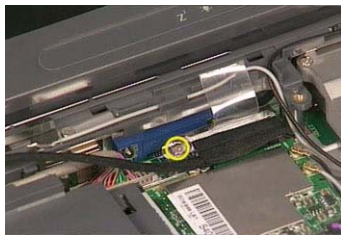
1. See “Removing the Battery” on page 48.

2. See “Removing the Middle Cover” on page 52.
3. Remove the two screws and then detach the launch board from the middle cover.



Removing the LCD Module

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Launch Board” on page 52.
4. Remove the screw that fastens the LCD coaxial cable and disconnect the cable. Then disconnect the LCD inverter cable.



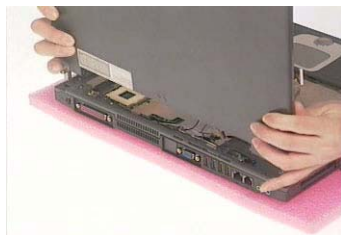
5. Remove the four screws holding the LCD hinge; two on the right and two on the left. Remove the four screws holding the LCD hinge; two on the right and two on the left.



6. Remove the two screws on the bottom; one on the right and the other on the left.



7. Then you can remove the entire LCD module from the main unit.



Disassembling the LCD Module

Removing the LCD Bezel

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Launch Board” on page 52.
4. See “Removing the LCD Module” on page 53.
5. Use plastic tweezers to remove the four screw pads, and then remove the four screws that fasten the LCD bezel.

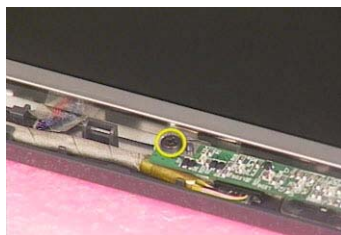


6. Snap off the bezel carefully, and then remove the LCD bezel from the LCD module.



Removing the Inverter Board (15" LCD)

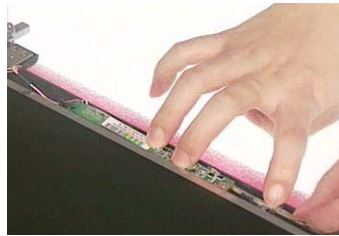
1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Launch Board” on page 52.
4. See “Removing the LCD Module” on page 53.
5. See “Removing the LCD Bezel” on page 55.
6. To remove the inverter board, first remove one screw from the inverter board.



7. Disconnect the LCD power cable then disconnect the inverter cable from the inverter board.



NOTE: Please arrange the LCD inverter cable well to the LCD panel as the picture below shows when you reassemble the LCD module.



Removing the 15" TFT LCD

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Launch Board" on page 52.
4. See "Removing the LCD Module" on page 53.
5. See "Removing the LCD Bezel" on page 55.
6. See "Removing the Inverter Board (15" LCD)" on page 55.
7. To remove the LCD, first remove the four screws that secure the LCD hinges.

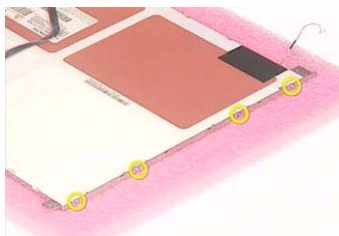


8. Then take the LCD out of the LCD panel.

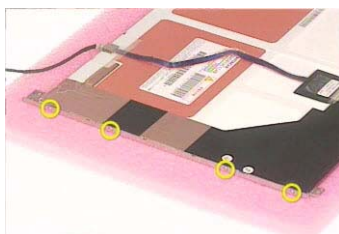


Removing the LCD Brackets

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Launch Board" on page 52.
4. See "Removing the LCD Module" on page 53.
5. See "Removing the LCD Bezel" on page 55.
6. See "Removing the Inverter Board (15" LCD)" on page 55.
7. See "Removing the 15" TFT LCD" on page 56.
8. Remove the four screws holding the right LCD bracket. Then remove the right bracket.



9. Remove the four screws holding the left LCD bracket. Then remove the left bracket..



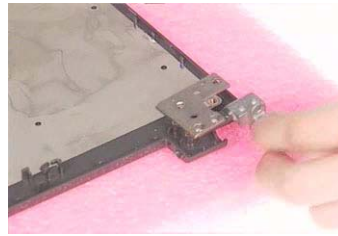
Removing the LCD Coaxial Cable

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Launch Board" on page 52.
4. See "Removing the LCD Module" on page 53.
5. See "Removing the LCD Bezel" on page 55.
6. See "Removing the Inverter Board (15" LCD)" on page 55.
7. See "Removing the 15" TFT LCD" on page 56.
8. Tear off the mylar fastening the LCD coaxial cable, then disconnect the coaxial cable.



Removing the LCD Hinges

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Launch Board” on page 52.
4. See “Removing the LCD Module” on page 53.
5. See “Removing the LCD Bezel” on page 55.
6. See “Removing the Inverter Board (15” LCD)” on page 55.
7. See “Removing the 15” TFT LCD” on page 56.
8. Remove the screw holding the right hinge, then remove the right hinge.



9. Remove the screw holding the left hinge, then remove the left hinge.



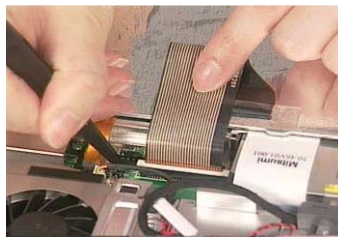
Disassembling the Main Unit

Removing the Keyboard

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. To remove the keyboard, first pull out and upward to expose the keyboard.

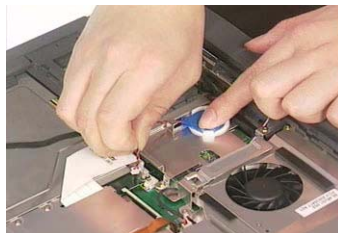


4. Use a plastic tweezers or a plastic flat screwdriver to disconnect the keyboard cable from the main board carefully, then remove the keyboard from the main board.



Removing the RTC Battery

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the LCD Module” on page 53.
4. Disconnect the RTC battery cable then remove it.



Removing the MimiPCI Card Plate

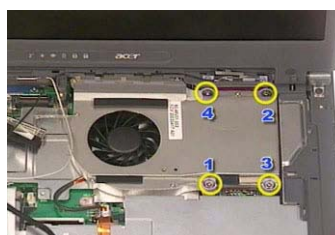
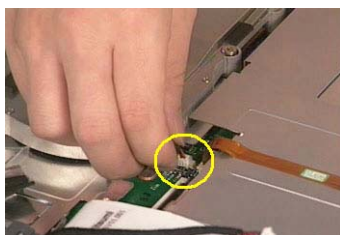
1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the LCD Module” on page 53.
4. See “Removing the RTC Battery” on page 59.

5. Remove the three screws holding the mini PCI card plate and remove the mini PCI card plate.

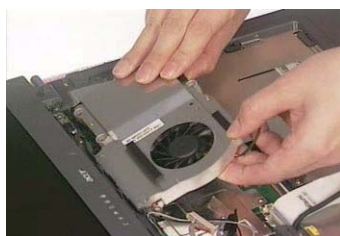


Removing the Thermal Module

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the LCD Module" on page 53.
4. See "Removing the RTC Battery" on page 59.
5. See "Removing the MimiPCI Card Plate" on page 59.
6. Disconnect the fan cable then remove the four screws fastening the thermal module.

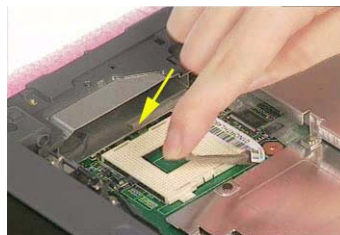
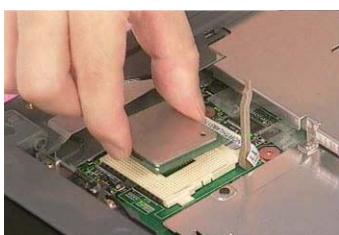
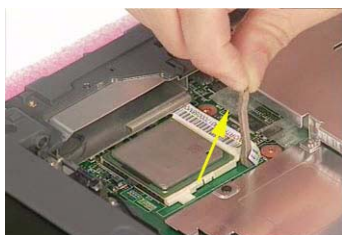


7. Then remove the thermal module.



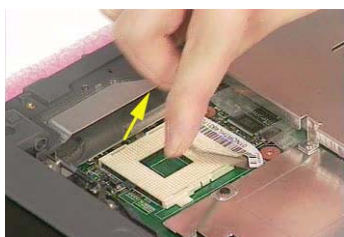
Removing the Processor

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the RTC Battery" on page 59.
5. See "Removing the MimiPCI Card Plate" on page 59.
6. See "Removing the Thermal Module" on page 60.
7. Lift up the CPU socket lever. Then remove the CPU. Remember to press down the lever as the video shows after you remove the CPU.



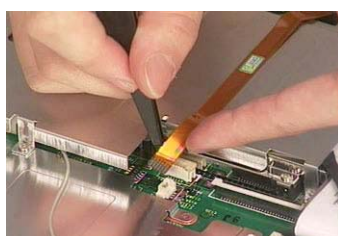
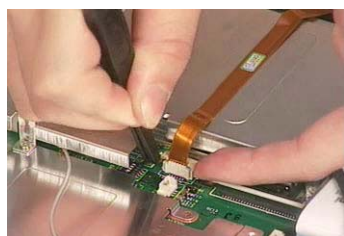
Installing the Processor

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Keyboard” on page 59.
4. See “Removing the RTC Battery” on page 59.
5. See “Removing the MimiPCI Card Plate” on page 59.
6. See “Removing the Thermal Module” on page 60.
7. Lift up the CPU lever, then place the CPU back to the CPU socket. Please remember to press the CPU lever after you put the CPU back to the socket.

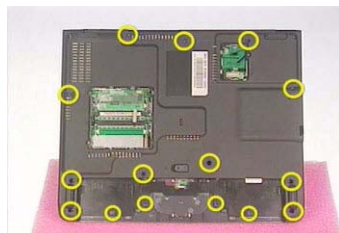
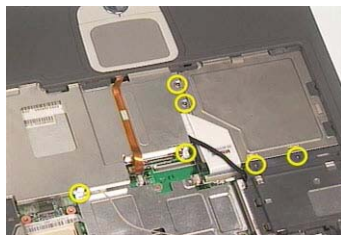


Removing the Upper Case Assembly

1. See “Removing the Keyboard” on page 59.
2. Disconnect the touchpad cable.



3. Remove the 6 screws that secure the upper case to the lower case. Then turn over the main unit and remove the 15 screws holding the lower case to the upper case.

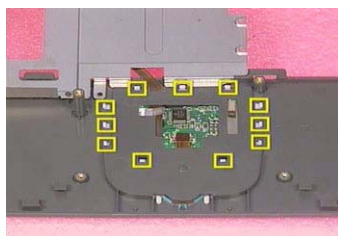


4. Then take the upper case assembly off the main unit.



Removing the Touchpad Board

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Upper Case Assembly" on page 61.
5. To detach the touch pad board, first disconnect the touch pad cable from the touch pad board with a plastic tweezers. Then release the touchpad cover lock on the back as the picture shows.



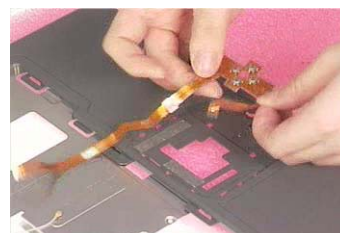
6. Remove the touchpad cover, then remove the touchpad button pad. Finally remove the touchpad board from the upper case.



Removing the Touchpad Cable

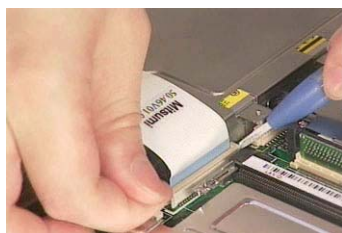
1. See "Removing the Battery" on page 48.

2. See “Removing the Middle Cover” on page 52.
3. See “Removing the LCD Module” on page 53.
4. See “Removing the Keyboard” on page 59.
5. See “Removing the Upper Case Assembly” on page 61.
6. See “Removing the Touchpad Board” on page 62.
7. Remove the touchpad scroll key then remove the touchpad cable.

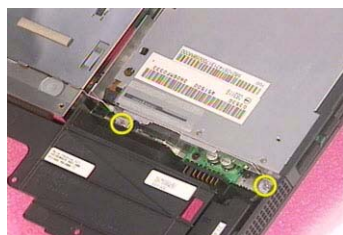


Removing the Floppy Disk Drive Module

1. See “Removing the Middle Cover” on page 52.
2. See “Removing the LCD Module” on page 53.
3. See “Removing the Keyboard” on page 59.
4. See “Removing the Upper Case Assembly” on page 61.
5. Disconnect the FDD cable from the main board.

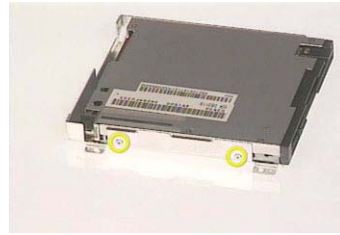
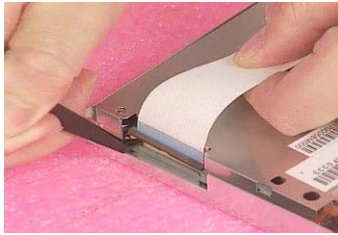


6. Remove the two screws hastening the FDD module. Detach the FDD module from the lower case.

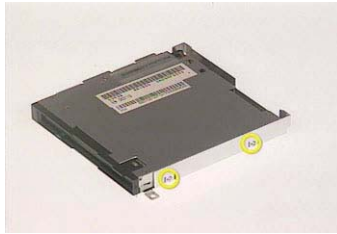


Disassembling the Floppy Disk Drive Module

1. Disconnect the FDD cable.
2. Remove the two screws that fasten the FDD bracket on one side.

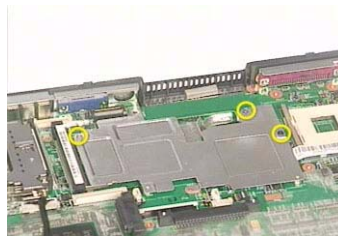


3. Remove another two screws holding the FDD bracket on the other side. Then take the FDD off the FDD bracket.



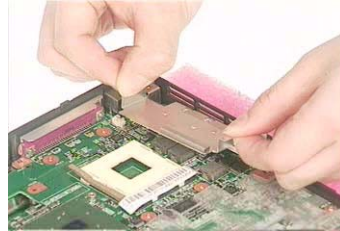
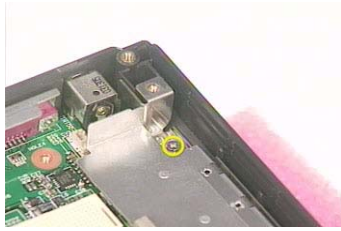
Removing the VGA Heatsink Plate

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. Remove the three screws that secure the VGA heatsink plate then remove the plate.



Removing the CPU Heatsink Plate

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. Remove the screw that fastens the CPU heatsink plate then remove it.



Removing the ODD Module(1)

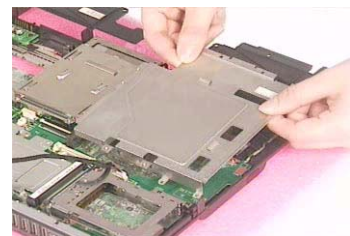
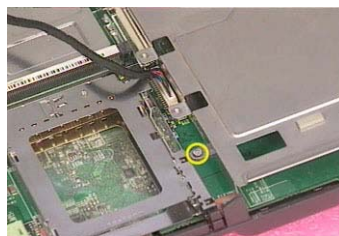
1. See "Removing the Battery" on page 48.
2. Remove the screw that fastens the ODD bracket on the bottom. Push the ODD module at the point the red arrow indicates hard. Then remove the ODD module from the lower case.



NOTE: If you need to replace the ODD module only, you can remove the ODD module as the steps above.

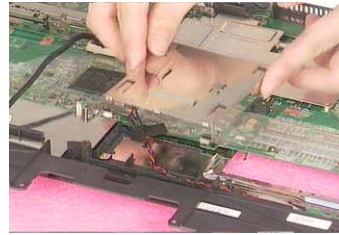
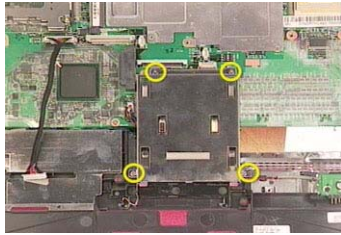
Removing the ODD Module(2)

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. Push the ODD module outwards then take the ODD out of the support bracket. Remove the screw that fastens the ODD support bracket then remove it.



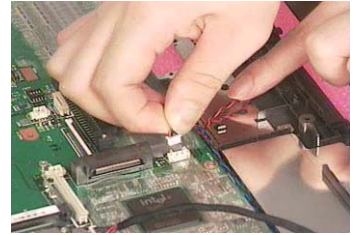
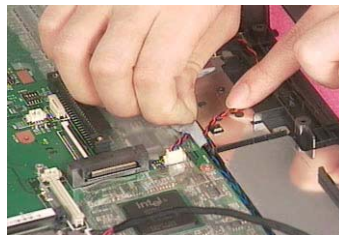
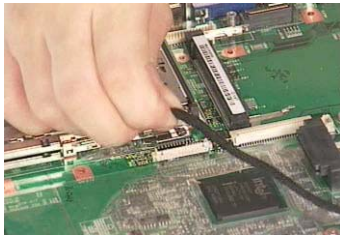
Removing the HDD Bracket

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. Remove the four screws holding the HDD bracket, then remove the HDD bracket.

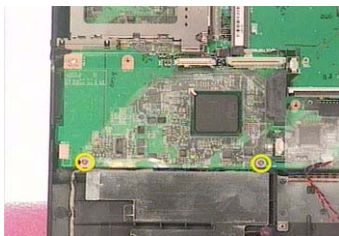


Removing the Main Board

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. See "Removing the VGA Heatsink Plate" on page 64.
6. See "Removing the CPU Heatsink Plate" on page 64.
7. See "Removing the ODD Module(1)" on page 65.
8. See "Removing the HDD Bracket" on page 65.
9. Disconnect the launch board cable. Tear off the tape that fastens the speaker set cable. Then disconnect the speaker set cable.



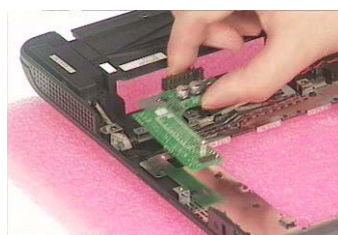
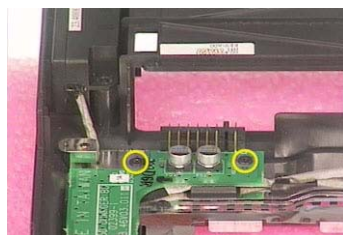
10. Remove the two screws holding the main board as the picture shows. Remove another two screws that fasten the main board. Then detach the main board from the lower case carefully.



Removing the DC Board

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. See "Removing the VGA Heatsink Plate" on page 64.

6. See "Removing the CPU Heatsink Plate" on page 64.
7. See "Removing the ODD Module(1)" on page 65.
8. See "Removing the HDD Bracket" on page 65.
9. See "Removing the Main Board" on page 66.
10. Remove the two screws that fasten the DC board. Then detach the DC board from the lower case.



Removing the I/O Port Bracket

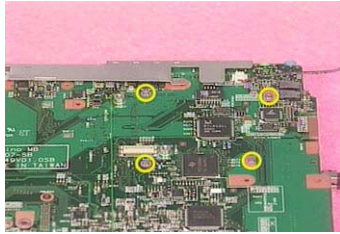
1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. See "Removing the VGA Heatsink Plate" on page 64.
6. See "Removing the CPU Heatsink Plate" on page 64.
7. See "Removing the ODD Module(1)" on page 65.
8. See "Removing the HDD Bracket" on page 65.
9. See "Removing the Main Board" on page 66.
10. Remove the four hex screws to detach the I/O port bracket from the main board.



Removing the PCMCIA Slot

1. See "Removing the Battery" on page 48.
2. See "Removing the Middle Cover" on page 52.
3. See "Removing the Keyboard" on page 59.
4. See "Removing the Floppy Disk Drive Module" on page 63.
5. See "Removing the VGA Heatsink Plate" on page 64.
6. See "Removing the CPU Heatsink Plate" on page 64.
7. See "Removing the ODD Module(1)" on page 65.
8. See "Removing the HDD Bracket" on page 65.

-
9. See “Removing the Main Board” on page 66.
 10. Remove the four screws that secure the PCMCIA slot, then remove the PCMCIA slot from the lower case.



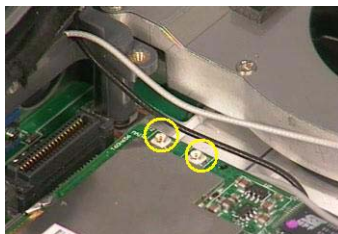
Removing the Speaker Set

1. See “Removing the Battery” on page 48.
2. See “Removing the Middle Cover” on page 52.
3. See “Removing the Keyboard” on page 59.
4. See “Removing the Floppy Disk Drive Module” on page 63.
5. See “Removing the VGA Heatsink Plate” on page 64.
6. See “Removing the CPU Heatsink Plate” on page 64.
7. See “Removing the ODD Module(1)” on page 65.
8. See “Removing the HDD Bracket” on page 65.
9. See “Removing the Main Board” on page 66.
10. See “Removing the DC Board” on page 66.
11. Tear off the tape fastening the speaker set cable. Then remove the four screws that secure the speaker set. Remove the speaker set from the lower case.

System Upgrade Procedure

Base Unit to Wireless Unit

1. See “Removing the Middle Cover” on page 52.
2. See “Removing the Keyboard” on page 59.
3. See “Removing the RTC Battery” on page 59.
4. See “Removing the MimiPCI Card Plate” on page 59.
5. Secure the wireless LAN card antenna by four screws. Insert the wireless LAN card to the socket then connect the wireless LAN card antenna to the wireless LAN card.



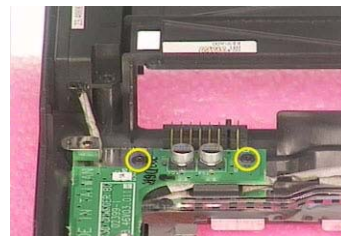
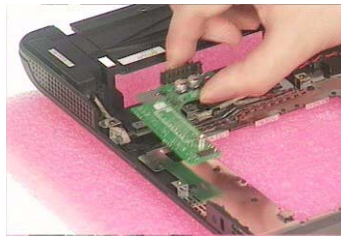
Assembling the Main Unit

Installing the Speaker Set

1. Attach the speaker set to the lower case. Secure the speaker set to the lower case with the four screws. Then stick the tape fastening the speaker set cable.

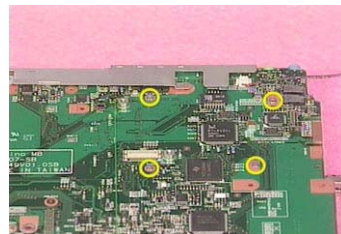
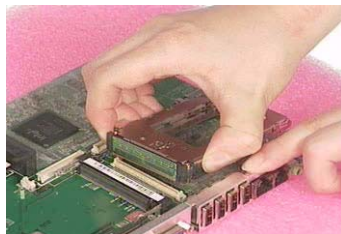
Installing the DC Board

1. See “Installing the Speaker Set” on page 86.
2. Attach the DC board to the lower case. Then secure the DC board to the lower case with two screws.



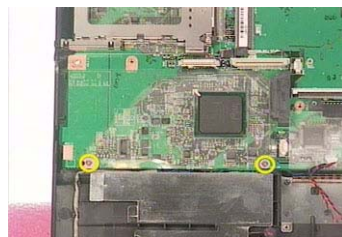
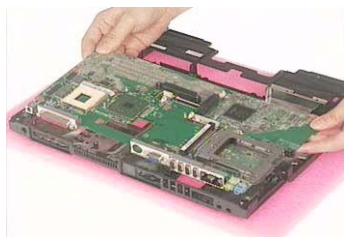
Installing the PCMCIA Slot

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. Attach the PCMCIA slot to the main board, and then fasten the PCMCIA slot to the main board with four screws.

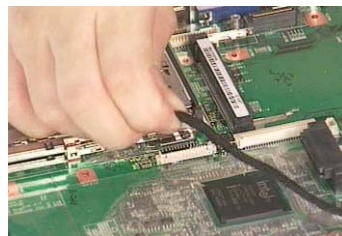
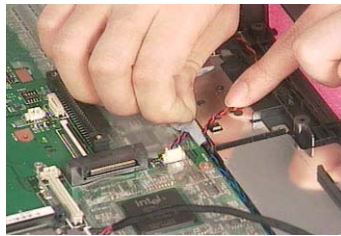
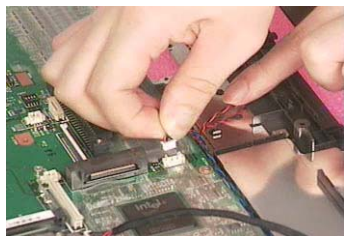


Installing the Main Board

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. Put the mainboard to the lower case. Secure the main board with the two screws as the picture shows. Fasten the main board to the lower case with another two screws.

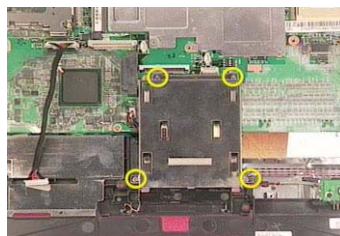
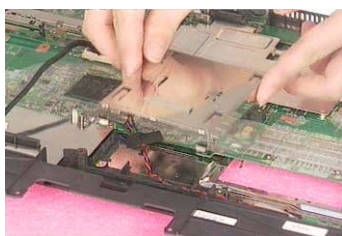


5. Connect the speaker set cable to the main board. Then stick the tape that fastens the speaker set cable. Connect the launch board cable to the main board.



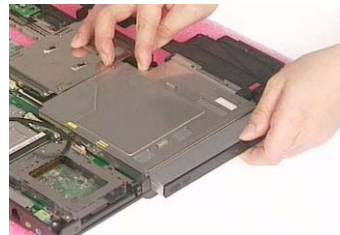
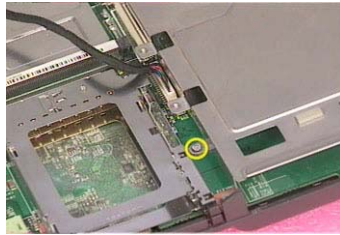
Installing the HDD Bracket

1. See "Installing the Speaker Set" on page 86.
2. See "Installing the DC Board" on page 86.
3. See "Installing the PCMCIA Slot" on page 86.
4. See "Installing the Main Board" on page 86.
5. Attach the HDD bracket. Then secure the HDD bracket with the four screws.



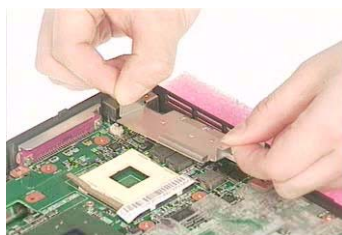
Installing the ODD Module

1. See "Installing the Speaker Set" on page 86.
2. See "Installing the DC Board" on page 86.
3. See "Installing the PCMCIA Slot" on page 86.
4. See "Installing the Main Board" on page 86.
5. See "Installing the HDD Bracket" on page 87.
6. Put the ODD support bracket to the lower case assembly, and then fasten the ODD support bracket with the one screw. Place the ODD back in the ODD support bracket, and then push the ODD to the original position.



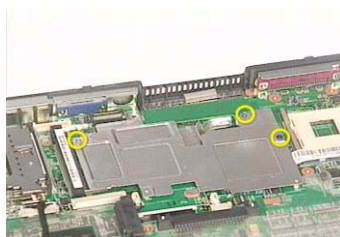
Installing the CPU Heatsink Plate

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. Place the CPU heatsink plate to the main board. Then secure the CPU heatsink plate with one screws.



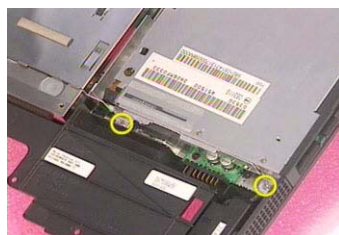
Installing the VGA Heatsink Plate

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. Place the VGA heatsink plate to the main board. Then fasten the VGA heatsink plate with three screws.

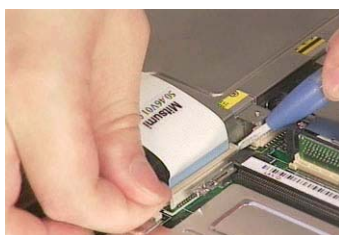
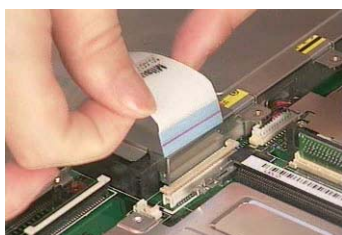


Installing the Floppy Disk Drive Module

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. See “Installing the HDD Bracket” on page 87.
6. See “Installing the CPU Heatsink Plate” on page 88.
7. Put the FDD module to the main board. Secure the FDD module with two screws.

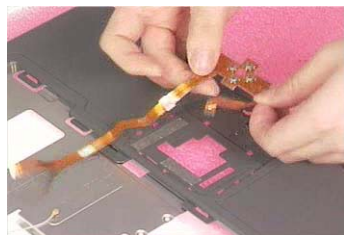


8. Connect the FDD cable to the main board.



Installing the Touchpad Cable

1. Attach the touchpad cable to the upper case, and then pull out the cable.
2. Place the touchpad scroll key to the upper case.



Installing the Touchpad Board

1. See “Installing the Touchpad Cable” on page 89.
2. Put the touchpad board and the touchpad button pad to the upper case. Then attach the touchpad cover to the upper case as the picture shows.



3. Connect the touch pad cable to the touchpad board with a plastic tweezers.

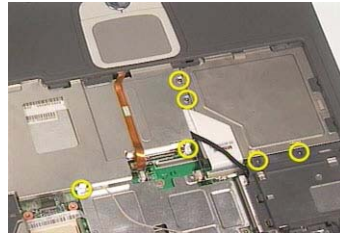
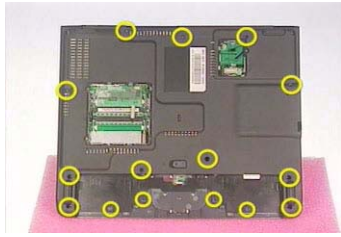


Installing the Upper Case Assembly

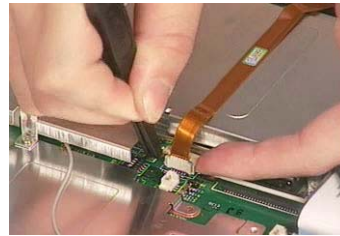
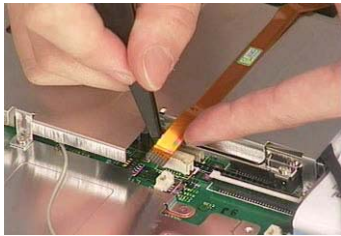
1. See "Installing the Speaker Set" on page 86.
2. See "Installing the DC Board" on page 86.
3. See "Installing the PCMCIA Slot" on page 86.
4. See "Installing the Main Board" on page 86.
5. See "Installing the HDD Bracket" on page 87.
6. See "Installing the ODD Module" on page 87.
7. See "Installing the CPU Heatsink Plate" on page 88.
8. See "Installing the VGA Heatsink Plate" on page 88.
9. See "Installing the Floppy Disk Drive Module" on page 88.
10. See "Installing the Touchpad Cable" on page 89.
11. See "Installing the Touchpad Board" on page 89.
12. Attach the upper case assembly to the lower case assembly.



13. Fasten the 15 screws on the bottom. Then secure the 6 screws as the picture shows.

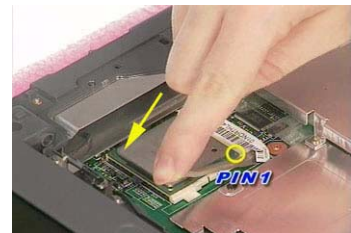
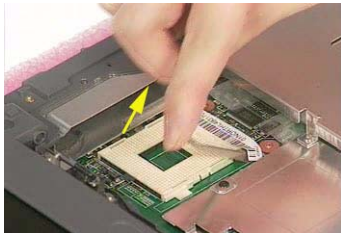


14. Connect the touchpad cable to the main board.



Installing the Processor

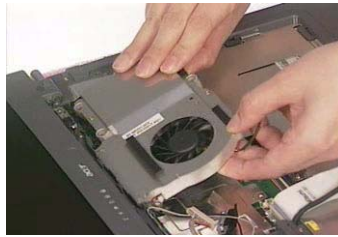
1. Lift up the CPU lever, then place the CPU back to the CPU socket carefully. Please remember to press the CPU lever after you put the CPU back to the socket.



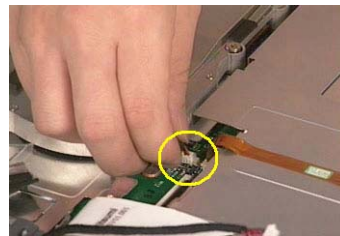
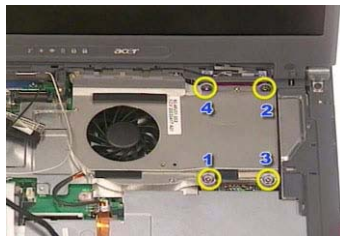
Installing the Thermal Module

1. See "Installing the Speaker Set" on page 86.
2. See "Installing the DC Board" on page 86.
3. See "Installing the PCMCIA Slot" on page 86.
4. See "Installing the Main Board" on page 86.
5. See "Installing the HDD Bracket" on page 87.
6. See "Installing the ODD Module" on page 87.
7. See "Installing the CPU Heatsink Plate" on page 88.
8. See "Installing the VGA Heatsink Plate" on page 88.
9. See "Installing the Floppy Disk Drive Module" on page 88.
10. See "Installing the Touchpad Cable" on page 89.
11. See "Installing the Touchpad Board" on page 89.
12. See "Installing the Upper Case Assembly" on page 90.

13. See “Installing the Processor” on page 91.
14. Place the thermal module to the main unit.



15. Secure the thermal module with the four screws. Then connect the thermal module cable to the main board.



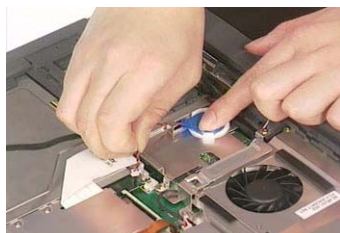
Installing the MimiPCI Card Plate

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. See “Installing the HDD Bracket” on page 87.
6. See “Installing the ODD Module” on page 87.
7. See “Installing the CPU Heatsink Plate” on page 88.
8. See “Installing the VGA Heatsink Plate” on page 88.
9. See “Installing the Floppy Disk Drive Module” on page 88.
10. See “Installing the Touchpad Cable” on page 89.
11. See “Installing the Touchpad Board” on page 89.
12. See “Installing the Upper Case Assembly” on page 90.
13. See “Installing the Processor” on page 91.
14. See “Installing the Thermal Module” on page 91.
15. Place the mini PCI card plate to the main unit. Secure the mini PCI card plate with the three screws as the picture shows.



Installing the RTC Battery

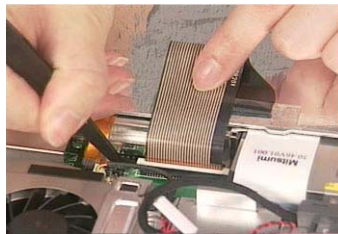
1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. See “Installing the HDD Bracket” on page 87.
6. See “Installing the ODD Module” on page 87.
7. See “Installing the CPU Heatsink Plate” on page 88.
8. See “Installing the VGA Heatsink Plate” on page 88.
9. See “Installing the Floppy Disk Drive Module” on page 88.
10. See “Installing the Touchpad Cable” on page 89.
11. See “Installing the Touchpad Board” on page 89.
12. See “Installing the Upper Case Assembly” on page 90.
13. See “Installing the Processor” on page 91.
14. See “Installing the Thermal Module” on page 91.
15. See “Installing the MiniPCI Card Plate” on page 92.
16. Place the RTC battery to the RTC battery holder. Connect the RTC battery cable to the main board.



Installing the Keyboard

1. See “Installing the Speaker Set” on page 86.
2. See “Installing the DC Board” on page 86.
3. See “Installing the PCMCIA Slot” on page 86.
4. See “Installing the Main Board” on page 86.
5. See “Installing the HDD Bracket” on page 87.
6. See “Installing the ODD Module” on page 87.

-
7. See “Installing the CPU Heatsink Plate” on page 88.
 8. See “Installing the VGA Heatsink Plate” on page 88.
 9. See “Installing the Floppy Disk Drive Module” on page 88.
 10. See “Installing the Touchpad Cable” on page 89.
 11. See “Installing the Touchpad Board” on page 89.
 12. See “Installing the Upper Case Assembly” on page 90.
 13. See “Installing the Processor” on page 91.
 14. See “Installing the Thermal Module” on page 91.
 15. See “Installing the MiniPCI Card Plate” on page 92.
 16. See “Installing the RTC Battery” on page 93.
 17. Attach the keyboard cable to its connector on the main board. Connect the keyboard cable.



18. Turn over the keyboard and attach the keyboard to the main unit.



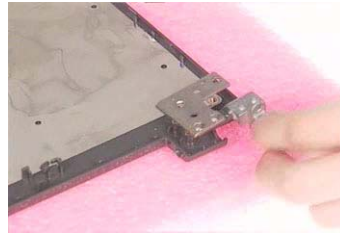
Assembling the LCD Module

Installing the LCD Hinges

1. Place the left hinge to the LCD panel. Secure the left hinge with one screw.



2. Place the right hinge to the LCD panel. Fasten the right hinge with one screw.



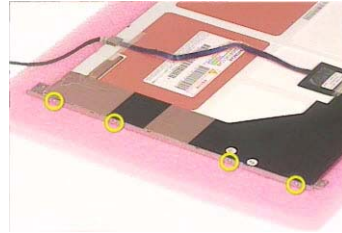
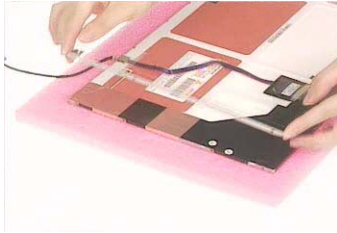
Installing the LCD Coaxial Cable

1. See “Installing the LCD Hinges” on page 95.
2. Connect the LCD coaxial cable and fasten with mylar. Fasten the LCD coaxial cable with mylar.

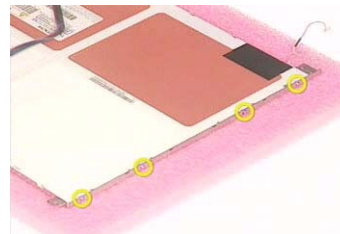


Installing the LCD Brackets

1. See “Installing the LCD Hinges” on page 95.
2. See “Installing the LCD Coaxial Cable” on page 95.
3. Attach the left bracket to the LCD. Then secure the left LCD bracket with four screws.



4. Attach the right bracket to the LCD. Fasten the right LCD bracket with four screws.



Installing the 15" TFT LCD

1. See "Installing the LCD Hinges" on page 95.
2. See "Installing the LCD Coaxial Cable" on page 95.
3. See "Installing the LCD Brackets" on page 95.
4. Place the LCD to the LCD panel.



5. Secure the left hinge with two screws. Fasten the right hinge with two screws.



Installing the Inverter Board (15" LCD)

1. See "Installing the LCD Hinges" on page 95.
2. See "Installing the LCD Coaxial Cable" on page 95.

3. See "Installing the LCD Brackets" on page 95.
4. See "Installing the 15" TFT LCD" on page 96.
5. Connect the inverter cable to the inverter board. Connect the inverter board to the LCD.



NOTE: Please arrange the LCD inverter cable well to the LCD panel as the picture below shows when you reassemble the LCD module.



6. Secure the inverter board with one screw.



Installing the LCD Bezel

1. See "Installing the LCD Hinges" on page 95.
2. See "Installing the LCD Coaxial Cable" on page 95.
3. See "Installing the LCD Brackets" on page 95.
4. See "Installing the 15" TFT LCD" on page 96.
5. See "Installing the Inverter Board (15" LCD)" on page 96.
6. Attach the LCD bezel to the LCD module.



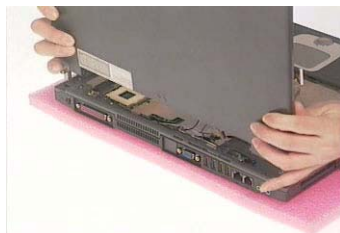
7. Fasten the LCD bezel with the four screws. Then cover the four screw pads.



Installing the LCD Module

Installing the LCD Module

1. Place the LCD module to the main unit.



2. Fasten the LCD module with the two screws on the bottom; one on the right and another one on the left.



3. Secure the LCD hinge with the four screws; two on the right and two on the left.



4. Connect the inverter cable to the main board. Connect the LCD coaxial cable to the main board. Then fasten the LCD coaxial cable with one screw.



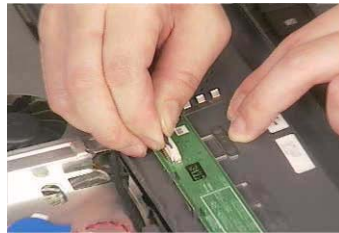
Installing the Launch Board

1. Attach the launch board to the middle cover. Then secure the launch board with the two screws as the picture shows.



Installing the Middle Cover

1. See "Installing the Launch Board" on page 99.
2. Connect the launch board cable to the launch board.



3. Attach the middle cover to the main unit carefully. Then close the LCD panel and fasten the middle cover with your fingers on its ridge.



4. Secure the middle cover with one screw as the picture shows.
5. Then attach the left hinge cap.

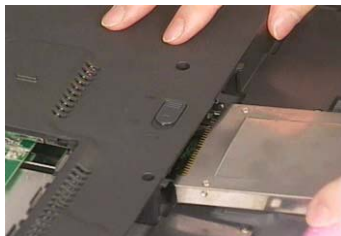


6. Secure the middle cover with one screw on another side as the picture shows.
7. Then attach the right hinge cap.



Installing the Hard Disk Drive Module

1. Insert the hard disk drive to the main unit. Then push it to the original position carefully.

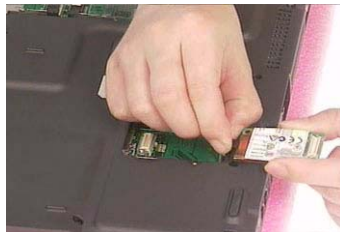


NOTE: Please attend the positive and negative of hard disk drive when insert the hard disk drive to the main unit.



Removing the Modem Board

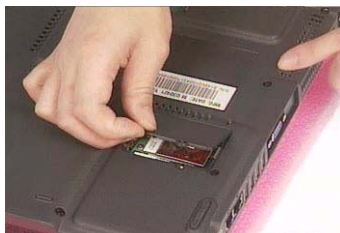
1. Connect the modem cable to the modem board.



2. Place the modem board to the main unit carefully. Then fasten the modem board with the two screws.



3. Place the modem cover back to the machine. Then secure the modem cover with one screw.



Installing the Memory Module

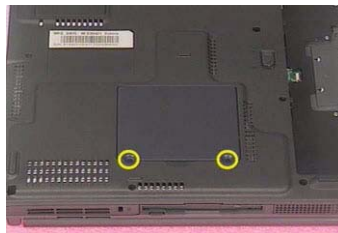
1. Insert the memory module to the DIMM slot.



2. Put the DIMM cover back to the machine.



3. Fasten the DIMM cover with the two screws.



Installing the Battery

1. Place the the battery back to the machine.



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 92.
POST does not complete. No beep or error codes are indicated.	"Power-On Self-Test (POST) Error Message" on page 95 "Undetermined Problems" on page 103
POST detects an error and displayed messages on screen.	"Error Message List" on page 96
Other symptoms (i.e. LCD display problems or others).	"Power-On Self-Test (POST) Error Message" on page 95
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to "Power-On Self-Test (POST) Error Message" on page 95 "Intermittent Problems" on page 102 "Undetermined Problems" on page 103

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.

1. Boot from the diagnostics diskette and start the diagnostics program.
2. See if FDD Test is passed as the program runs to FDD Test.
3. Follow the instructions in the message window.

If an error occurs with the internal diskette drive, reconnect the diskette connector on the system board.

If the error still remains:

1. Reconnect the external diskette drive/DVD-ROM module.
2. Replace the external diskette drive/CD-ROM module.
3. Replace the main 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 diagnostics program.
2. See if CD-ROM Test is passed when the program runs to CD-ROM Test.
3. Follow the instructions in the message window.

If an error occurs, reconnect the connector on 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 main 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.

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 main 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 doagmpstotics program (please refer to main board).
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:

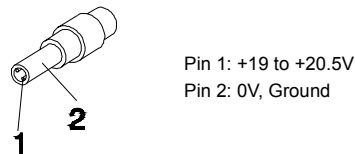
1. Remove the battery pack.
2. Connect the power adapter and check that power is supplied.
3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

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

- ☐ “Check the Power Adapter” on page 93
- ☐ “Check the Battery Pack” on page 94

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



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 103.
 - ☐ 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 94.

Check the Battery Pack

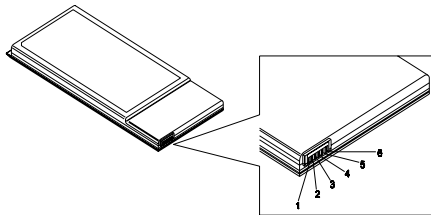
To check the battery pack, do the following:

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 103.

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 (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	System disabled. Incorrect password is specified.
<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 shut down system, not show message.

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 91.
Keyboard error	see "Keyboard or Auxiliary Input Device Check" on page 91.
Keyboard Controller Failed	see "Keyboard or Auxiliary Input Device Check" on page 91.
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 91.
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility
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 92. 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 92. 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

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 92. 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 92. 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 92. 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 94. 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 System board
USB does not work correctly	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.	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 103.

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).

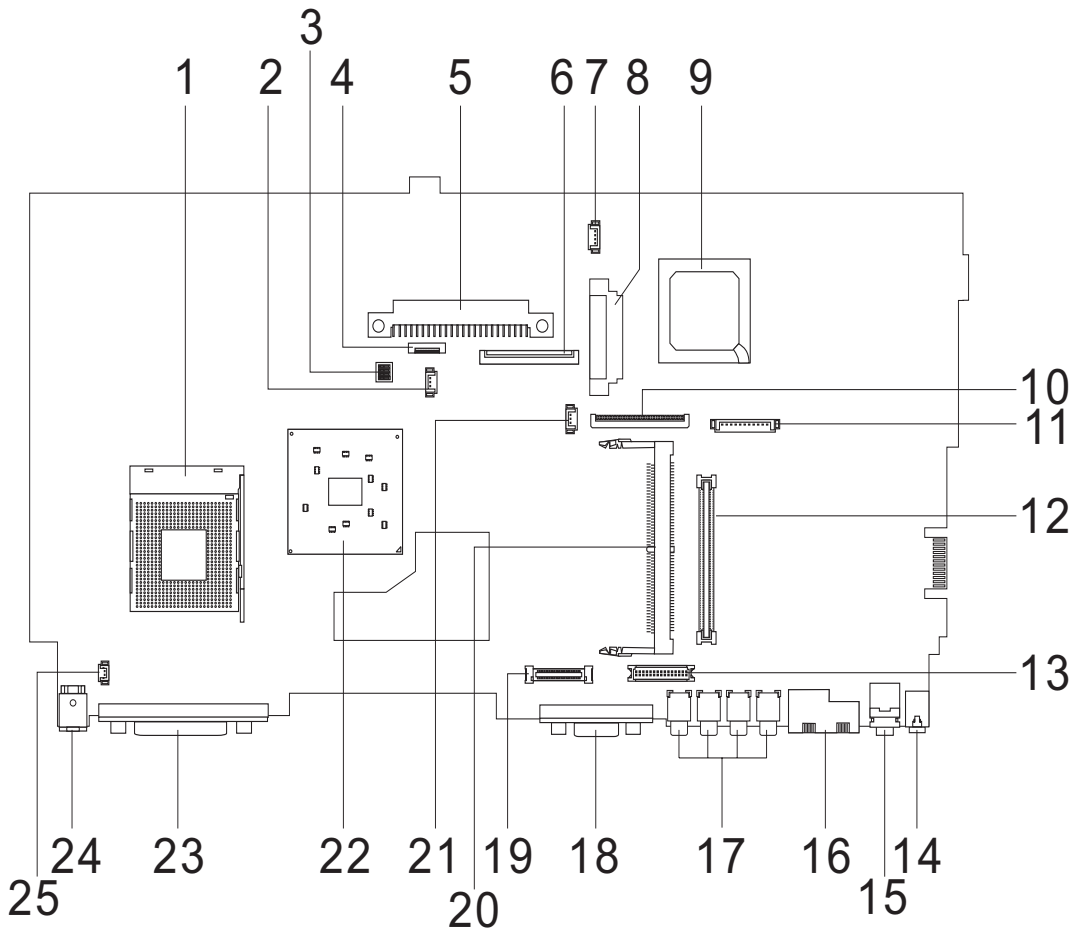
NOTE: Verify that all attached devices are supported by the computer.

NOTE: Verify that the power supply being used at the time of the failure is operating correctly. (See "Power System Check" on page 92):

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

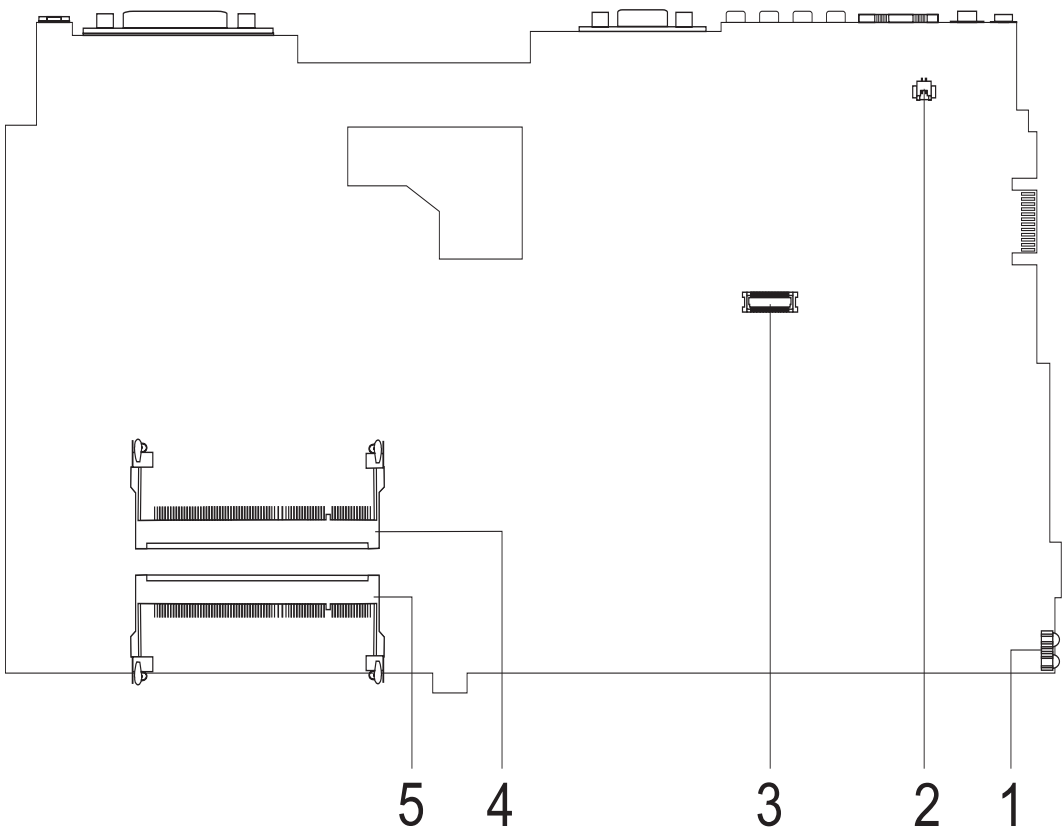
Jumper and Connector Locations

Top View



1	U12	CPU Socket	14	LIN1	Line-in Port
2	FAN1	Fan Connector	15	LOUT1	Line-out Port
3	SW1	SW1	16	RJ1	RJ45+RJ11
4	TPAD1	Touchpad Cable Connector	17	USB1-4	Four USB Ports
5	HDD1	HDD Connector	18	CRT1	VGA Port
6	KB1	Keyboard Connector	19	LCD1	LCD Coaxial Cable Connector
7	SPK1	Speaker Cable Connector	20	MINI1	Mini PCI Connector
8	IDE1	Optical Drive Connector	21	RTC1	RTC Battery Connector
9	U23	South Bridge	22	U15	North Bridge
10	FDD1	FDD Connector	23	PRT1	Parallel Port
11	CN1	Launch Cable Connector	24	DCIN1	DC-in Port
12	CBUS1,2	PCMCIA Slot	25	CVR1	LCD Lid Switch
13	INV1	LCD Inverter Cable Connector			

Bottom View



- 1 IR1 FIR Port
- 2 RING1 Modem Cable Connector
- 3 MDC1 Modem Card Connector
- 4 DM1 DIMM Socket 1
- 5 DM2 DIMM Socket 2

SW1 Settings

	SW1-3	SW1-4
CHKPW Enable	ON	OFF
Boot Block Enable	OFF	ON

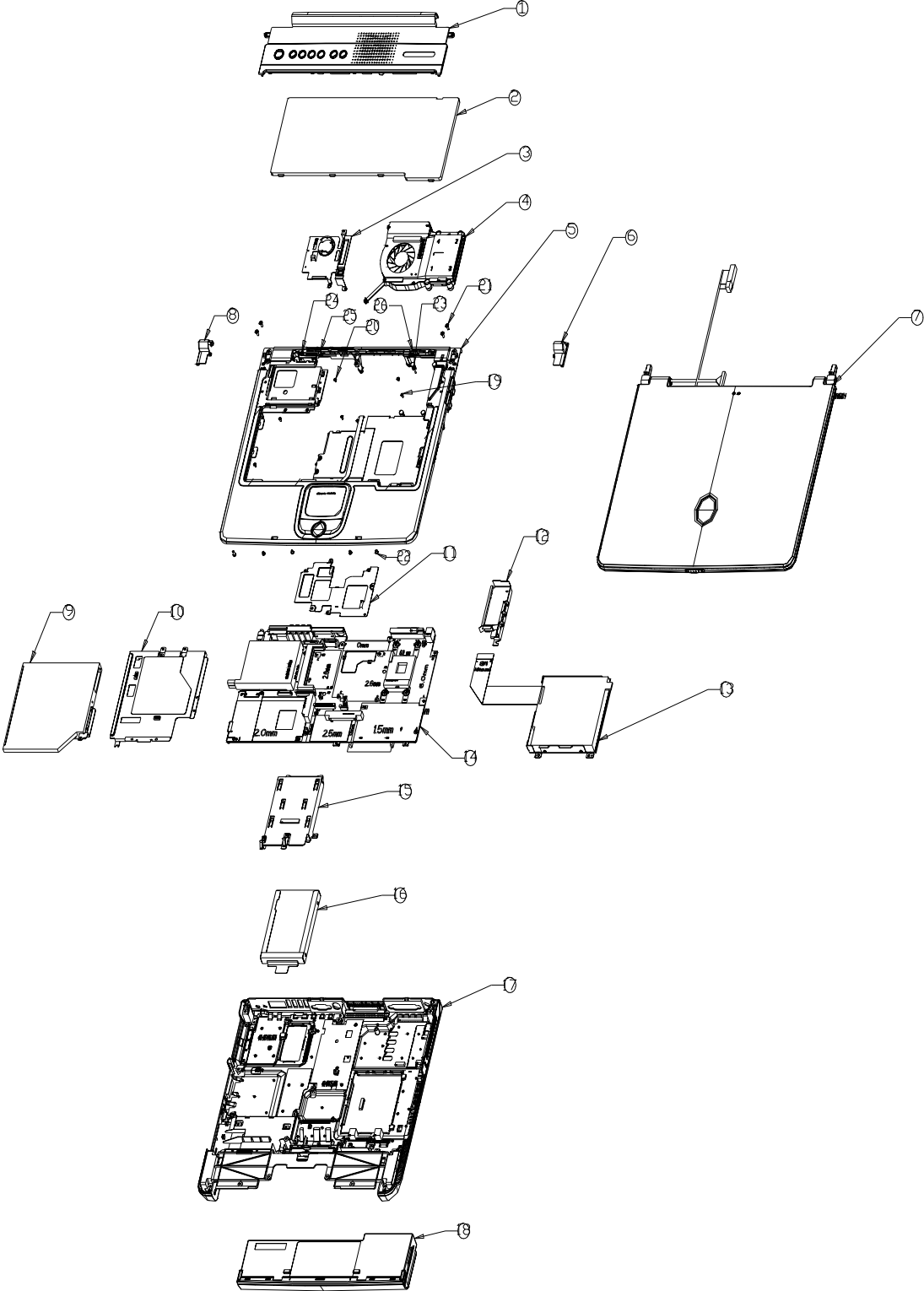
FRU (Field Replaceable Unit) List




This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of Aspire 1610. 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.





Aspire 1610 Exploded Diagram









Picture	No.	Partname And Description	Part Number
Adapter			
		ADAPTER 120W 3PIN LITEON PA-1121-02AC REV.B	AP.T3003.002
Battery			
		RTC BATTERY LONGTRUM	23.T30V1.001
	18	BATTERY MODULE LI-ION 8CELL 2.0 MAH SIMPLO BTP-60A1 BATTERY MODULE LI-ON 8CELL 2.0MAH SIMPLO BTP-58A1	6M.T30V1.009 6M.T30V1.009??
		BATTERY LI-ON 8CELL 2.0MAH SANYO BTP-60A1 BATTERY LI-ION 8CELL 2.0 MAH LI-ION SIMPLO BTP-58A1	BT.T3003.001 BT.T3007.001
		BATTERY COVER	42.T30V1.001
CASE/COVER/BRACKET ASSEMBLY			
Boards			
		DC-DC CHARGER BOARD	55.T30V1.001
		WIRELESS LAN BOARD 802.11G WNC RM8 MIMIPCI	54.A16V1.001

Picture	No.	Partname And Description	Part Number
		LAUNCH BOARD	55.T30V1.002
		MODEM BOARD AMBIT T60M283.10(01)	54.09011.544
Cables			
		COVER SWITCH CABLE 2PIN 50MM 2CONNECTOR	50.T30V1.002
		LAUNCH BOARD CABLE	50.T30V1.011
		MODEM CABLE 2PIN 2CONNECTOR 55MM	50.41T11.002
		POWER CORD 10A 125V	27.A19V1.001
Case/Cover/Bracket Assembly			
	3	MINI PCI PLATE W/RTC HOLDER	60.T30V1.003
	6	HINGE CAP RIGHT	42.T30V1.002
	8	HINGE CAP LEFT	42.T30V1.003

Picture	No.	Partname And Description	Part Number
	10	OPTICAL DEVICE SUPPORT BRACKET	33.A16V1.001 (Check if the appearance is the same with TM240/250 as well as the location)
	15	HDD BRACKET	33.T30V1.002
	16	HDD HOLDER	33.T30V1.003
	17	LOWER CASE W/ DIMM COVER & MODEM COVER & SPEAKERS	60.A19V1.001
		MODEM COVER W/SCREW	42.T30V1.004
		DIMM COVER W/SCREW	42.T30V1.005
	19	UPPER CASE W/COVERSWITCH CABLE & TOUCHPAD CABLE & SCROLL KEY	60.A19V1.002 (Picture)
		TOUCHPAD COVER	42.T30V1.006
		MIDDLE COVE W/LAUNCH BOARD NAME PLATE	60.A19V1.003
		MIDDLE COVER	42.A19V1.001

Picture	No.	Partname And Description	Part Number
		ASSEMBLY DUMMY FDD	6K.A16V1.001
Communication Module			
		WIRELESS ANTENNA RIGHT	50.A16V1.002
		WIRELESS ANTENNA LEFT	50.A16V1.003
CPU			
		CPU P4 3.06G 500MB INTEL	KC.DPD01.306
DVD			
		DVD-RW MODULE 4X KME DVR-K12D	6M.A16V1.006
		DVD-RW MODULE 4X HLDS GWA-4040N	6M.A19V1.001
		DVD-RW DRIVE 2X PIONEER DVR-K12D	KU.00405.004
		DVD-RW 4X HLDS GWA-4040N	KU.0040D.001
		OPTICAL BRACKET	33.T30V1.004
FDD/Floppy Disk Drive			
	13	FDD MODULE 1.44M MCI JU-226A033FC	6M.T30V1.003
		FDD MODULE 1.44M MITSUMI D353G 4515	6M.T30V1.004
HDD/ Hard Disk Drive			
		HDD 60GB HGST IC25N060ATMR04	KH.06007.006
		HDD 60GB HGST DK23FA-60 A0A0	KH.06007.005
		HDD 60G TOSHIBA MK6021GAS	KH.36004.001
Heatsink			

Picture	No.	Partname And Description	Part Number
	4	CPU FANSINK W/FAN	34.A19V1.001
		CPU THERMAL MODULE	34.A19V1.003
		VGA HEATSINK	34.A19V1.004
Keyboard			
	2	KEYBOARD 85KEY DARFON NSK-ACY60G GERMAN	KB.A1907.001
		KEYBOARD 85KEY SUNREX K020830U2GR GERMAN	KB.A1909.001
LCD			
	7		
		Do not provide entire LCD module order	
		LCD 15" SXGA+ AU B150PG01	LK.15005.002
		LCD 15" SXGA+ TFT LG LP150E02-A2P1	LK.15008.004
" data-bbox="78 796 211 851"/>		INVERTER BOARD 14"/>"	19.21030.I71
		INVERTER BOARD 15" SUMIDA	19.T30V1.201
		LCD BRACKET RIGHT	33.A16V1.002

Picture	No.	Partname And Description	Part Number
		LCD BRACKET LEFT	33.A16V1.003
		INVERTER CABLE	50.T30V1.007
		LCD COAXIAL CABLE	50.A16V1.005
	NS	LCD PANEL W/HINGE & LOGO	60.A16V1.005
	NS	LCD BEZEL 15" W/ICON LABEL	60.A16V1.004
		HINGE PACK LEFT/RIGHT	6K.A19V1.001
Main Board			
		MAINBOARD W/LAUNCH CABLE & MODEM & MODEM CABLE & PCMCIA SLOT & RTC BATTERY	LB.A1901.001
Miscellaneous			
		LOGO PLATE	31.42S08.001

Picture	No.	Partname And Description	Part Number
		ICON LABEL	40.A16V1.001 (Check if the picture is correct)
		TOUCHPAD SCROLL KEY	42.T30V1.007
		TOUCHPAD KNOB	42.T30V1.008
		LCD SCREW CAP LOWER	47.A16V1.001
		LCD SCREW RUBBER UPPER	47.A16V1.002
		RUBBER FOOT	47.T30V1.003
		NAME PLATE	40.A19V1.001
Memory			
		MEMORY DDR333 256MB INFINEON HYS64D32020GDL-6-B	KN.25602.009
		MEMORY DDR333 256MB NANYA NT256D64SH8BAGM-6K	KN.25603.009
		SODIMM 256M SAMSUNG M470L3224FT0-CB3	KN.2560B.008
		MEMORY DDR333 512MB INFINEON HYS64D64020GBDL-6-B	KN.51202.007
		SODIMM 512M NANYA NT512D64S8HBAFM-6K	KN.51203.005
PCMCIA slot/PC card slot			
		PCMCIA SLOT	22.T30V1.001
Pointing Device			
	NS	TOUCHPAD SYNAPTICS TM41P-357	56.17001.001
Speaker			
		SPEAKER SET	23.T30V1.002

Picture	No.	Partname And Description	Part Number
Screws			
	NS	SCREW	86.T30V1.001
	NS	SCREW	86.T30V1.002
	NS	SCREW	86.9A352.3R0
	NS	SCREW	86.9A353.6R0
	NS	SCREW	86.9A524.4R0
	NS	SCREW	86.9A552.2R0
	NS	SCREW	86.9A552.3R0
	NS	SCREW	86.9A552.4R0
	NS	SCREW	86.9A553.3R0
	NS	SCREW	86.9A553.4R0
	NS	SCREW	34.00015.081
		SCREW (SCW HEX NYL I#R-40/ O#4-40 L5.5)	34.00015.081
		SCREW (SCRW MACH PAN NYLOK M2.0*10 NI)	86.1A522.100
		SCREW (SCRW CPU SCREW FORCE 5KGS)	86.T30V1.001
		SCREW (SCREW M2*3 NYLON 1JMCPC-420325)	86.9A352.3R0
		SCREW (SCREW M2.5X6)	86.9A353.6R0
		SCREW (SRW M2.5*8L B/ZN NYLOK 700)	86.9A353.8R0
		SCREW (SCREW M3x4)	86.9A524.4R0
		SCREW (SCREW M2X2.0)	86.9A552.2R0
		SCREW (SCREW WAFER NYLOK NI 2ML3)	86.9A552.3R0
		SCREW (SCRW M2*4 WAFER NI)	86.9A552.4R0
		SCREW (SCRW M2.5*3 WAFER NI)	86.9A553.3R0
		SCREW (SCREW M2.5*4L NI)	86.9A553.4R0

Model Definition and Configuration

Model Name Definition

Model Number	LCD	CPU	Memory	HDD	CD/DVD	Battery	Wireless LAN
1613LMi	15.0" SXGA+	DT P4 3.06GHz/533	DDR333 2x256M	60GB	4x DVD-Dual	Li-Ion	802.11g
	15.0" XGA	DT P4 3.06GHz/533	DDR333 2x256M	60GB	4x DVD-Dual	Li-Ion	802.11g

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 3.06GHz
Memory	256MB Nan-Ya SO-DIMM DDR333 NT256D64SH8BAGM-6K (.14u) 256MB Infineon SO-DIMM DDR333 HYS64D32020GDL-6-B 512MB Infineon SO-DIMM DDR333 HYS64D64020GBDL-6-B 64Mx64 (0.14u) 512MB Nanya SO-DIMM DDR333 NT512D64S8HBAFM-6K (.14u)
LCD	AU 15.0" SXGA+ B150PG01 AU 15.0" SXGA+ NB LCD AU B150PB01 V.0 01XXX Samsung 15.0" SXGA+ LTN150P4-L03 LG 15.0" LP150E02-A2P1
Hard Disk Drive	60GB IBM HGST Moraga IC25N060ATMR04-0 60GB Toshiba Neptune MK6021GAS 60GB HGST Fresno DK23FA-60 HTS428060F9AT00
DVD Dual, 4X	Pioneer DVR-K12D HLDS GWA-4040N KME SUPER-MULTI UJ-820B-A
AC Adapter (3 pin)	Liteon TA 1121-02AW 120W
Power Cord	King Cord
Battery Li-Ion, 8 cells	SIMPLO BTP-58A1 ASSY BTY PK LI+2.0MAH 8C OPTION SANYO BTP-60A1 ASSY BTY PK LI+2.0MAH 8C SIMPLO BTP-58A1 PK Panasonic cell LI+2.0MAH 8C
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)	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
Wireless LAN Card	IBM Wireless LAN Cardbus Adapter Intel Pro-Wireless LAN PC Card Proxim Skyline 802.11a Cardbus PC Card Cisco Aironet 350 series Wireless Lan Card NeWeb Wireless Lan Card 802.11b
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
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 V70 NET Color Monitor 20" Mozo 17" TFT LCD (DVI)

Item	Specifications
I/O - Projector	NEC MultiSync MT-1040
I/O - Parallel (Printer/Scanner)	Canon BJC-600J Epson Stylus Color 740 Parallel Interface HP DeskJet 890C HP DeskJet 880C Parallel Interface HP LaserJet 6MP HP LaserJet 2200
I/O-IR Printer	HP LaserJet 6MP use IR HP LaserJet 2200 use IR
I/O - USB Keyboard/Mouse	Chicony USB Keyboard KU-8933 Microsoft Natural Keyboard Pro Acer Aspire USB mouse Logicoool USB Mouse Logitech Cordless Mouseman Wheel USB Interface Logitech USB Wheel Mouse M-BB48 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 Logitech QuickCam Home PC Video Camera Orange Micro USB 2.0 Web Cam
I/O - USB Storage Drive	Logitech CDRW +DVDROM combo USB interface Iomega USB Zip 250MB
I/O-USB Flash Drive	IBM 32MB USB Memory key Apacer USB Handy Drive 32MB Apacer USB Handy Drive 256MB
I/O - USB Hub	Belkin 4 Port USB Hub Eizo I Station USB Hub Elecom USB Hub 4 Port Sanwa USB Hub 4 Port Snawa 4 Port Hub USB 2.0
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
PCMCIA	

Item	Specifications
PCMCIA - ATA	IBM Microdrive 340MB IBM Microdrive 1G Iomega Click! 40MB Sony Memory Stick 64MB Sandisk Flash Card 20MB Apacer SD Flash Card 128MB Transcedn SD Card 32MB
PCMCIA - USB 2.0	Apricorn EZ-USB2.0 Cardbus PC Card DTK USB 2.0 2Port CardBus Host Controller Adaptec USB2CONNECT
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-SCSI	Adaptec 1408 or B SCSI CB NewMedia Bus Toaster SCSI II
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.

A

- AC Adapter 27
- AFLASH Utility 42
- Audio 20

B

- Battery 25
- battery pack
 - charging indicator 12
- BIOS 20
 - package 20
 - ROM size 20
 - ROM type 20
 - vendor 20
 - Version 20
- BIOS Setup Utility 30
- BIOS Supports protocol 20
- BIOS Utility 30
 - Basic System Settings 35
 - Navigating 31
 - Onboard Device Configuration 37
 - Startup Configuration 36
 - System Information 31
 - System Security 41
- Board Layout 4
 - Bottom View 5, 106
 - Top View 4, 105
- brightness
 - hotkeys 17

C

- Cache
 - controller 20
 - size 20
- caps lock
 - on indicator 12
- CardBus 25
- CD-ROM Interface 22
- Chipsets 20
- computer
 - on indicator 12, 13
- contrast
 - hotkeys 17
- Controllers 20

- Core logic 20
- CPU
 - core voltage 20
 - I/O voltage 20
 - package 20
 - type 20

D

- DC-AC LCD Inverter 26
- DC-DC/Charger 25
- DIMM
 - Combinations 21
- Disassembly
 - Machine 44
- Disassembly Flowchart 46
- Display 1
 - display
 - hotkeys 17
- Display Standby Mode 28

E

- Environmental Requirements 28
- Error Symptom-to-Spare Part Index 95
- External CD-ROM Drive Check 91

F

- Features 1
- Flash Utility 42
- FRU (Field Replaceable Unit) List 107

H

- Hard disk 20, 22
- Hard Disk Drive Module
 - Disassembly 51
- Hard Disk Standby Mode 28
- Hardware Specifications and Configurations 20
- HDD 20, 22
- Hibernation Mode 28
- Hibernation mode
 - hotkey 17
- Hot Keys 17

I

Indicators 12
Intermittent Problems 102

J

Jumper and Connector Locations
SW1 Settings 106

K

Keyboard 20, 25
Keyboard or Auxiliary Input Device Check 91

L

L2 cache 20
LCD 26

M

Machine Disassembly 44
Mechanical Specification 29
media access
 on indicator 12
Memory Check 92
Modem 22

N

Notebook Manager
 hotkey 17
num lock
 on indicator 12

O

Online Support Information 123

P

Panel 5, 106
 Bottom 11
 right 9
Parallel Port 24
PC Card 12, 25
PCMCIA 25
Power Management 28
Power System Check 92
 Battery Pack 94
 Power Adapter 93
Processor 20

R

Removing the Battery Pack 48
RTC 20

S

Second Level Cache 20
speakers
 hotkey 17
Standby Mode 28
Super I/O 20
System
 Layout 4
System Check Procedures 91
System Diagnostic Diskette 42
System Memory 20
System Utilities 30
System Utility Diskette 42

T

Temperature 28
Test Compatible Components 119
Touchpad 20
touchpad
 hotkey 17
Touchpad Check 94
Troubleshooting 90

U

Undetermined Problems 103
USB 25
utility
 BIOS 30

V

Video 24
 Resolutions 24
Video controller 20

W

Windows XP Environment Test 120

www.s-manuals.com