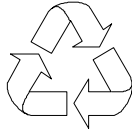


Service Guide



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PRINTED IN TAIWAN

Revision History

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

Date	Chapter	Updates

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Conventions

The following conventions are used in this manual:

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

Preface

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

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for our "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 AUTHORIZED SERVICE PROVIDERS, your 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 office to order FRU parts for repair and service of customer machines.

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System Specifications

Features

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

Performance

- ☐ Intel® Northwood processor with 512K or Willimette processor with 256K level 2 cache
- ☐ 128/256/512MB DDR266 SDRAM memory
- ☐ Large LCD display with high performance 3D graphics
- ☐ High-capacity, Enhanced-IDE hard disk
- ☐ Lithium-Ion battery pack
- ☐ Power management system
- ☐ Dual display capability
- ☐ Simultaneous LCD and CRT display

Multimedia

- ☐ Built-in AC97 audio subsystem.
- ☐ Built-in dual stereo speakers
- ☐ S-video output
- ☐ Internal removable optical drive (CD-ROM, DVD-ROM, CD-RW or DVD/CD-RW combo) or secondary storage (2nd hard disk)

Connectivity

- ☐ High-speed fax/data modem port
- ☐ Onboard PCI 10/100 Mbps LAN support
- ☐ USB (Universal Serial Bus) ports
- ☐ IEEE 1394 port
- ☐ One MINI PCI slot with 802.11 wireless LAN

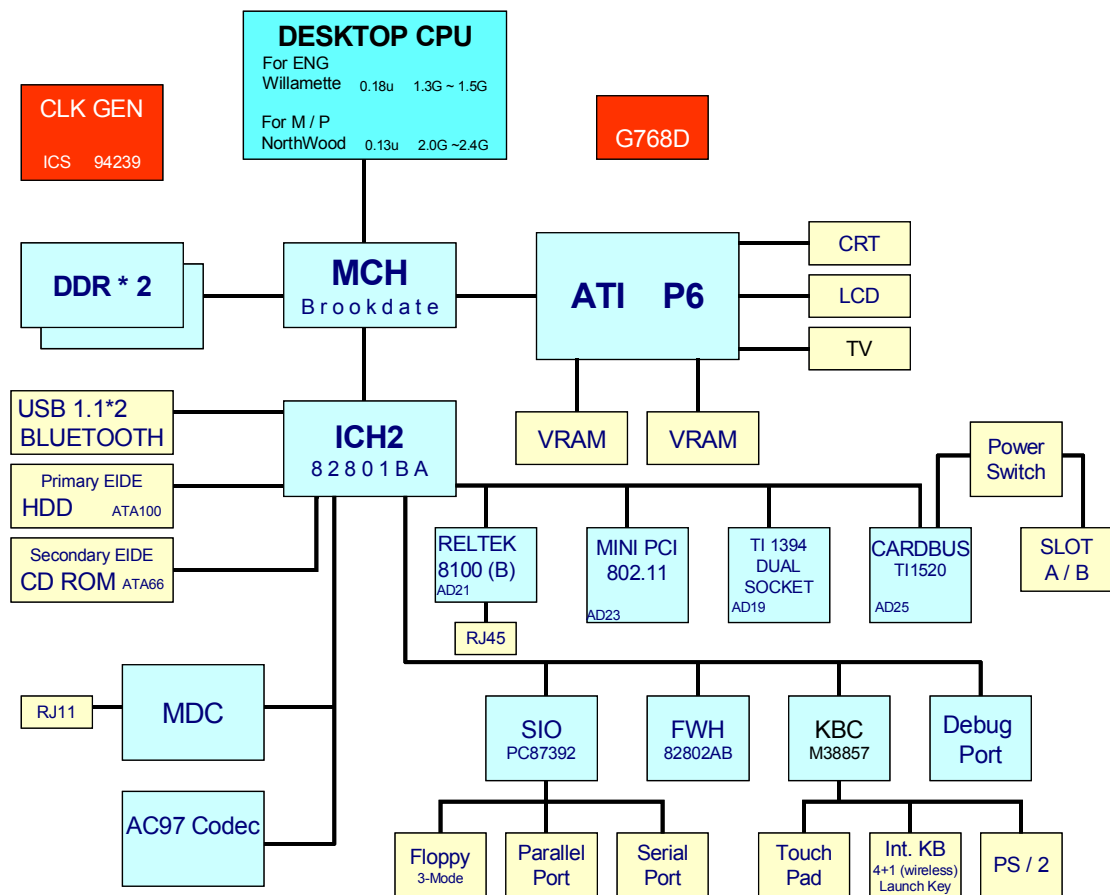
Human-centric design and ergonomics

- ☐ All-in-one design.
- ☐ Sleek, smooth and stylish design.
- ☐ Full-sized keyboard
- ☐ Wide and curved palm rest
- ☐ Ergonomically-centered touchpad pointing device with Internet scroll key
- ☐ Launch keys

Expansion

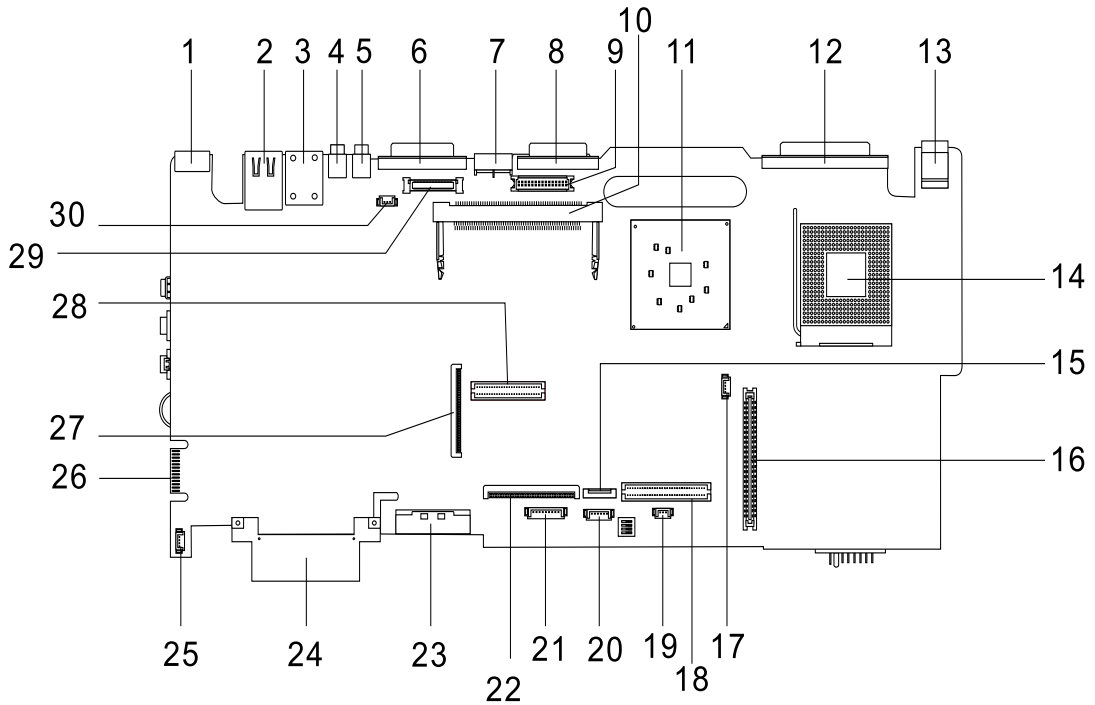
- ☐ Upgradeable memory and hard disk
- ☐ Swappable Media bay modules

System Block Diagram



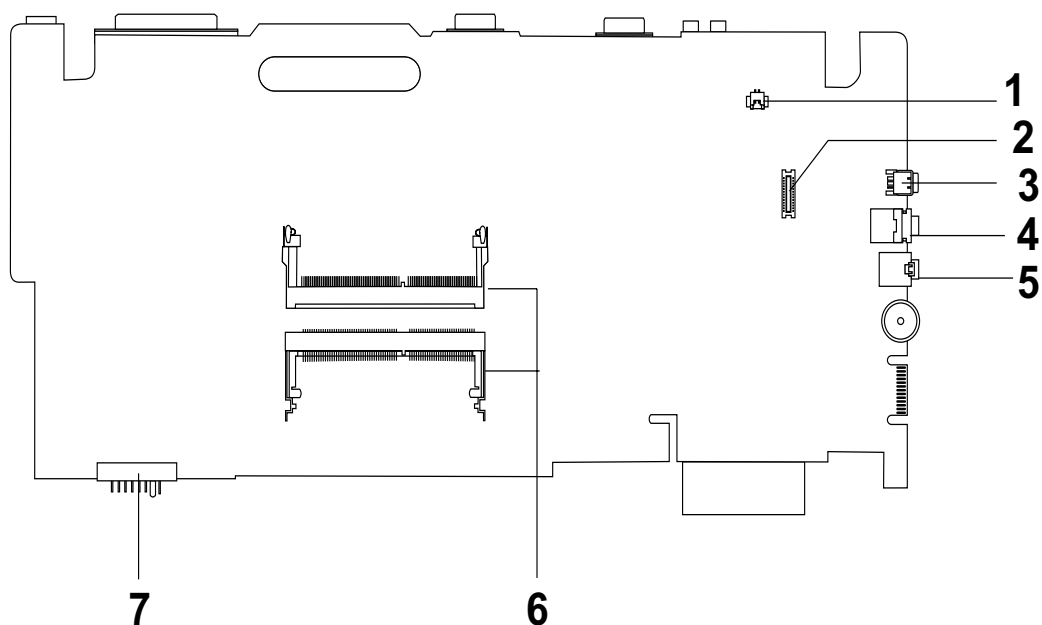
Board Layout

Top View



1	PS/2 keyboard/mouse port	16	Cardbus connector
2	LAN port	17	Fan connector
3	Modem Port	18	DC to DC connector
4	USB port	19	RTC connector
5	USB port	20	FIR connector
6	Serial Port	21	Bluetooth connector
7	S-Video connector	22	Keyboard connector
8	External Display Port	23	Secondary IDE connector
9	Inverter Connector	24	Primary IDE connector
10	Mini PCI connector	25	Speaker connector
11	MCH	26	Debug board connector
12	Parallel port	27	Floppy Diskette Drive Connector
13	DC-in Port	28	DC to DC connector
14	CPU socket	29	LCD monitor connector
15	Touchpad connector	30	Launch board connector

Bottom View

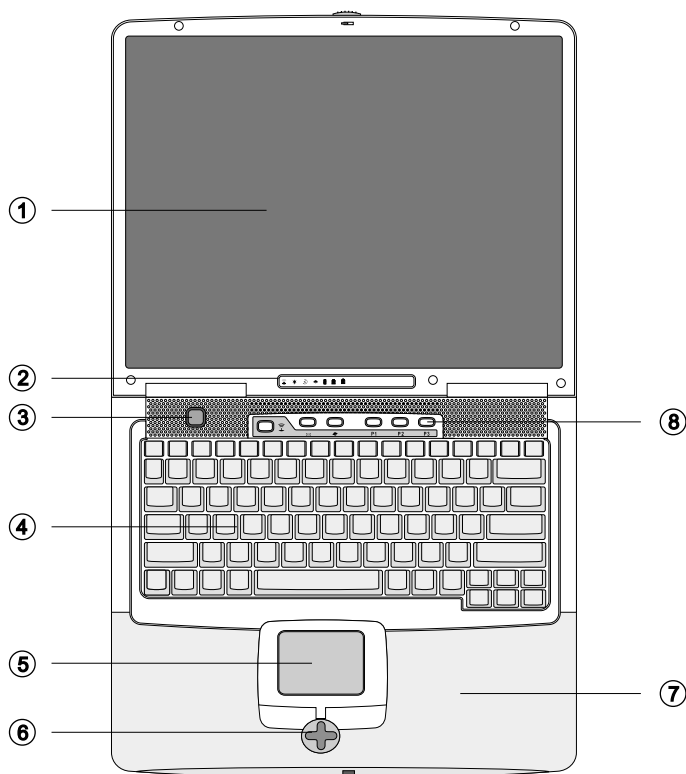



- | | | | |
|---|----------------------------|---|-------------------|
| 1 | Modem Card Cable Connector | 5 | Line-in port |
| 2 | Audio Connector | 6 | Memory slot |
| 3 | IEEE 1394 port | 7 | Battery connector |
| 4 | Speaker-out port | | |

Outlook View

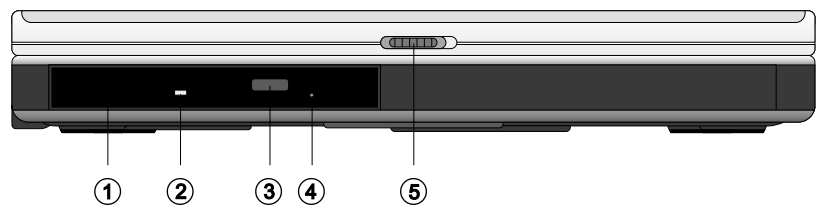
A general introduction of ports allow you to connect peripheral devices, as you would with a desktop PC.

Top View



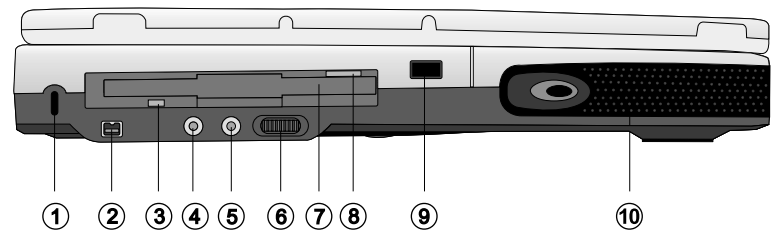
#	Icon	Item	Description
1		Display screen	Also called LCD (liquid-crystal display), displays computer output.
2		Status indicators	LEDS (Light-emitting diodes) that turn on and off to show the status of the computer and its functions and components.
3		Power button	Turns on the computer power.
4		Keyboard	Inputs data into your computer.
5		Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
6		Click buttons (left, center and right)	The left and right buttons function like the left and right mouse buttons. The center button is a four-directional scroll pad.
7		Palmrest	Comfortable support area for your hands when you use the computer.
8		Easy Launch keys	Buttons for launching frequently used programs.

Front View




#	Icon	Item	Description
1		Media bay module	Installed in the Media bay, provides optical media access or secondary storage by way of removable modules.
2		Optical drive activity indicator	Lights/flashs when the optical drive is in use.
3		Optical drive eject button	Ejects the disc from the optical drive.
4		Optical drive emergency eject hole	Ejects the disc from the optical drive when the computer is turned off.
5		Display latch	Slide to the right to unlatch and open the display.

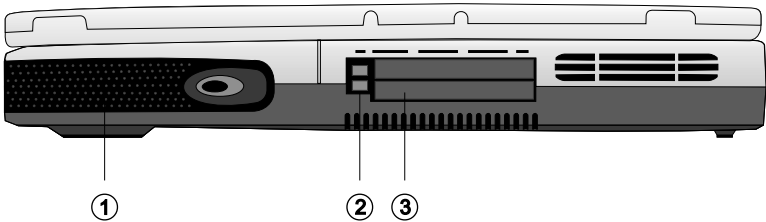
Left Panel




#	Icon	Item	Description
1		Security keylock	Connects to a Kensington-compatible computer security lock.
2		IEEE 1394 port	Connects to a IEEE 1394-compatible device (e.g., digital video camera).
3		Floppy drive activity indicator	Lights when the floppy drive is in use.
4		Line-out jack	Connects to audio line-out devices (e.g., speakers, headphones).
5		Line-in jack	Connects an external microphone or an external audio line-in device.

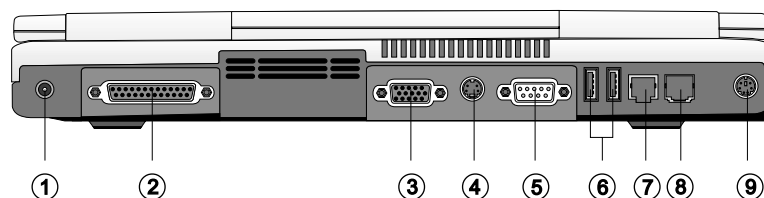
#	Icon	Item	Description
6		Volume control knob	Controls the volume of the speakers.
7		Floppy drive	Accepts a 3.5-inch diskette.
8		Floppy drive eject button	Ejects the diskette from the floppy drive.
9		Infrared port	Interfaces with infrared devices (e.g., PDA).
10		Speaker (left)	Outputs sound.










Right Panel



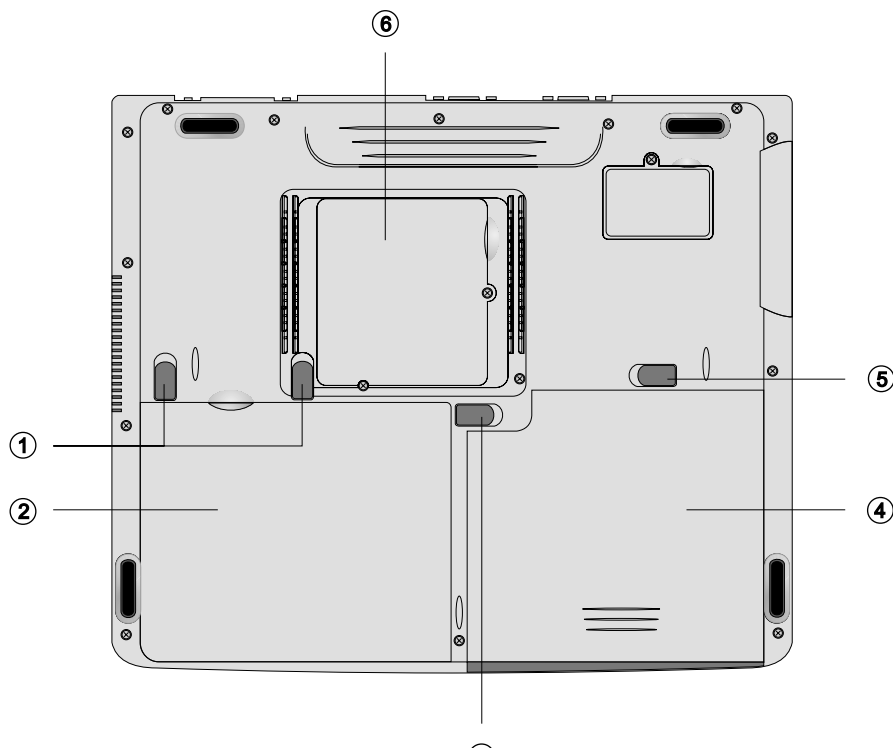
#	Icon	Item	Description
1		Speaker (right)	Outputs sound.
2		PC Card eject button	Eject the PC Card from its slot.
3		PC Card slots	Accepts one type III or two II/I PC Card(s).




Rear Panel



#	Icon	Item	Description
1		DC-in jack	Connects to an AC adapter.
2		Parallel port	Connects to a parallel device (e.g., parallel printer).
3		External monitor port	Connects to a display device.
4		Video-out port	Connects to a display device with S-video input.
5		Serial port	Connects to a serial device (e.g., serial mouse).
6		USB ports (two)	Connect to Universal Serial Bus devices (e.g., USB mouse, USB digital camera).
7		Modem jack	Connects to a phone line (only for models with an internal fax/data modem).
8		Network jack	Connects to an Ethernet 10/100-based network.
9		PS/2 port	Connects to any PS/2-compatible device (e.g., PS/2 mouse/keyboard/keypad).

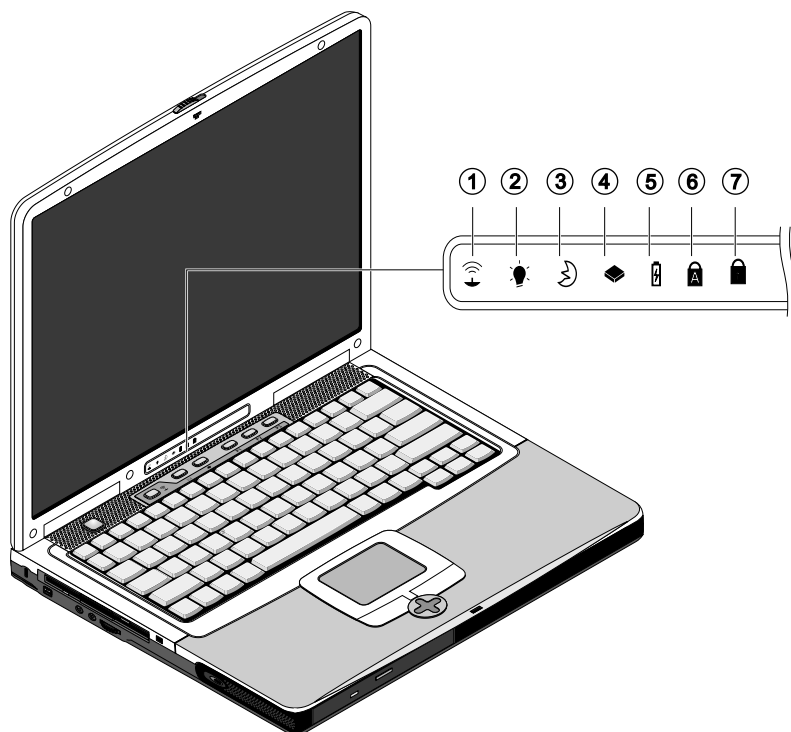
Bottom Panel



#	Icon	Item	Description
1		Battery release latches	Unlatches the battery to remove the battery pack.
2		Battery	Houses the computer's battery pack.
3		Battery lock	Locks/unlocks the battery pack in the battery bay.
4		Media bay Module	Installed in the Media bay, provides optical media access or secondary storage by way of removable modules.
5		Media bay release latch	Unlatches the Media bay module.
6		Memory compartment	Houses the computer's main memory.

Indicators

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

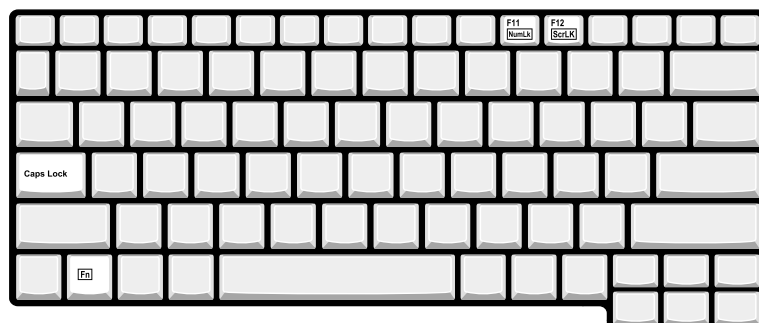




The Power and Standby status icons are visible even when you close the display cover so you can see the status of the computer while the cover is closed.

#	Icon	Function	Description
1		Wireless communication	Lights when the Wireless connection is active.
2		Power	Lights when the computer is on; flashes when a battery-low condition occurs.
3		Sleep	Lights when the computer enters Sleep mode; flashes when the computer is waking up from Sleep mode.
4		Media activity	Flashes when the hard disk or optical drive is accessed.
5		Battery charge	Lights when the battery is being charged.
6		Caps lock	Lights when Caps Lock is activated.
7		Num lock	Lights when Numeric Lock is activated.

Lock Keys

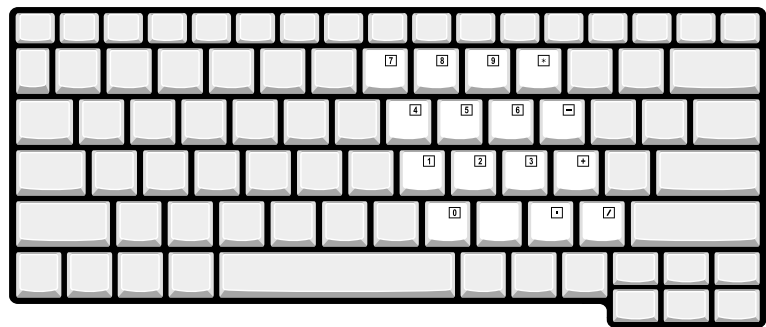
The keyboard has three lock keys which you can toggle on and off.





Lock Key	Description
Caps Lock	When Caps Lock is on, all alphabetic characters typed are in uppercase.
Num Lock (Fn-F11)	When Num Lock 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 Scroll Lock is on, the screen moves one line up or down when you press the  or  arrow keys respectively. Scroll Lock 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.

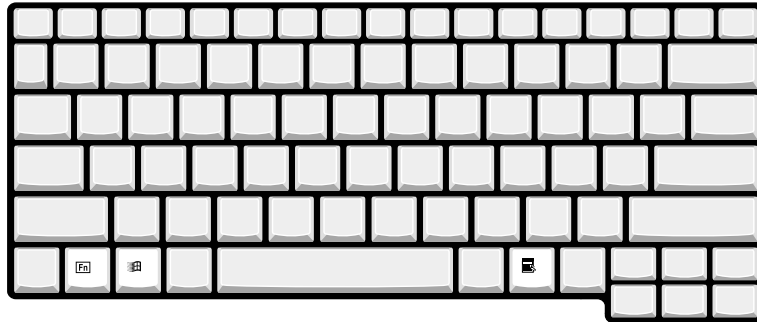











Desired Access	Num Lock On	Num Lock Off
Number keys on embedded keypad	Type numbers in a normal manner.	Hold  while typing numbers.
Cursor-control keys on embedded keypad	Hold  while using cursor-control keys.	Use cursor-control keys in a normal manner.
Main keyboard keys	Hold Fn while typing letters 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.

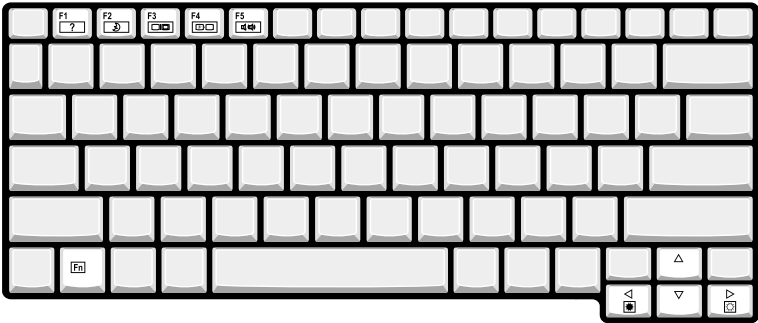


Key	Icon	Description
Windows logo key		Start button. Combinations with this key perform shortcut functions. Below are a few examples:  + Tab (Activates next taskbar button)  + E (Explores My Computer)  + F (Finds Document)  + M (Minimizes All)  +  + M (Undoes Minimize All)  + R (Displays the Run...dialog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

Hot Keys

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

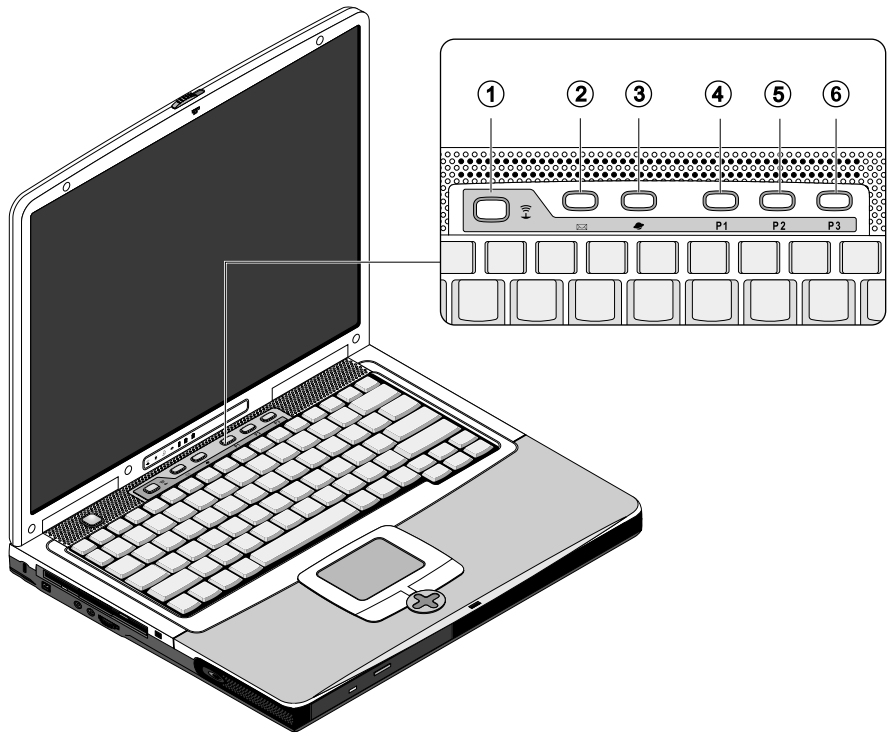
To activate hot keys, press and hold the **Fn** key before pressing the other key in the hot key combination.






Hot Key	Icon	Function	Description
Fn-F1	?	Hot key help	Displays a list of the hotkeys and their functions.
Fn-F2		Sleep	Puts the computer in Sleep mode, which can be defined via the advanced section of the Power Management Properties in the Windows Control Panel.
Fn-F3		Display toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn-F4		Screen blank	Turns the display screen backlight off to save power. Press any key to return.
Fn-F5		Speaker on/off	Turns the speakers on and off; mutes the sound.
Fn→		Brightness up	Increases the screen brightness.
Fn←		Brightness down	Decreases the screen brightness.

Launch Keys

Located at the top of the keyboard are five launch keys. Used to launch frequently used applications, these launch keys are designated as Wireless, Web, Mail, P1 and P2.



Number	Icon	Function	Description
1		Wireless LAN	This button is used to enable or disable the Wireless LAN (optional) function.
2		E-mail	By default, is used to launch the e-mail application; lights when incoming email is received.
3		Internet browser	By default, is used to launch your internet browser application.
4	P1	P1	This button is user-programmable.
5	P2	P2	This button is user-programmable.
6	P3	P3	This button is user-programmable.

Touchpad

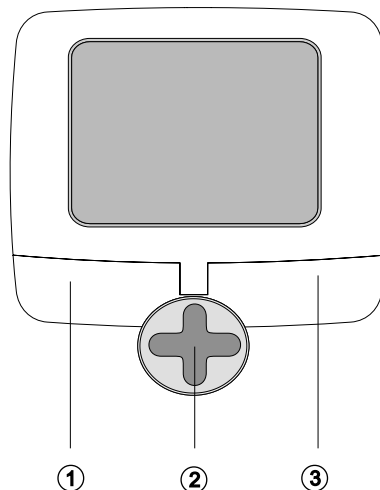
The built-in touchpad is a PS/2-compatible pointing device that senses movement on its surface. This means the cursor responds as you move your finger on the surface of the touchpad. The central location on the palmrest provides optimum comfort and support.



NOTE: When you connect an external PS/2 mouse, the computer automatically disables the internal touchpad.

Touchpad Basics

The following items teach you how to use the touchpad:



- ☐ Move your finger across the touchpad to move the cursor.
- ☐ Press the left (1) and right (2) buttons located on the edge of the touchpad to do selection and execution functions. These two buttons are similar to the left and right buttons on a mouse. Tapping on the touchpad produces similar results.
- ☐ Press the 4-direction scroll pad to move through a page or window as you would pressing the up/down and left/right scrollbars.

Function	Left Button	Right Button	Scroll Pad	Tap
Execute	Click twice quickly		Click twice quickly	Tap twice (at the same speed as double-clicking the mouse button)
Select	Click once		Click once	Tap once
Drag	Click and hold, then use finger to drag the cursor on the touchpad		Click and hold, then use finger to drag the cursor on the touchpad	Tap twice (at the same speed as double-clicking the mouse button) then hold finger to the touchpad on the second tap and drag the cursor
Access context menu		Click once		
Scroll			Click and hold the button in the desired direction (up/down/left/right).	

NOTE: Keep your fingers dry and clean when using the touchpad. Also keep the touchpad dry and clean. The touchpad is sensitive to finger movements. Hence, the lighter the touch, the better the response. Tapping too hard will not increase the touchpad's responsiveness.

Hardware Specifications and Configurations

Processor

Item	Specification
CPU type	Intel® desktop Northwood processor or Willimette processor
CPU package	Micro-FCPGA package
CPU core voltage	1.45V/1.75V
CPU ID voltage	1.5V

BIOS

Item	Specification
BIOS vendor	Wistron
BIOS Version	A41
BIOS ROM type	Flash ROM
BIOS ROM size	256KB/512KB
BIOS package	32-pin
Supported protocols	ACPI 1.0b, Simple Boot Flag Specification 1.0, PnP BIOS 1.0a, PCI 2.2, USB 1.1, SMBIOS 2.3, PC2001
BIOS password control	Set by switch, see SW1(PIN1) setting

Second Level Cache

Item	Specification
Cache controller	Built-in CPU
Cache size	512KB
1st level cache control	Always enabled
2st level cache control	Always enabled
Cache scheme control	Fixed in write-back

System Memory

Item	Specification
Memory controller	Built-in Intel Brookdale MCH
Onboard memory size	0MB
DIMM socket number	2 sockets (2 banks)
Supports memory size per socket	512MB
Supports maximum memory size	1024MB
Supports DIMM type	DDRAM
Supports DIMM Speed	DDR266
Supports DIMM voltage	2.5V
Supports DIMM package	200-pin
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications.

Memory Combinations

DIMM I	DIMM II	Total Memory
128 MB	0 MB	128 MB
0 MB	128 MB	128 MB
128 MB	128 MB	256 MB
256 MB	0 MB	256 MB
0 MB	256 MB	256MB
256 MB	128 MB	384 MB
128 MB	256 MB	384 MB
256 MB	256 MB	512 MB
512 MB	0 MB	512 MB
0 MB	512 MB	512 MB
512 MB	128 MB	640 MB
128 MB	512 MB	640 MB
512 MB	256 MB	768 MB
256 MB	512 MB	768 MB
512 MB	512 MB	1 GB

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

LAN Interface

Item	Specification
LAN interface/Chipset	Mini PCI interface LAN card / RTL8100BL
Supports LAN protocol	10/100 Mbps
LAN connector type	RJ45
LAN connector location	Rear side

Wireless LAN Interface

Item	Specification
LAN interface	Mini PCI interface IEEE 802.11b LAN card
Channel support and default channel protocol	Covering the FCC subset of the IEEE 802.11b ISM Band
Enable/disable radio	Support FAA requirement

Modem Interface

Item	Specification
Chipset	Built-in V.92 56Kbps software data/fax modem with international PTT certificate / Ambit MDCU98M005.01
Fax modem data baud rate (bps)	14.4K
Data modem data baud rate (bps)	56K
Supports modem protocol	V.92 data modem 56K, V9.0 fax modem 14.4K and digital line protection operation
Modem connector type	RJ11
Modem connector location	Rear side

Hard Disk Drive Interface

Item	Specification			
Vendor & Model name	IBM Travelstar 10GB IC25N010ATCS	IBM Travelstar 20GB IC25N020ATCS	IBM Travelstar 30 GB IC25N030ATCS	IBM Travelstar 40GB IC25N040ATCS
Capacity (GB)	10000	20000	30000	40000
Bytes per sector	512	512	512	512
Logical heads	1	2	3	4
Logical sectors	63	63	63	63
Drive Format				
Logical cylinders	16383	16383	16383	16383
Physical read/write heads	2	3	2	4
Disks	1	1	2	2
Spindle speed (RPM)	4200	4200	4200	4200
Performance Specifications				
Buffer size	512KB	2048KB	2048KB	2048KB
Interface	IDE (ATA-5)	IDE (ATA-5)	IDE (ATA-5)	IDE (ATA-5)
Data transfer rate (disk-buffer, Mbytes/s)	125-241	130-245	125-241	130-245
Data transfer rate (host~buffer, Mbytes/s)	100MB/Sec.			
DC Power Requirements				
Voltage tolerance	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%

DVD-ROM Interface

Item	Specification	
Vendor & model name	Toshiba SD-C2502	
Performance specification	With CD Diskette	With DVD Diskette
Transfer rate (KB/sec)	1,500KB/sec. ~ 3,600KB/sec. (FULL - CAV)	4.58MB/sec. ~ 11.08MB/sec. (FULL - CAV)
Access time (typ.)	110 ms	150 ms
Rotation speed	4800 rpm (typ.)	3700 rpm (typ.)
Buffer memory	512 KBytes	
Interface	ATAPI	
Applicable disc format	DVD-ROM, DVD-Video, CD-DA, CD-ROM (Mode-1, Mode-2), CD-ROM XA Mode-2 (FORM-1, FORM-2), Multi-Session Photo CD, CD-I, Video CD, Enhanced CD & CD PLUS Compatible, CD-R/W	
Loading mechanism	Drawer with soft eject and emergency eject hole	
Power Requirement		
Input voltage	5V(DC) +/- 5%	

DVD/CD-RW Combo

Item	Specification
Vendor & Model name	KME UJDA720
Performance Specification	
Transfer rate (KB/sec)	CAV Mode: 775~1800 blocks/sec Mode 1: 1550-3600 KBytes/sec Mode 2: 1768~4106 KBytes/sec
Access time (typ.)	Random: 150 ms Full Stroke: 300 ms
Rotation speed	5000 rpm (typ.)
Buffer memory	2MB
Interface	ATAPI
Applicable disc format	CD-DA, CD-ROM (Mode-1, Mode-2), CD-ROM XA Mode-2 (FORM-1, FORM-2), Multi-Session Photo CD, CD-I, Video CD, Enhanced CD & CD PLUS Compatible, CD-R/W
Loading mechanism	Drawer with soft eject and emergency eject hole
Power Requirement	
Input voltage	5V(DC) +/- 5%

Audio Interface

Item	Specification
Audio Controller	ALC201
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	20 bit stereo Digital to analog converter 18 bit stereo Analog to Digital converter
Compatibility	Microsoft PC2001, AC97 2.1
Mixed sound source	Line-in, CD, Video, AUX
Voice channel	8/16-bit, mono/stereo
Sampling rate	44.1 KHz
Internal microphone	No
Internal speaker / Quantity	Yes
Supports PnP IRQ	IRQ10

Video Interface

Item	Specification
Chip vendor	ATI M6
Chip name	Rage Mobility-M6P
Chip voltage	Core/1.8V Memory/2.5V
Supports ZV (Zoomed Video) port	No
Graph interface	4X AGP (Accelerated Graphics Port) bus
Maximum resolution (LCD)	14.1" XGA-024x768 (32 bit colors) 15.0" XGA-1400x1050 (32 bit colors) 15.0" SXGA+ -1400x1050 (32 bit colors)
Maximum resolution (CRT)	1400x1050 (32 bit colors)

Video Memory

Item	Specification
Fixed or upgradeable	Fixed
Video memory size	32MB

Video Resolutions Mode (for 15.0" XGA LCD)

Resolution	8 bits (256 colors)	16 bits (High color)	24 bits (True color)	32 bits (True color)
640x480	Yes	Yes	Yes	Yes
800x600	Yes	Yes	Yes	Yes
1024x768	Yes	Yes	Yes	Yes

Parallel Port

Item	Specification
Parallel port controller	SMSC LPC47N267
Number of parallel port	1
Location	Rear side
Connector type	25-pin D-type connector, in female 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 or 3
Optional parallel port I/O address (in BIOS Setup)	3BCh, 278h, 378h
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
USB Compliancy Level	1.1
OHCI	USB 1.1
Number of USB port	2
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

PCMCIA Port

Item	Specification
PCMCIA controller	TI PCI1520
Supports card type	Type-II
Number of slots	Two type-II
Access location	Left side
Supports ZV (Zoomed Video) port	No ZV support
Supports 32 bit CardBus	Yes (IRQ11)

System Board Major Chips

Item	Controller
System core logic	Intel Brookdale MCH/ICH2
Super I/O controller	NS PC87392
Audio controller	Realtech ALC 201
Video controller	ATI Rage Mobility - M6
Hard disk drive controller	ICH2
Keyboard controller	M38859
RTC	Intel Brookdale MCH/ICH2

Keyboard

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

Battery

Item	Specification
Vendor & model name	Sony BTP-44A3
Battery Type	Li-ion
Pack capacity	5880 mAh
Cell voltage	3.7V
Number of battery cell	12
Package configuration	4 cells in series, 3 series in parallel
Package voltage	16.8 V

DC-AC LCD Inverter

Item	Specification
Vendor & model name	Ambit T62I194.00
Input voltage (V)	7.3 ~ 21V
Input current (mA)	1000mA max
Output voltage (Vrms, no load)	1450Vrms
Output voltage frequency (kHz)	45K-80K Hz
Output Current/Lamp	6.0 mA max

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	AU B141XN04	Hitachi TX38D85VC1CAM	Hitachi TX38D95V1CAM
Mechanical Specifications			
LCD display area (diagonal, inch)	14.1	15	15
Display technology	TFT	TFT	TFT
Resolution	XGA (1024x768)	XGA+ (1024x768)	SXGA+ (1400x1050)
Supports colors	262K	262K	262K
Optical Specification			
Brightness control	Keyboard hotkey	Keyboard hotkey	Keyboard hotkey
Contrast control	No	No	No
Electrical Specification			
Supply voltage for LCD display (V)	3.3	3.3	3.3

AC Adapter

Item	Specification
Vendor & model name	LiteON PA-1900-05AC
Input Requirements	
Maximum input current (A, @90Vac, full load)	1.5 A @ 100Vac 0.9 A @ 240Vac
Nominal frequency (Hz)	47 - 63
Frequency variation range (Hz)	47 - 63
Nominal voltages (Vrms)	90 - 270
Inrush current	The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac(60Hz) and 230Vac(50Hz) respectively.
Efficiency	It should provide an efficiency of 83% minimum, when measured at maximum load under 115V(60Hz).
Output Ratings (CV mode)	
DC output voltage	+20V+10/-0V
Noise + Ripple	300mvp-pmax (20MHz bandwidth)
Load	0 A (min.) 4.75 A (max.)
Output Ratings (CC mode)	
DC output voltage	+12V ~ +20V
Constant output	4.5 ± 0.2 A
Dynamic Output Characteristics	
Turn-on delay time	2 sec. (@115Vac)
Hold up time	4 ms min. (@115 Vac input, full load)
Over Voltage Protection (OVP)	24 V
Short circuit protection	Output can be shorted without damage

AC Adapter

Item	Specification
Electrostatic discharge (ESD)	15kV (at air discharge) 8kV (at contact discharge)
Dielectric Withstand Voltage	
Primary to secondary	1500 Vac (or 2121 Vdc), 10 mA for 1 second
Leakage current	0.25 mA max. (@ 254 Vac, 60Hz)
Regulatory Requirements	Internal filter meets: 1. FCC class B requirements. (USA) 2. VDE 243/1991 class B requirements. (German) 3. CISPR 22 Class B requirements. (Scandinavia) 4. VCCI class II requirements. (Japan)

Power Management

Power Saving Mode	Phenomenon
Standby Mode Waiting time specified by the System Standby value or the operating system elapses without any system activity. Or When the computer is about to enter Hibernation mode (e.g., during a battery-low condition), but the Hibernation file is invalid or not present.	<input type="checkbox"/> The Sleep indicator lights up
Hibernation Mode When customized functions for power management are set to Hibernation and the corresponding action is taken.	<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	-10~+60 °C
Non-operating	-20~+60 °C (storage package)
Humidity	
Operating	20% to 80% RH, non-condensing
Non-operating	20% to 80% RH, non-condensing
Non-operating	20% to 90% RH, non-condensing (storage package)
Vibration	
Operating (unpacked)	5~25.6Hz: 0.38mm (peak to peak) 25.6~250Hz: 0.5G

Environmental Requirements

Item	Specification
Non-operating (unpacked)	5~27.1Hz: 0.6G 27.1Hz~50Hz: 0.4mm (peak to peak) 50~500Hz: 2.0G
Non-operating (packed)	5~62.6Hz: 0.51mm (peak to peak) 62.6~500Hz: 4G

Mechanical Specification

Item	Specification
Dimensions	323 (W) x 275 (D) x 35-39.5(H)
Weight	depends on local configuration
I/O Ports	2 type II CardBus socket, 1 RJ-11 modem port, 1 RJ-45 LAN port, 1 DC-in jack(AC adapter), 1 FIR port, 1 parallel port, 1 external monitor port, 1 PS/2 keyboard/mouse port, 2 USB ports, 1 speaker/headphone-out jack, 1 audio line-in jack, 1 fingerprint detection device(optional)
Drive Bays	One
Material	Upper Case: ACS-M032 LCD Bezel and LCD Panel: ACS-M032 Lower Case: AL-MG
Indicators	Wireless Communication, Power LED, Standby LED, Media Activity, Battery Charge, Caps Lock, Num Lock
Switch	Power

Memory Address Map

Memory Address	Size	Function
00100000h-000F0000h	64 KB	System BIOS
000F0000h-000E0000h	64 KB	UMB Area
000D0000h-000C0000h	128 KB	VGA BIOS
000C0000h-000A0000h	128 KB	Video memory (VRAM)
000A0000h-00000000h		Conventional memory

I/O Address Map

I/O Address	Function
000-00F	DMA controller-1
020-021	Interrupt controller-1
040-043	Timer 1
060, 064	Keyboard controller 38859 chip select
061-061	System speaker out
062-062	ACPI-compliant embedded controller
066-066	ACPI-compliant embedded controller
070-073	System CMOS/real-time clock
081-08F	DMA controller
094-09F	DMA controller
0A0-0A1	Programmable interrupt controller
0C0-0DF	DMA controller
0F0-0FF	Numeric data processor
170-177	Secondary IDE controller
1F0-1F7	Primary IDE controller

I/O Address Map

I/O Address	Function
240-247	SMC IrCC-fast infrared port
274-277	ISAPNP read data port
279-279	ISAPNP read data port
2F0-2FF	SMC IrCC-fast infrared port
376-376	Secondary IDE controller
378-37F	Parallel port (LPT)
381-38B	Motherboard resource
38C-38F	Motherboard resource
392-393	Motherboard resource
3B0-3BB	Mobility Radeon (VGA)
3C0-3DF	Mobility Radeon (VGA)
3F0-3F5	Standard floppy disk controller
3F6-3F6	Primary IDE controller
3F7-3F7	Standard floppy disk controller
3F8-3FF	Communications port (COM1)
4D0-4D1	Motherboard resource
570-577	Secondary IDE controller
580-587	Motherboard resource
A79-A79	ISAPNP read data port
1000-10FF	RTL8139 ethernet controller
8000-801F	SMBus controller
A000-A0FF	Video controller
C000-C0FF	AC'97 audio controller
C400-C43F	AC'97 audio controller
C800-C8FF	PCI modem
CC00-CC7F	PCI modem
CCA0-CCBF	USB host controller #1
CCE0-CCFF	USB host controller #2
D000-D01F	USB host controller #3
F100-F16F	Motherboard resource
F178-F17F	Motherboard resource
F200-F23F	Motherboard resource
FD00-FDFF	O2 Micro OZ6912 CardBus controller
FE00-FEFF	O2 Micro OZ6912 CardBus controller

IRQ Assignment Map

Interrupt Channel	Function
IRQ0	System timer
IRQ1	Keyboard
IRQ2	Cascade
IRQ3	IR
IRQ4	COM1 (Serial port)
IRQ5	Reserved for R2 card
IRQ6	FDD
IRQ7	LPT (Parallel port)

IRQ Assignment Map

Interrupt Channel	Function
IRQ8	CMOS/RTC
IRQ9	SCI IRQ used by ACPI bus
IRQ10	SMBUS controller (PIRQB#), Audio (PIRQB#), Modem (PIRQB#), LAN (PIRQTB#), TI1520CardBus (PIRQC#, PIRQG#),
IRQ11	USB1.1(PIRQD#, PIRQH#), VGA (PIRQA#), 802.11b (PIRQF#, PIRQE#), IEEE1934(PIRQF#)
IRQ12	PS/2 device
IRQ13	Math processor
IRQ14	IDE primary channel
IRQ15	IDE secondary channel

DMA Channel Assignment

DMA Channel	Function
DRQ0	Reserved
DRQ1	Reserved
DRQ2	FDD
DRQ3	Reserved
DRQ4	DMA controller
DRQ5	Reserved
DRQ6	Reserved
DRQ7	Reserved

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

BIOS Utility
<p>System Information</p> <p>Basic System Settings</p> <p>Startup Configuration</p> <p>Onboard Device Configuration</p> <p>System Security</p> <p>Loading Default Settings</p>
<p>↑↓ = Move highlight bar, Enter = Select, Esc = Exit</p>

Navigating the BIOS Utility

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

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

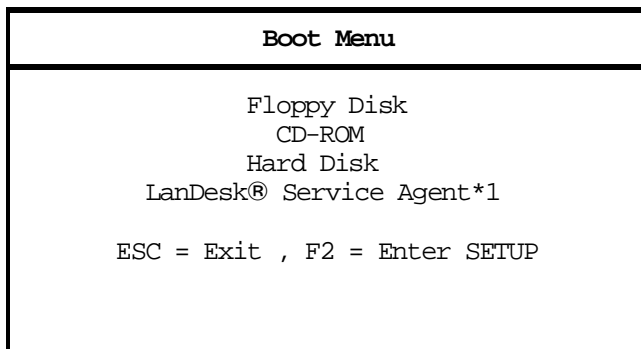
Within a menu, navigate through the BIOS Utility by following these instructions:

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

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

Multi-Boot Menu

Users can press F12 to access the Multi Boot Selection Menu. In this menu, users can boot device without entering BIOS SETUP utility.



NOTE: If users disable "Boot from LAN" option in BIOS SETUP Utility, then the LAN Desk Service Agent will not appear.

System Information

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

System Information	
CPU Type & Speed	Pentium 4 933MHz
Floppy Disk Drive	1.44MB 3.5-inch
Hard Disk Drive	XXXXXMB
HDD Serial Number	XXXXXXXXXXXXXXXXXXXX
System with	XXXROM Attached
System BIOS Version	V3.5 R01-A04
VGA BIOS Version	XXXXXXXXXXXXXXXXXXXX
Memory Size	128MB
Video RAM Size	1MB
LAN Device	Exist (MAC Address = XX:XX:XX:XX:XX:XX)
↑↓ = Move highlight bar, ←→ = Change Setting, F1 = Help	

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

The following table describes the information in this screen.

Parameter	Description
CPU Type & Speed	Describes the type and speed of CPU installed in the system.
Floppy Disk Drive	Shows the floppy disk information.
Hard Disk Drive	Shows the size or capacity of the hard disk.
HDD Serial Number	Shows the serial number of the hard disk.
System with	The system will automatically detect that the media type is CD-ROM. DVD ROM, CD-RW or Combo Drive.
System BIOS Version	Shows the system BIOS version.
VGA BIOS Version	Shows the video graphics accelerator BIOS version.
Memory Size	Shows the total memory size used by the system
Video RAM Size	Video RAM allocated from main memory size
LAN Device	Shows the status of LAN device. Displays the MAC address of LAN device existed. If the device does not exist, this entry should be invisible.

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

Basic System Settings

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

Basic System Settings		Page 1/1
Date -----	[Mon Aug 28, 2001]	
Time -----	[20:39:33]	
↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help		

The following table describes the parameters in this screen.

Parameter	Description	Format
Date	Sets the system date.	DDD MMM DD, YYYY (day-of-the-week month day, year)
Time	Sets the system time.	HH:MM:SS (hour:minute:second)

Startup Configuration

The Startup Configuration screen contains parameter values that define how your computer behaves on system startup.

Startup Configuration	
Boot Display	[Both]/[Auto]
Screen Expansion	[Enabled]/[Disabled]
Resume On LAN Access	[Enabled]/[Disabled]
Hotkey Beep	[Enabled]/[Disabled]
Fast Boot	[Enabled]/[Disabled]
Boot from LAN	[Enabled]/[Disabled]
CPU Throttling	[Automatic]/[Smart Mode]
Boot Drive Sequence:	
1 st	[Floppy]
2 nd	[CD-ROM]
3 rd	[Hard Disk]
4 th	[LANdesk ® Service Agent]
↑↓ = Move highlight bar, ←→ = Change Setting, F1 = Help	

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





Parameter	Description	Options
Boot Display	Sets the display device on boot-up. When set to Auto , the computer automatically determines the display device. If an external display device (e.g., monitor) is connected, it becomes the boot display. When set to Both, the computer outputs to both the LCD and the external display if one is connected.	Both or Auto
Screen Expansion	Expand the screen on the graphic/text mode. When it is disabled, the graphic/text mode expansion function is disabled and the graphic/text image will be centralized on the LCD. If it is enabled, the graphic/text image will be expanded to the full LCD screen.	Enabled or Disabled
Resume On LAN Access	When enabled, the computer will wake up from Sleep state if any LAN access to it occurs.	Enabled or Disabled
Hotkey Beep	When enabled, the computer makes a beep when a hot key (key combination) "Fn+[F4]" is pressed.	Enabled or Disabled
Fast Boot	When the flag is set, the ACPI BIOS will communicate with the BIOS to decide the whether the next POST is Fast or Diagnostic.	Enabled or Disabled
Boot from LAN	When enabled, remote host with appropriate boot image can boot from this computer.	Enabled or Disabled

Parameter	Description	Options
CPU Throttling	Selects the CPU power policy. This function decreases the CPU power by 50%. In automatic mode, BIOS will auto detect ACIn/Out. If AC-Out, BIOS will enable throttling. If AC-in, BIOS will Auto disable it. In smart mode, BIOS will always execute throttling function.	Automatic or Smart Mode
Boot Drive Sequence	Specifies the order in which the computer starts up from. Please refer to below section.	1st: Floppy Disk 2nd: CD-ROM/ DVD-ROM 3rd: Hard Disk 4th: LANDesk [®] Service Agent
Floppy Disk Drive	Enables boot-up from the floppy drive, if selected as the first option. The computer attempts to boot from the floppy disk drive (looks for a bootable floppy) before following the boot sequence specified in the Boot Drive Sequence.	
CD-ROM/ DVD-ROM	Enables boot-up from the optical drive, if selected as the first option. The computer attempts to boot from the CD or DVD drive (looks for a bootable CD) before following the boot sequence specified in the Boot Drive Sequence.	
Hard Disk	Enables boot-up from the hard disk.	
LANDesk [®] Service Agent	Boot on LAN disabled.	

Setting the Boot Drive Sequence

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

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

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

Onboard Device Configuration

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

The Onboard Device Configuration screen assigns resources to basic computer communication hardware.

Onboard Device Configuration	
Serial Port.....	[Enabled]/[Disabled]
Base Address.....	[3F8h]/[2F8h]/[3E8h]/[2E8h]
IRQ.....	[3]/[4]
IrDA FIR.....	[Enabled]/[Disabled]
Base Address.....	[2F8h]/[3F8h]/[3E8h]/[2E8h]
IRQ.....	[3]/[4]
DMA	[3]/[1]/[0]
Parallel Port.....	[Enabled]/[Disabled]
Base Address.....	[378h]/[278h]/[3BCh]
IRQ.....	[5]/[7]
Operation Mode.....	[ECP]/[Bi-directional]/[Standard]
ECP DMA Channel.....	[1]/[3] ^{Note1*}
Default Wireless Antenna.....	[Disabled]/[Wireless LAN]/[Bluetooth]
↑↓ = Move highlight bar, ←→ = Change Setting, F1 = Help	

NOTE: This option item should be [---] if the user chooses the Bi-directional and Standard mode. When the device is disabled, all the subsystems will be showed with [---].

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

Parameter	Description	Options
Serial Port	Enables or disables the serial port. The serial port is a PnP device. Enabled/Disabled setting won't affect the Windows Device Manager setting of the serial port. When enabled, you can set the base I/O address and interrupt request (IRQ) of the serial port.	Enabled or Disabled 3F8h , 2F8h, 3E8h or 2E8h 4 or 3
IrDA FIR	Enables or disables the IrDA FIR. The IrDA FIR is a PnP device. Enabled/Disabled setting won't affect the WinMe Device Manager setting of the IrDA FIR. When enabled, you can set the base I/O address and interrupt request (IRQ) for the IrDA FIR. The direct memory access (DMA) channel of the IrDA FIR is set to 3.	Enabled or Disabled 2F8h , 3E8h, 3F8h or 2E8h 3 3

Parameter	Description	Options
Parallel Port	Enables or disables the parallel port. The parallel port is a PnP device. Enabled/Disabled setting won't affect the Windows Device Manager setting if the parallel port. When enabled, you can set the base I/O address, interrupt request (IRQ) and operation mode of the parallel port. If operation mode is set to ECP, the direct memory access (DMA) channel of the parallel port is set to 1.	Enabled or Disabled 378h , 3BCh, or 278h 7 or 5 Bi-directional , EPP, ECP or Standard 1 or 3
Default Wireless Antenna	Select default wireless device when the system boot. User may select preferred device as default wireless device, or disable all wireless device to prevent unnecessary RF signals. For models without bluetooth, wireless LAN or not equipped with wireless devices, these items should be invisible.	Disabled , Wireless LAN, Bluetooth

System Security

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




System Security	
Setup Password	[None]/[Present]
Power On Password	[None]/[Present]
Hard Disk Password	[None]/[Present]
Processor Serial Number	[Enabled]/[Disabled]
↑↓ = Move Highlight Bar, ←→ = Change Setting, F1 = Help	

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

Parameter	Description	Options
Setup Password	When set, this password protects the computer and the BIOS Utility from unauthorized entry. See the following section for instructions on how to set a password.	None or Present
Power-on Password	When set, this password protects the computer from unauthorized entry during boot-up. See the following section for instructions on how to set a password.	None or Present
Hard Disk Password	When set, this password protects the hard disk from unauthorized access. See the following section for instructions on how to set a password.	None or Present
Processor Serial Number	A lot of the literature available on the serial number suggests that it should be used to encrypt and decrypt data sent to and from e-commerce sites.	Disabled or Enabled

Setting a Password


Follow these steps:

1. Use the cursor / keys to highlight a Password parameter (Setup, Power-on or Hard Disk) and press the  key. The password box appears:





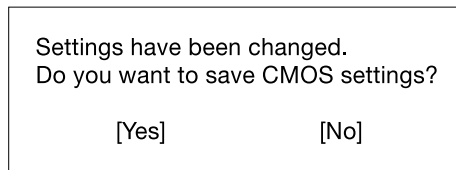
2. Type a password. The password may consist of up to eight characters (A-Z, a-z, 0-9).

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

3. Press . Retype password to verify your first entry and press .



4. After setting the password, the computer automatically sets the chosen password parameter to Present.
5. Press  to return to the main menu.
6. Press . The following dialogue box appears.





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


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

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

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

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



Setup Password


Type the Setup Password and press  to access the BIOS Utility.

2. When the Power-on Password is set, the following prompt appears at boot-up.

Power-on Password





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

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

HDD Password







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


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

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

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




To remove a password, use the cursor / keys to highlight a Password parameter (Setup, Power-on or Hard Disk) and press the / keys to select None

Load Default Settings

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

Do you want to load default settings?

[Yes] [No]

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

BIOS Flash Utility

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

- ☐ New versions of system programs
- ☐ New features or options

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

NOTE: Do not install memory-related drivers (XMS, EMS, DPMS) when you use IFlash.

NOTE: This program contains a readme.txt file. This readme.txt file will introduce on how to use IFlash utility.

System Utility Diskette

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

1. Panel ID Utility
2. Thermal & Fan Utility
3. Mother Board Data Utility

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

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

System Diagnostic Diskette

IMPORTANT: ¹The diagnostics program here that we used is called PQA (Product Quality Assurance) and is provided by Headquarters. You can utilize it as a basic diagnostic tool. To get this program, you can find it in the service CD kit.

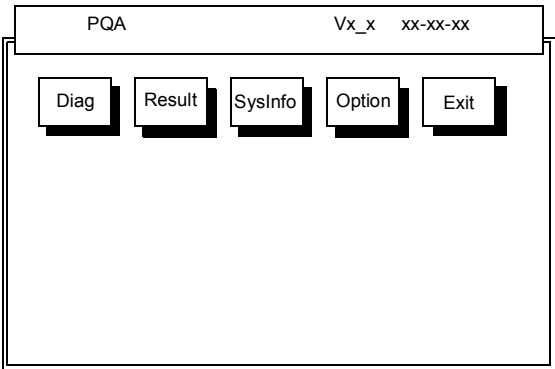
To better fit local service requirements, your regional office MAY have other diagnostic program.

Please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

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

¹ New added description. Please pay attention to it.

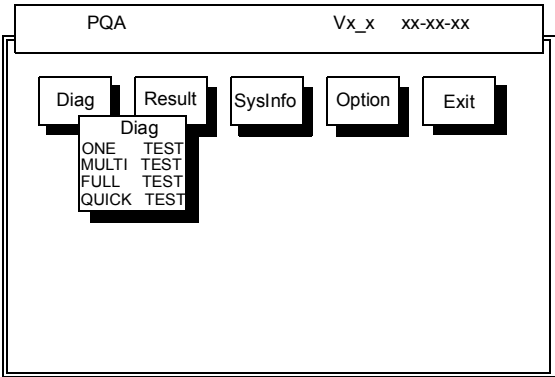
Running PQA Diagnostics Program



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

The Diag option lets you select testing items and times.

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



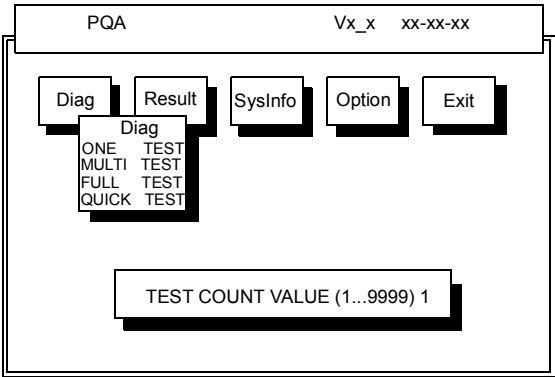
One Test performs a single test and Manual checks the selected test items in sequence.

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

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

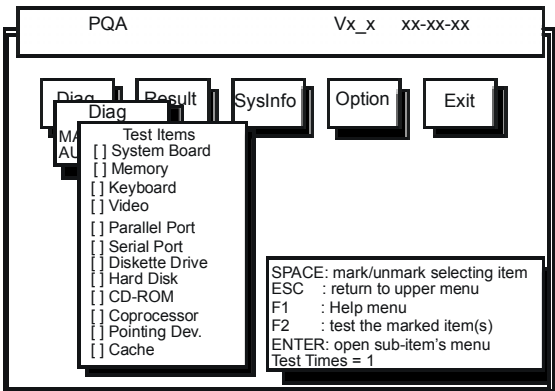
Quick Test performs all test items quickly for your system.

The screen below appears if you select Multi Test.



Specify the desired number of tests and press **ENTER** .

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



Move the highlight bar from one item to another. Press Space to enable or disable the item. Press **ENTER** to view the available options of each selected item. Press **ESC** to close the submenu.

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

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

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

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

Machine Disassembly and Replacement

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

To disassemble the computer, you need the following tools:

- ☐ Wrist grounding strap and conductive mat to prevent electrostatic discharge
- ☐ Flat-bladed screwdriver
- ☐ Phillips screwdriver
- ☐ Hexagonal screwdriver
- ☐ Plastic stick

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

General Information

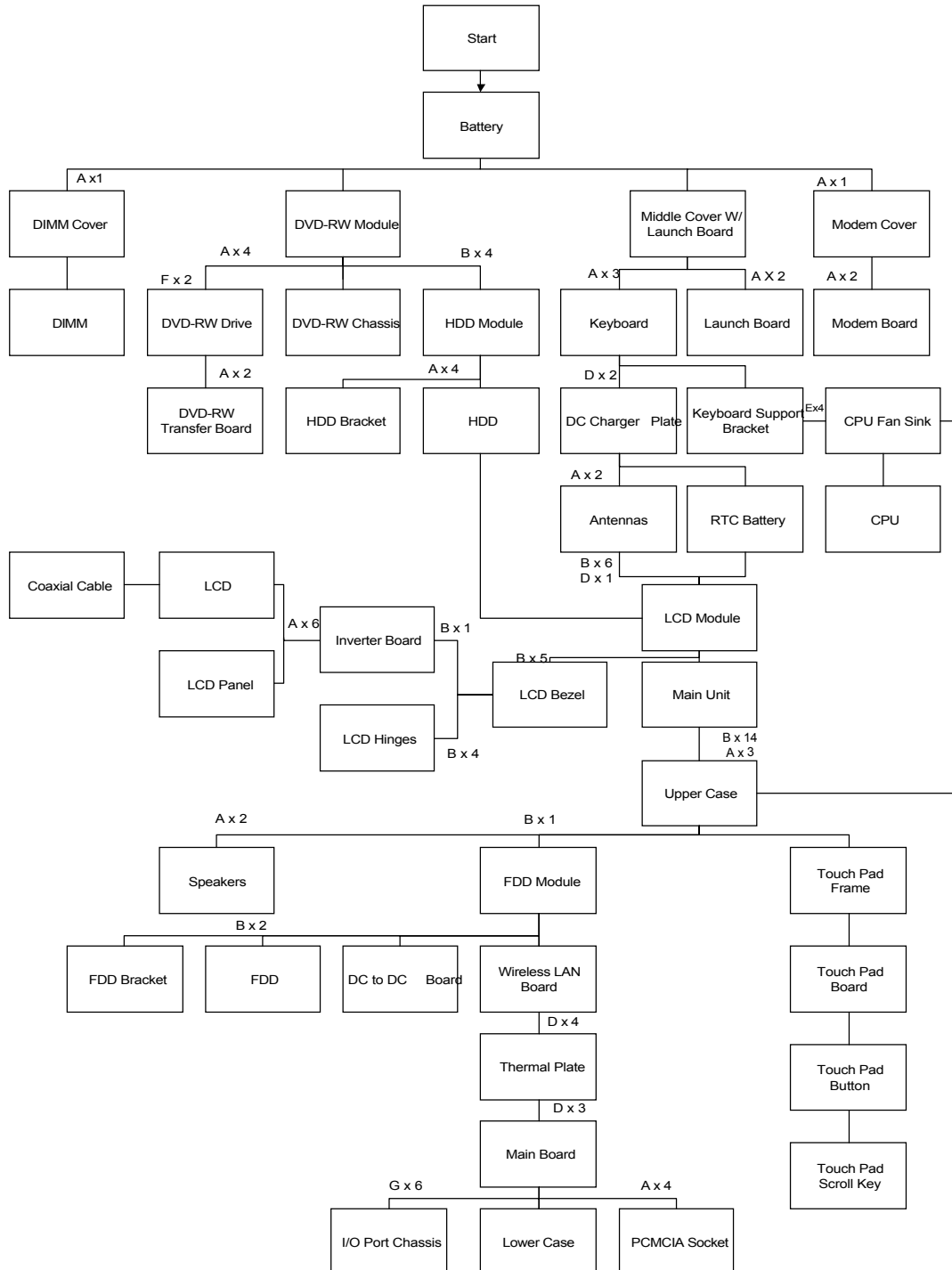
Before You Begin

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 graphical 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 system board, you must first remove the keyboard, then disassemble the inside assembly frame in that order.



Screw List

Item	Description
A	SCREW M2*L4
B	SCREW M2.5XL6
C	SCREW M3.0*L4
D	SCREW M2.5*5
E	CPU Spring Screw
F	T1.7*3
G	No Washer Screw

Removing the Battery Pack

1. To remove the battery pack, push the battery latches.
2. Release the battery pack out of the machine.

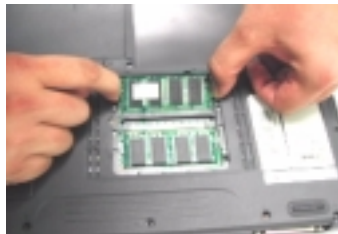


Removing the Extended Memory

1. See “Removing the Battery Pack” on page 49
2. To remove the extended memory, first loosen the screw as shown and then lift the extended memory cover upward.
3. Slide the DIMM cover out and remove it from the main unit.



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



Removing the Modem Board

1. See “Removing the Battery Pack” on page 49
2. To remove the modem board from the machine, first release the screw from the modem cover.



3. Remove the two screws as shown here.



4. Lift the modem and turn it over carefully. Disconnect the modem cable from the modem then remove it from the system.



Removing the DVD-ROM Drive Module

1. See “Removing the Battery Pack” on page 49
2. Push the CD-RW latch forward, then slide the CD-RW drive out from the machine at the same time.



Disassembling the DVD-ROM Drive Module

1. See “Removing the Battery Pack” on page 49
2. See “Removing the DVD-ROM Drive Module” on page 52
3. Remove the four screws as shown here, then detach the bracket from the DVD-RW drive.

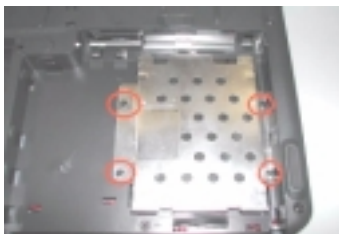


4. Remove the two screws as shown, then detach the CD-RW bay transfer board from the DVD-RW drive.

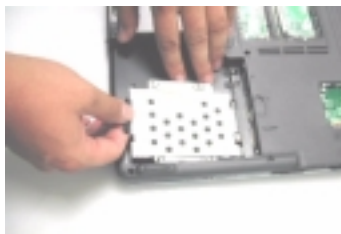


Removing the Hard Disk Drive Module

1. See “Removing the Battery Pack” on page 49
2. See “Removing the DVD-ROM Drive Module” on page 52
3. Remove the four screws as shown here.



4. Then carefully remove the hard disk drive module from the machine.



Disassembling the Hard Disk Drive Module

1. See “Removing the Battery Pack” on page 49
2. See “Removing the DVD-ROM Drive Module” on page 52
3. See “Removing the Hard Disk Drive Module” on page 53
4. Remove the four screws from both sides of the hard disk drive module, then slide the hard disk drive out from the bracket .



Disassembling the LCD

To avoid the risk of LCD damage, we suggest you to place a protected film on the LCD surface before disassembly.

Removing the Middle Cover

1. See “Removing the Battery Pack” on page 49
2. To remove the middle cover, push up the middle cover gently from the main unit, then pull the middle cover up and turn it over.



3. Disconnect the launch cable from the launch board to remove the middle cover.



4. Remove the two screws as shown and then remove the launch board from the middle cover.



Removing the Keyboard

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. To remove the keyboard, first remove the three screws as shown here.



4. Lift the keyboard upward and then carefully place it on the upper case.

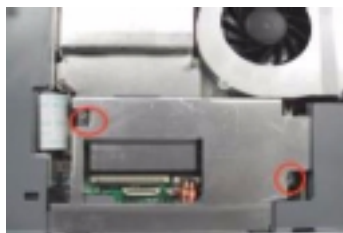


5. Disconnect the keyboard cable from the main board, then carefully remove the keyboard from the main unit.



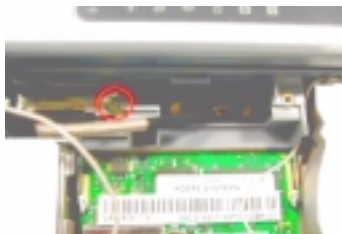
Removing the DC-DC Charger Plate

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. Remove the two screws as shown here, and then detach the DC-DC charger plate from the main board.



Removing the LCD Module

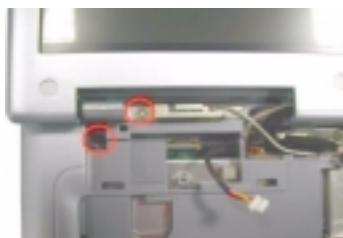
1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. Remove the screw and disconnect the LCD coaxial cable from the main board.



6. Disconnect the inverter cable from the main board.



-
7. Remove four screws in front and two screws on the rear side to remove the LCD from the main unit.



NOTE: Image showing two screws on the rear side of the unit will be posted once available.



Removing LCD Bezel

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. Remove five LCD plugs and then the five screws from the LCD bezel.



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



Removing the Inverter/LED Board

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “Disassembling the Upper Case” on page 62
7. To remove the inverter board, remove the screw from the inverter.



8. Disconnect the cable from the inverter.



9. Remove the inverter from the system.

Removing the LCD

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “Disassembling the Upper Case” on page 62
7. See “Removing the Inverter/LED Board” on page 59
8. Remove six screws from both sides of the LCD.



9. Then remove the LCD from the LCD panel.



10. Gently remove the ESD tape and disconnect the LCD coaxial cable from the LCD.



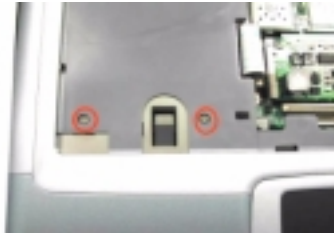
Removing the RTC Battery

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. Remove the RTC Battery from the main board gently.



Disassembling the Upper Case

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. To remove the upper case, first remove the two screws from the front side, and then remove the fourteen screws from the backside of the main unit.



NOTE: Image showing fourteen screws from the backside of the main unit will be posted once available.

7. Remove the touch pad cable from the connector carefully.

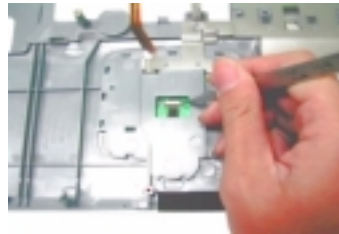


8. Then detach the upper case from the main unit carefully.

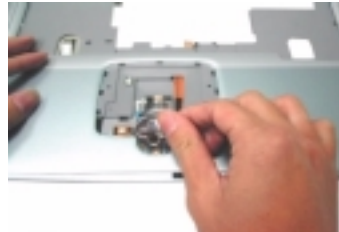
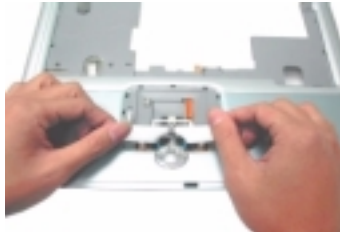


Removing the Touch Pad

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. Remove the touch pad cable from the connector carefully
8. Snap off the touch pad frame, then remove the touch pad board.



9. Remove the touch pad button and the scroll key from the upper case.



Disassembling the Lower Case

Removing the Keyboard Support Bracket

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. Remove the keyboard support bracket out from the main unit carefully.



Removing the CPU Fan Sink

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. Remove the four screws as shown.
8. Remove the CPU fan sink from the main board, and the disconnect the CPU fan sink cable from the main board



9. Release the lever from the CPU socket, and the remove the CPU from the socket carefully.



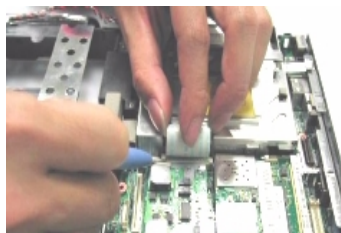
Disassembling the Fan

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. See “Removing the CPU Fan Sink” on page 64.
8. Remove the three screws as shown here and then remove the CPU fan sink.



Removing the Floppy Disk Drive Module

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. To remove the floppy disk drive module, first remove the screws.
8. Disconnect the floppy disk FPC cable from the main board and remove it from the main unit carefully.



Disassembling the Floppy Disk Drive Module

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. See “Removing the Floppy Disk Drive Module” on page 65”

-
8. To disassemble the floppy disk drive from the disk drive module, first remove the two screws as shown here.



9. Detach the floppy disk from the floppy disk drive bracket and then tear off the floppy disk drive FPC cable gently from the floppy disk drive.



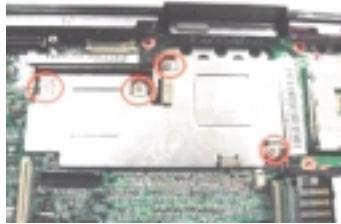
Removing the Wireless LAN Board

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. See “Removing the Floppy Disk Drive Module” on page 65
8. Push out the latches on both sides of the socket and pull the Wireless LAN board out from the socket. gently.



Removing the Thermal Plate

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. See “Removing the Floppy Disk Drive Module” on page 65
8. See “Removing the Wireless LAN Board” on page 66
9. Remove the four screws as shown here and then remove the thermal plate from the main board gently.



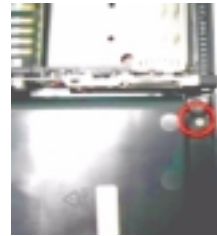
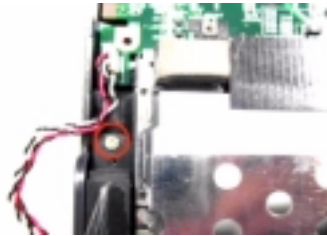
Removing the DC to DC Board

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. See “Removing the Floppy Disk Drive Module” on page 65
8. Pull the DC to DC board out from the main board gently.



Removing the Speakers

1. See “Removing the Battery Pack” on page 49
2. See “Removing the Middle Cover” on page 55
3. See “Removing the Keyboard” on page 56
4. See “Removing the DC-DC Charger Plate” on page 57
5. See “Removing the LCD Module” on page 57
6. See “See “Removing the Battery Pack” on page 49” on page 62
7. To remove the speakers, first disconnect the cable from the main board, and then remove the two screws as shown.



8. Remove the speakers from the main board gently.



Removing the Main Board

1. See “Removing the Battery Pack” on page 49
2. See “Disassembling the DVD-ROM Drive Module” on page 52
3. See “Disassembling the Hard Disk Drive Module” on page 54
4. See “Removing the Middle Cover” on page 55
5. See “Removing the Keyboard” on page 56
6. See “Removing the DC-DC Charger Plate” on page 57
7. See “Removing the LCD Module” on page 57
8. See “See “Removing the Battery Pack” on page 49” on page 62
9. See “Removing the Floppy Disk Drive Module” on page 65
10. See “Removing the Thermal Plate” on page 67
11. Remove the four screws as shown, then remove the main board from the lower case gently.



Removing the PCMCIA

1. See “Removing the Battery Pack” on page 49
2. See “Disassembling the DVD-ROM Drive Module” on page 52
3. See “Disassembling the Hard Disk Drive Module” on page 54
4. See “Removing the Middle Cover” on page 55
5. See “Removing the Keyboard” on page 56
6. See “Removing the DC-DC Charger Plate” on page 57
7. See “Removing the LCD Module” on page 57
8. See “See “Removing the Battery Pack” on page 49” on page 62
9. See “Removing the Floppy Disk Drive Module” on page 65
10. See “Removing the Thermal Plate” on page 67
11. See “Removing the Wireless LAN Board” on page 66
12. To remove the PCMCIA slot, first remove the four screws as shown, and then remove the PCMCIA slot from the main board carefully.



Troubleshooting

Use the following procedure as a guide for computer problems.

NOTE: The diagnostic tests are intended to test only our products. Non-our branch 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 73.
POST does not complete. No beep or error codes are indicated.	"Power-On Self-Test (POST) Error Message" on page 76 "Undetermined Problems" on page 84
POST detects an error and displayed messages on screen.	"Error Message List" on page 77
The diagnostic test detected an error and displayed a FRU code.	"System Diagnostic Diskette" on page 42
Other symptoms (i.e. LCD display problems or others).	"Power-On Self-Test (POST) Error Message" on page 76
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to "Power-On Self-Test (POST) Error Message" on page 76 "Intermittent Problems" on page 83 "Undetermined Problems" on page 84

System Check Procedures

External Diskette Drive Check

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

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

Do the following to select the test device. See “System Diagnostic Diskette” on page 42 for details.

1. Boot from the diagnostics diskette and start the PQA program (see “System Diagnostic Diskette” on page 42).
2. Go to the diagnostic Diskette Drive in the test items.
3. Press **F2** in the test items.
4. Follow the instructions in the message window.

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

External CD-ROM Drive Check

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

Do the following to select the test device:

1. Boot from the diagnostics diskette and start the PQA program (refer to “System Diagnostic Diskette” on page 42).
2. Go to the diagnostic CD-ROM in the test items.
3. Press **F2** in the test items.
4. Follow the instructions in the message window.

If an error occurs, 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 system board.

Keyboard or Auxiliary Input Device Check

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

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

If the keyboard cable connection is correct, run the Keyboard Test. See “System Diagnostic Diskette” on page 42 for details.

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

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


The following auxiliary input devices are supported by this computer:

- ☐ Numeric keypad
- ☐ External keyboard

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

Memory Check

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

1. Boot from the diagnostics diskette and start the PQA program (please refer to “System Diagnostic Diskette” on page 42).
2. Go to the diagnostic memory in the test items.
3. Press  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:

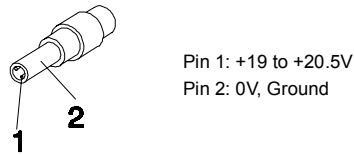
1. Remove the battery pack.
2. Connect the power adapter and check that power is supplied.
3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

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

- ☐ “Check the Power Adapter” on page 74
- ☐ “Check the Battery Pack” on page 75

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 84.
 - ☐ 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 75.

Check the Battery Pack

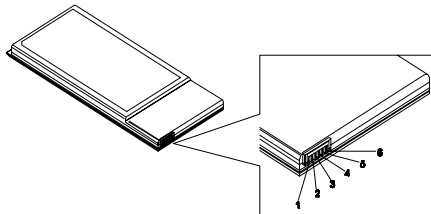
To check the battery pack, do the following:

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 84.

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

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

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

Index of Error Messages

Error Code List

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

Error Message List

Error Messages	FRU/Action in Sequence
Failure Fixed Disk	Reconnect hard disk drive connector. "Load Default Settings" in BIOS Setup Utility. Hard disk drive System board
Stuck Key	see "Keyboard or Auxiliary Input Device Check" on page 73.
Keyboard error	see "Keyboard or Auxiliary Input Device Check" on page 73.
Keyboard Controller Failed	see "Keyboard or Auxiliary Input Device Check" on page 73.
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 72.
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility See "External Diskette Drive Check" on page 72.
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 73. 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 73. Reconnect the LCD connector Hard disk drive LCD inverter ID LCD cable LCD Inverter LCD System board
No beep, power-on indicator turns on and LCD is blank. But you can see POST on an external CRT.	Reconnect the LCD connectors. LCD inverter ID LCD cable LCD inverter LCD System board
No beep, power-on indicator turns on and a blinking cursor shown on LCD during POST.	Ensure every connector is connected tightly and correctly. System board
No beep during POST but system runs correctly.	Speaker System board

Error Beep List

Code	Beeps	Description
00h	Two long beeps, one short beep, and then one long beep	Success
F1h	1 long, 1 short beeps	BIOS file size mismatch
F2h	1 long, 2 short beeps	BIOS file reading error
F3h	3 short beeps	Model ID mismatch
E1h	2 long, 1 short beeps	Flash memory erase error
E2h	2 long, 2 short beeps	Flash memory programming error (include failure on comparison)
D1h	2 short beeps	Floppy drive not installed

Index of Symptom-to-FRU Error Message

LCD-Related Symptoms

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

Indicator-Related Symptoms

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

Power-Related Symptoms

Symptom / Error	Action in Sequence
Power shuts down during operation	Power source (battery pack and power adapter). See "Power System Check" on page 73. 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 73. 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 73. 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 75. 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 25. 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 25. LCD cover switch System board
The system doesn't resume from hibernation mode.	See "Hibernation Mode" on page 25. Hard disk connection board Hard disk drive System board
The system doesn't resume from standby mode after opening the LCD.	See "Standby Mode" on page 25. 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.	See "Thermal & Fan Utility" on page 41. Reconnect hard disk/CD-ROM drives. Hard disk connection board System board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequence
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute "Load Default Settings", then reboot system. Reconnect hard disk/CD-ROM/diskette drives.
External display does not work correctly.	Press Fn+F5, LCD/CRT/Both display switching See "System Diagnostic Diskette" on page 42. System board
USB does not work correctly	See "System Diagnostic Diskette" on page 42 System board
Print problems.	Ensure the "Parallel Port" in the "Onboard Devices Configuration" of BIOS Setup Utility is set to Enabled. Onboard Devices Configuration Run printer self-test. Printer driver Printer cable Printer System Board
Serial or parallel port device problems.	Ensure the "Serial Port" in the Devices Configuration" of BIOS Setup Utility is set to Enabled. Device driver Device cable Device System board

Keyboard/Touchpad-Related Symptoms

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

Modem-Related Symptoms

Symptom / Error	Action in Sequence
Internal modem does not work correctly.	See "System Diagnostic Diskette" on page 42. 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 84.

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 73):

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-our branch devices
 - ☐ Printer, mouse, and other external devices
 - ☐ Battery pack
 - ☐ Hard disk drive
 - ☐ DIMM
 - ☐ CD-ROM/Diskette drive Module
 - ☐ PC Cards
4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRU one at a time. Do not replace a non-defective FRU:
 - ☐ System board
 - ☐ LCD assembly

Index of AFlash BIOS Error Message

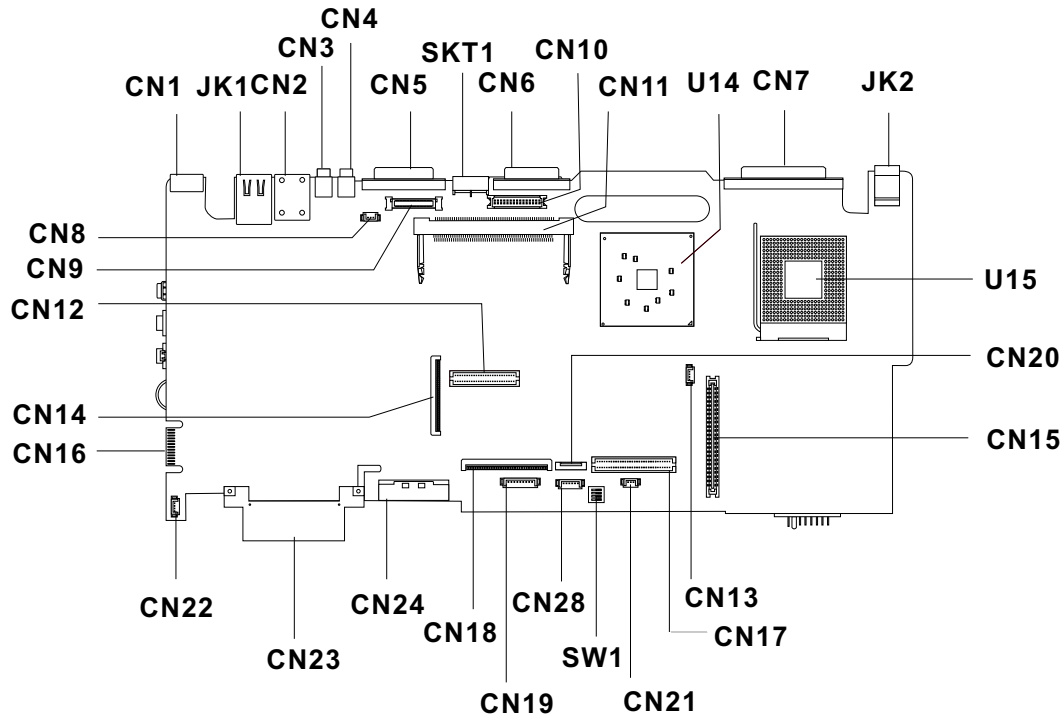
Error Message	Action in Sequence
Hardware Error	See "System Diagnostic Diskette" on page 42
VPD Checksum Error	Reboot the system and then retest with this diskette.
BIOS Update Program Error	Turn off the power and restart the system.
System Error	Make sure this AFlash BIOS diskette for this model.
Without AC adapter	make sure to connect AC adapter
Battery Low	make sure to install a highly charged battery, and reboot system.

Index of PQA Diagnostic Error Code, Message

Error Code	Message	Action in Sequence
16XXX	Backup battery error	Backup battery
01XXX	CPU or main board error	Reload BIOS default setting. System board
02XXX	Memory error	DIMM System board
03XXX	Keyboard error	Reset Keyboard Keyboard System board
04XXX	Video error	System board
05XXX	Parallel Port error	System board
06XXX	Serial port or main board error	System board
07XXX	Diskette drive error	Diskette drive System board
08XXX	Hard disk error	Reload BIOS default setting Hard disk System board
09XXX	CD-ROM error	Reset CD-ROM cable CD-ROM drive System board
10XXX	Co-processor error	System board
11XXX	Pointing device error	Reset Keyboard Keyboard System board
12XXX	Cache test error	System board

Jumper and Connector Locations

Top View



PCB No. : 01212-2

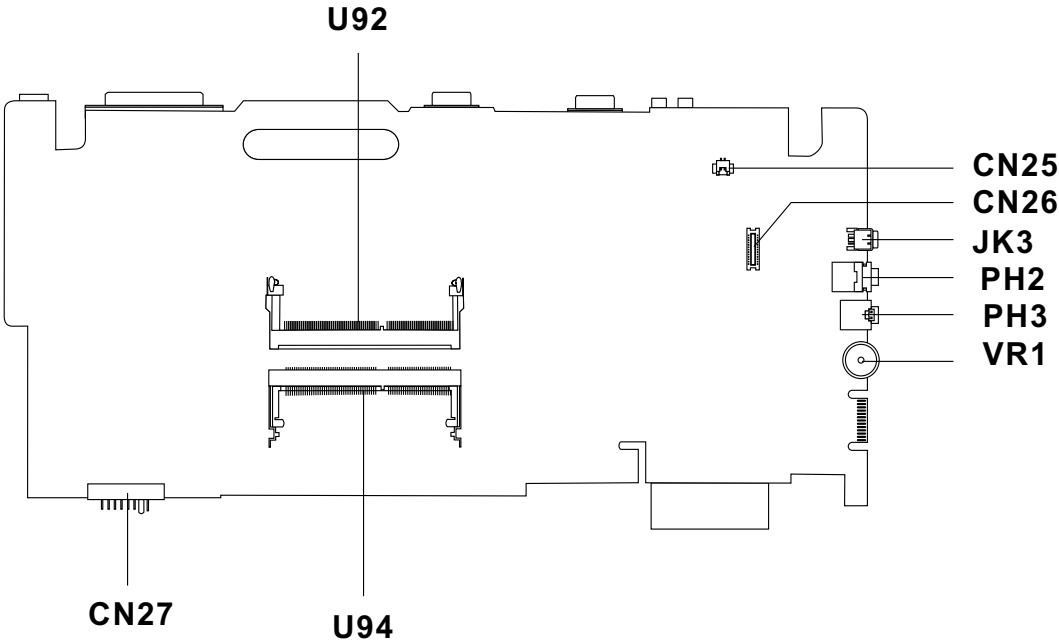
CN1	PS/2 keyboard/mouse port	CN17	DC to DC connector
CN2	Modem Port	CN18	Keyboard connector
CN3	USB port	CN19	Bluetooth connector
CN4	USB port	CN20	Touchpad connector
CN5	Serial Port	CN21	RTC connector
CN6	External Display Port	CN22	Speaker connector
CN7	Parallel port	CN23	Primary IDE connector
CN8	Launch board connector	CN24	Secondary IDE connector
CN9	LCD monitor connector	CN28	FIR connector
CN10	Inverter Connector	JK1	LAN port
CN11	Mini PCI connector	JK2	DC-in Port
CN12	DC to DC connector	U14	MCH
CN13	Fan connector	U15	CPU socket
CN14	Floppy Diskette Drive Connector	SKT1	S-Video connector
CN15	Cardbus connector	SW1	Switch
CN16	Dubug board connector		

SW1 Settings

PIN	Setting
Switch 1-1	ON: Disable password check OFF: Enable password check
Switch 1-2	ON: Enable BootBlock erasable OFF: Disable BootBlock erasable
Switch 1-3 / Switch 1-4	OFF, ON: Disabled OFF, OFF: Disabled ON, OFF: Disabled ON, ON: Disabled

NOTE: All switches default setting are "OFF".

Bottom View



CN25	Modem Card Cable Connector	JK3	IEEE 1394 port
CN26	Audio Connector	PH2	Speaker-out port
CN27	Battery connector	PH3	Line-in port
U92	Memory slot	VR1	Volume controller
U94	Memory slot		

FRU (Field Replaceable Unit) List

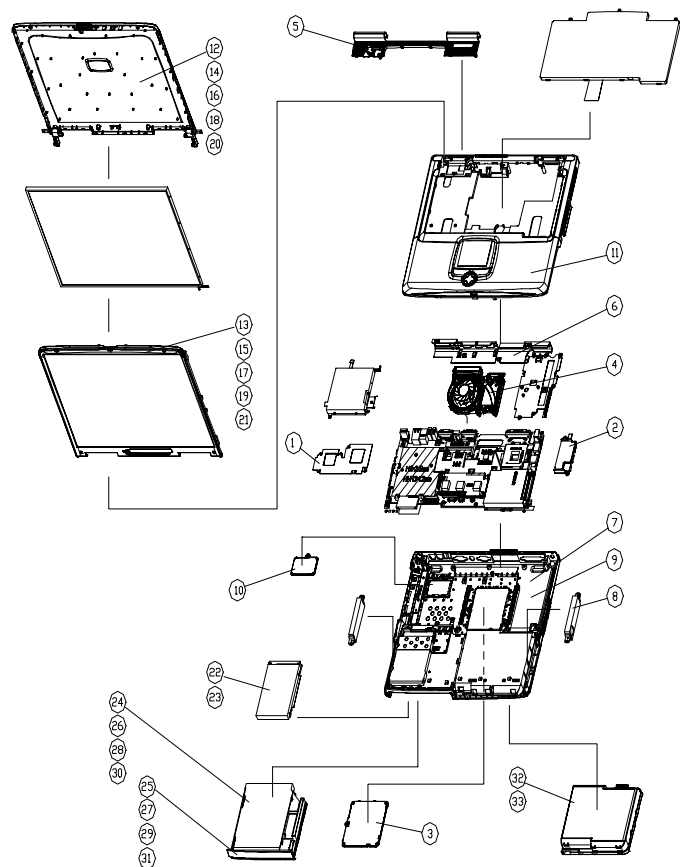
This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of the product. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).







IMPORTANT: Please note WHEN ORDERING FRU PARTS, that 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 in the printed Service Guide. For -AUTHORIZED SERVICE PROVIDERS, your office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional 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 best to dispose it, or follow the rules set by your regional office on how to return it.






NOTE: The number indicates the location shown on exploded diagram or “NS” indicates “Not shown” on it.







Exploded Diagram



Picture	No.	Partname	Description
CPU/Processor			
	NS	CPU WILL 1.7 G/400FSB/ 255K	IC CPU WILL1.7G/400FSB/ 256O
Memory			
	NS	SODIMM 128M M470L1624BT0-CB0	SODIMM 128M M470L1624BT0-CB0
LCD			
	NS	LCD 14" XGA B141XN04 V.2/4XXX	LCD 14" XGA B141XN04 V.2/4XXX
HDD/ Hard Disk Drive			
	NS	HDD 20G IBM/IC25N020ATCS H32687	HDD 20G IBM IC25N020ATCS H32687
Heatsink			
	04	CPU HEAT PIPE	ASSEMBLY CPU HEAT-PIPE
Keyboard			
	NS	KEYBOARD DARFON NSK-AB00J JAPAN	KB DARFON NSK-AB00J JAPANESE





Picture	No.	Partname	Description
Cables			
	NS	MODEM CABLE 2P 55MM	WIRE MDC 2CONN 2P 55MM
	NS	POWER CORD 2PIN 7A 125V JAPAN	CORD T-MARK 125V JAPAN
	NS	INVERTER CABLE	CABLE INVERTER REX
	NS	LCD COAX CABLE 15.1"	CABLE COAXIAL 15.1" LCD XGA
	NS	FDD FPC CABLE	CABLE FDD FPC H2
	NS	LAUNCH BOARD CABLE	CABLE POWER PCB H2

Picture	No.	Partname	Description
Main board			
	NS	MAINBOARD W/O CPU	H2 PIV MB2 W/O CPU W/32MB VRAR
Boards			
	NS	MODEM BOARD 56K AMBIT/ T60M301.01	MODEM 56K MDC AMBIT/ T60M301.01
	NS	DC TO DC BOARD	H2 DC TO DC BOARD
	NS	INVERTER BOARD 15.1" T62I194.02	INVERTER 15.1" T62I194.02
	NS	LAUNCH BOARD	H2 LAUNCH BOARD
	NS	TOUCHPAD BOARD	TOUCHPAD SYNAPTICS/TM41PDS-351

Picture	No.	Partname	Description
	NS	CD-ROM BOARD	H2 CD-ROM BOARD
Battery			
	33	RTC BATTERY LI 3V 210MAH	BTY COIN 3V CR2032WKA2 210MAH
	32	BATTERY 12 CELL SONY	ASSY BATTERY PACK SONY 12 CELL
Adapter			
	NS	ADAPTER 90W 19V 2PIN LITEON/PA-1900-06AC	ADT 90W 19V 2P PA-1900-06AC
CD-ROM Drive			
	31	CD-ROM DRIVE 24X MITSUMI/SR243T	CDROM 24X MITSUMI/SR243T W/O B
FDD / Floppy Disk Drive			
	NS	FDD 1.44 MCI/JU-226A033FC	FDD 1.44 MCI/JU-226A033FC W/I

Picture	No.	Partname	Description
Case/Cover/Bracket Assembly			
	05	MIDDLE COVER W/ LAUNCH BOARD	ASSY MIDDLE COVER H2 AOPEN
	23	HDD BRACKET	ASSEMBLY HDD BRACKET
	11	UPPER CASE W/TOUCHPAD	ASSEMBLY UPPER CASE H2 AOPEN
	NS	TOUCHPAD FRAME	FRAME TOUCH PAD H2 AOPEN
	09	LOWER CASE W/ SPK, DIMM & MDC DOOR, FOOT RUBBER	ASSEMBLY LOW CASE H3 AOPEN
	30	CD-ROM CHASSIS	ASSY CD ROM CHASSIS H3 AOPEN

Picture	No.	Partname	Description
	03	DIMM COVER	ASSEMBLY DIMM DOOR H3 AOPEN
	NS	CD-ROM BEZEL	ASSY BEZEL CD ROM MISUMI H3
	NS	FDD BRACKET	BRACKET FDD H2
	20	LCD PANEL W/HINGE	ASSEMBLY PANEL H3
	21	LCD BEZEL	ASSY BEZEL 14" H3
	NS	DC CHARGER PLATE	ASSEMBLY DC CHARGER PLATE
	NS	KEYBOARD BRACKET	BRACKET KEYBOARD H2
	01	CPU HEAT SINK PLATE	ASSEMBLY CPU THERMAL PLATE

Picture	No.	Partname	Description
	02	THERMAL PLATE	ASSEMBLY THERMAL PLATE
		LCD BRACKET 14.1"	BRACKET L 14.1" LCD 150MM H2
		LCD BRACKET 14.1"	BRACKET R 14.1" LCD H2
		HINGE PACK 14/15"	HINGE PACK 14/15"
		MODEM COVER	ASSEMBLY MDC DOOR H3 AOPEN
		BATTERY COVER	COVER BATTERY H3 AOPEN
		TOUCHPAD ESD PLATE	PLATE TOUCH PAD ESD 60MM H2
		I/O BRACKET	ASSEMBLY I/O BRACKET
Speaker			
	08	SPEAKER LEFT 1W 40HM 71DB 50MM	SPK LEFT 1W 40HM 71DB 50MM
Miscellaneous			
	NS	TOUCHPAD BUTTON	BUTTON TOUCH PAD H2 AOPEN
	NS	SCROLL KNOB KEY	KNOB SCROLL KEY H3 AOPEN
	NS	LENS NAME PLATE	LENS NAME PLATE H2
	NS	NAME PLATE	PLATE NAME H3 AOPEN
	NS	SCREW MYLAR CAP/UP	MYLAR BEZEL SCREW H3 AOPEN
	NS	SCREW RUBBER CAP/DOWN	RUBBER SCREW DOWN H3 AOPEN
	NS	RUBBER FOOT	RUBBER FOOT LOWER CASE
Screws			
	NS	SCREW M2.5X6	SCREW M2.5X6
	NS	SCREW TAP FLT M2.5*L18 ZN	SCREW TAP FLT M2.5*L18 ZN
	NS	SCREW M2*4 WAFER NI	SCREW M2*4 WAFER NI
	NS	SCREW TAP FLT M1.7*3*L3 B/ ZN	SCREW TAP FLT M1.7*3*L3 B/ ZN
	NS	SCREWS FOR I/O BRACKET	SCREW HEX NYL I#R-40/O#4-40 L5.5

Picture	No.	Partname	Description
	NS	SCREW M2*3 NYLON 1JMCPC-420325	SCREW M2*3 NYLON 1JMCPC-420325
	NS	SCREW M3*4	SCREW M3X4(86.9A524.4R0)

Test Compatible Components

This computer's compatibility is tested and verified by the internal testing department. All of its system functions is tested under Windows XP environment.

Refer to the following lists for components, adapter cards, and peripherals which have passed these tests. Regarding configuration, combination and test procedures, please refer to the Compatibility Test Report released by the Mobile System Testing Department.

Microsoft Windows XP Environment Test

Item	Specifications
Network Adapters	
Ethernet/10baseT/100baseT	3Com EtherLink III 3C589D 10/100 16 bits Fast EtherLink 3C574-TX Xircom Credit Card Ethernet Adapter 10/100 CE3-10/100 IBM EtherJet PC Card EN533
Token Ring	Madge Smart 16/4 RingNode MK2 20-00 IBM Turbo 16/4 TokenRing PC Card 85H3629
Multifunction Card	D-Link WinConnect 33.6 LAN/FAX Modem DME-336 Xircom Creadit Card 10/100+ Modem 56K CEM56-100
CardBus	3Com Meghertz 10/100 LAN CardBus PC Card 3CCFE575BT Intel EtherExpress PRO/100 Mobile Adapter MBLA3200 Xircom CardBus Ethernet 10/100 CBE 10-/100BTX TDK LAN 10/100BASET-TX CardBus card LAK-CB100X D-Link Fast Ethernet CardBus 10/100mbps DFE-660 Xircom RealPort CardBus 10/100 RBE-100 IBM 10/100 EtherJet CardBus Adapter (32 bit) 25L4855
Others	Lucent Wave LAN IEEE 802.11 PCMCIA Card PC24E-H-FC
Modem Adapters	
Modem (up to 56K)	ActionTec DataLink 56Kbps FAX/Modem 744L1075 IBM 56K Double Jack Modem P/N02K4197 TDK K56Kflex Data/Fax Modem DF5633 Xircom Credit Card Modem 56 CM-56 USR Megahertz 56K Modem, XJ1560
ISDN	IBM ISDN Ethernet PC Card USR Megahertz ISDN 128K CC128ST
I/O Peripheral	
I/O - Display	Acer 211c 72211c ViewSonic PF790 IBM 9514-B04 TFT monitor 9514B03/9514B04 AcerView 76i, 7176i Compaq Color Monitor V70 NEC 20" Color Monitor E1100
I/O - Keyboard	Chicony, keyboard USB KU-8933 IBM Numeric Keypad III 07G0032/79F6408 Compaq Keyboard IBM US English KBD (PS/AT Style) 92G7454/92G7454 Microsoft Natural KBD USB e06401comb Acer 101 keyboard 6311

Item	Specifications
I/O - Mouse	IBM PS/2 Mini Mouse II 07G0033/07G3159 IBM PS/2 Style mouse (Black) 12J3615 Logitech Serial Mouse M-M35 Microsoft Intelli-Mouse PS/2 Microsoft Intelli-Mouse USB FDM-A50 Microsoft Intelli-Mouse Optical X05-48976 Logitech USB Wheel Mouse M-BB4B Logitech MouseMan Wheel USB Comb for DOSV & iMac SM-72UPi Logitech P/S Style Mouse M-S34 Acer Aspire USB mouse Logitech USB Wheel Mouse M-UB48
I/O - Projector	NEC MultiSync MT-1040
I/O - Parallel (Printer)	IBM Network Printer 17 431200X HP LaserJet 6MP EPSON Stylus Color (USB) Canon USB Printer BJC-430J Canon Color Bubble Jet BJC-600 HP Desktop 880C MY95V150B0
I/O - Parallel (Scanner)	HP ScanJet 3300C Color Scanner (USB) MY97712194 AcerScan Prisa 620s
I/O - USB	Sanwa USB HUB (Self Power) USB HUB 4 PORT TI-CHIP W-USB104TI EIZO I. Station USB HUB OFTD0003AA Iomega USB ZIP250 ELECOM USB HUB 4-PORT UH-4S 3COM USB 4 port TI-CHIP Hub 3C19250
I/O - USB (Modem)	Best Data USB 56K V.90 Modem SpeakerPhone USB10032323 USB Blaster Modem 56K V9.0 DE5670
I/O - USB (Ethernet)	BELKIN USB Ethernet adapter F5U111 USB LINKSYS USB Network Adapter USB-10T
I/O - USB (Speaker)	JS USB Digital Speaker J3328 Panasonic USB Digital Speaker EAB-MPC57 AIWA Multimedia Digital Speaker System (USB) SC-UC78
I/O - USB (Joystick)	USB Rockfire Avant Garde Flightstick 81000369 Microsoft SIDEWINDER Precision Pro (USB) 326-00069
I/O - USB Camera	Acer USB Video Capture Kit (00/01) DVC- V6+ Intel Digital Camera IBM PC Camera 51091000854
PCMCIA	
PCMCIA - SCSI	Adaptec SlimSCSI APA-1460 Adaptec 1480A Slim SCSI CB
PCMCIA - ATA	SunDisk ATA 15MB VIPER 170E IBM Travel Kit 340MB MicroDrive XHA27000 IBM Travel Kit 170MB Microdrive XHA26329 Sony Memory Stick (64MB) + PC Card adapter EPSON FLach Packer 6MB
PCMCIA CD-ROM	IBM Portable 20x Speed CD-ROM Drive w/ sound (JP) 1169011/5559-201 Panasonic 20x Portable CD-ROM Player

Item	Specifications
PCMCIA - 1394	Melco IEEE 1394 interface PCMCIA Card Sony DCR TRV-10/ACCKIT M90 1394 Camera w/ Video Capture PC Card LACIE IEEE 1394 Fire Wire Hard Drive BUFFALO IEEE 1394 interface IFC-ILCB/DV CardBus Card

Online Support Information

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

If you are a distributor, dealer, ASP or TPM, please refer your technical queries to your local branch office. 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 CSD Taiwan.

Our website offers you convenient and valuable support resources whenever you need them.

In the Technical Information section you can download information on all of our 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 the International Traveler's Warranty (ITW)
- ☐ Returned material authorization procedures
- ☐ An overview of all the support services we offer, accompanied by a list of telephone, fax and email contacts for all your technical queries.

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

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