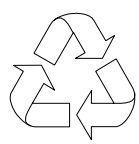
Acer TravelMate 650 Series

Service Guide

Service guide files and updates are available on the ACER/CSD web; for more information, please refer to http://csd.acer.com.tw



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Revision History

Please refer to the table below for the updates made on TravelMate 650 service guide.

Date	Chapter	Updates
2003/06/17	Chpater One p. 52	Change step 4 from bluetooth antenna to left wireless LAN antenna.
	Chapter One p. 53	Change step 6 to wireless LAN antenna. Please see the parts that have been highlighted.

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Conventions

The following conventions are used in this manual:

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

Preface

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

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

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System Specifications

Features

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

Performance

- Mobile Intel® Pentium®4 processor-M with 512KB level 2 cache featuring the new Enhanced Intel® SpeedStep™ technology
- Memory expandable up to 1GB
- Internal removable DVD drive (AcerMedia bay)
- High-capacity, Enhanced-IDE hard disk
- Li-Ion main battery pack
- Power management system with ACPI (Advanced Configuration Power Interface)
- Li-Ion main battery pack
- Power management system with ACPI (Advanced Configuration Power Interface)
- Smart Card interface with pre-boot authentication system for added security
- 4-in-1 multimedia reader

Display

- Thin-Film Transistor (TFT) liquid-crystal display (LCD) displaying 32-bit high colour up to 1024X768 eXtended Graphics Array (XGA) resolution for 14.1” and 1024X768 Super eXtended Graphics Array + (SXGA+) resolution for 15.0”
- 3D capabilities
- Simultaneous display on LCD and CRT
- S-video for output to a television or display device that supports S-video input
- “Automatic LCD dim” feature that automatically decides the best settings for your display and conserves pwer
- Dual view suupport

Multimedia

- 16-bit high-fidelity AC’97 stereo audio with 3D sound and wavetable synthesizer
- Built-in dual speakers
- Built-in microphone
- High-speed optical drive (AcerMedia bay)

Connectivity

- High-speed fax/data modem port
- Ethernet/Fast Ethernet port
- Fast infrared wireless communication
- Four (4) USB 2.0 (Universal Serial Bus) ports
- IEEE 1394 port
- Invilink 802.11b/802.11a+b wireless LAN (manufacturing optional)
- Bluetooth ready (manufacturing optional)

- SD/MMC/SM/MS memory slot (manufacturing optional)

Keyboard and Pointing Device

- Internet 4-way scroll button
- Sleek, smooth and stylish design
- Acer FinTouch full-sized curved keyboard
- Ergonomically-centered touchpad pointing device

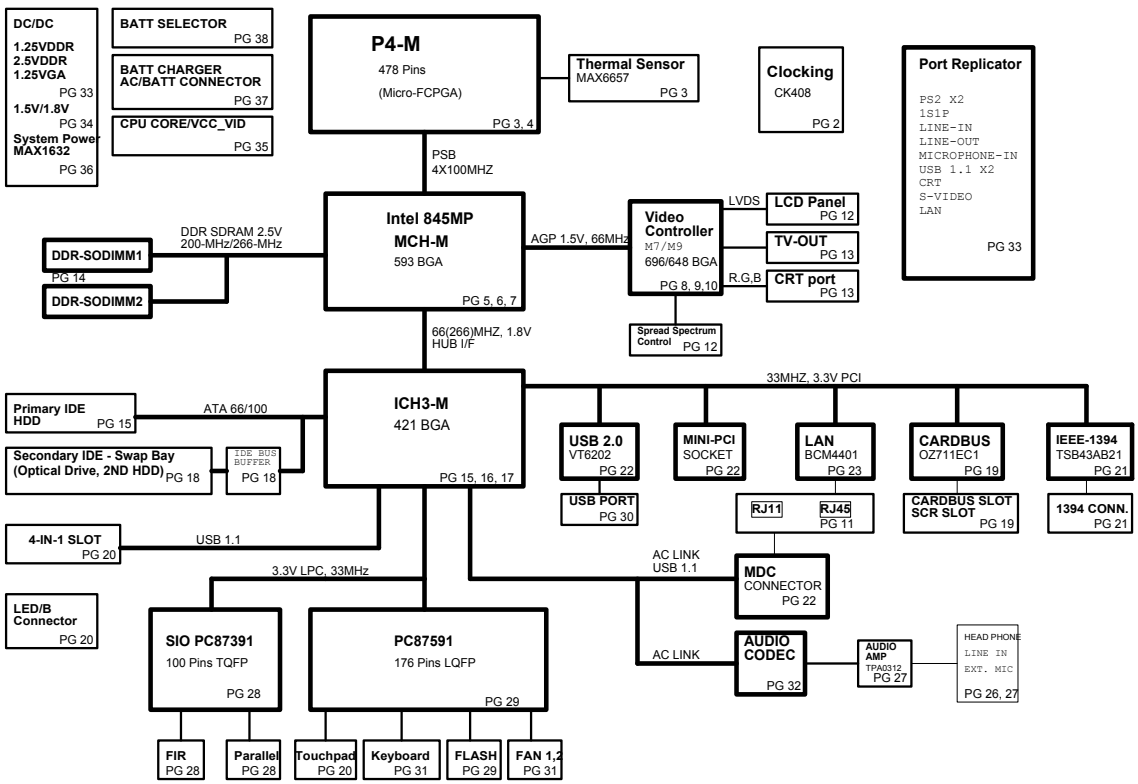
Expansion

- One type II CardBus PC Card slot
- Upgradeable memory
- EasyPort port replicator

I/O Ports

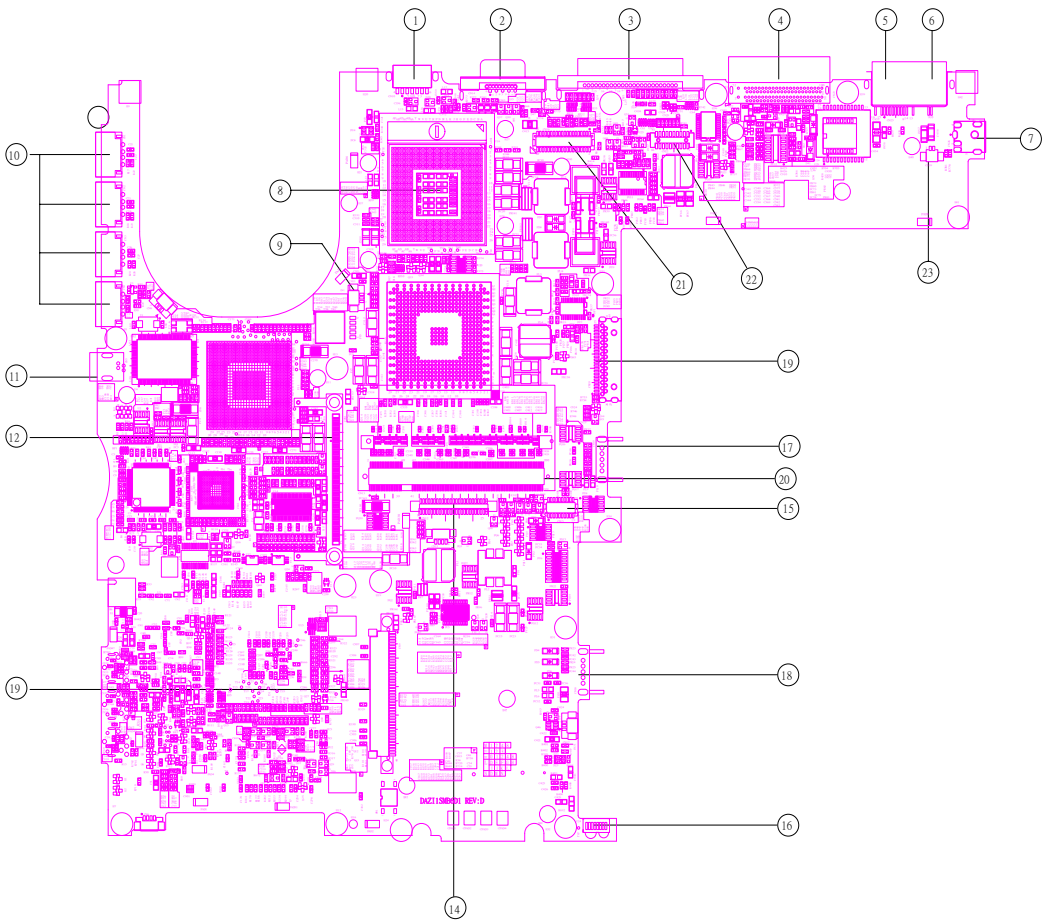
- One Card bus type II slot
- One RJ-11 jack for 56Kbps fax/modem
- One RJ-45 jack for LAN
- One DC-in jack for AC adapter
- One ECP/EPP compliant 25-pin parallel port
- One external 15-pin VGA port
- One speaker/headphone/line-out jack
- One microphone/line-in jack
- Four USB 2.0 ports (Disable middle port when docked with SPR)
- One IEEE 1394 port
- One S-video (NTSC/PAL) output port
- One Kensignton lock socket
- FIR (Fast Infred) port
- One 100-pin port replicator

System Block Diagram



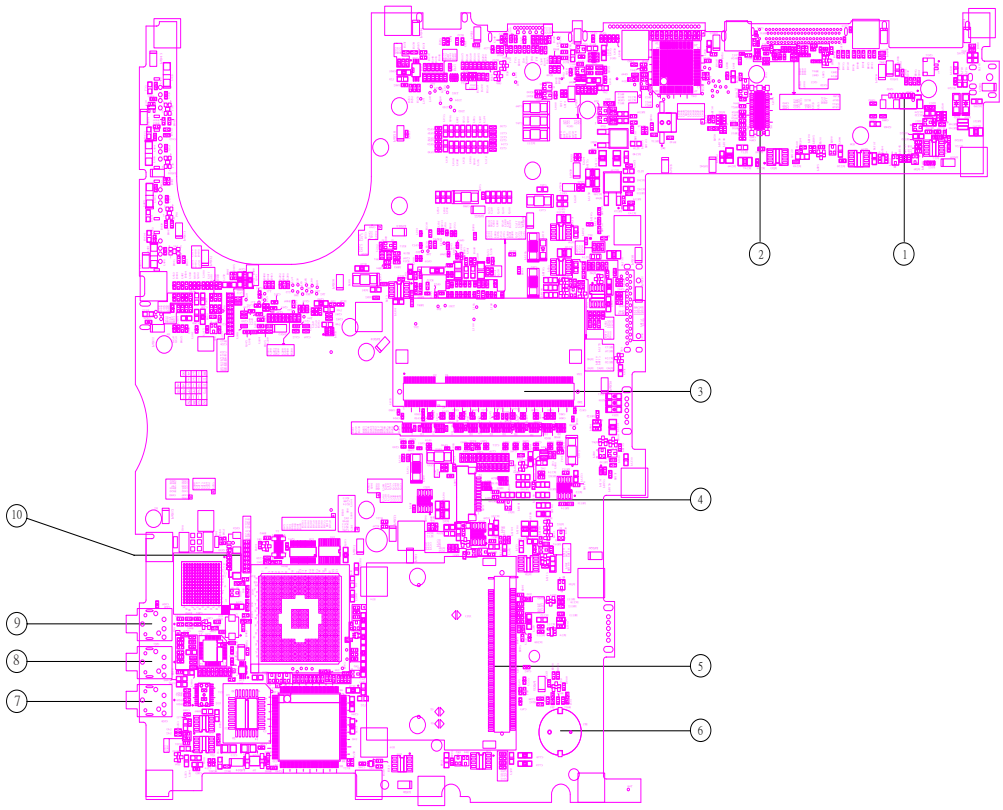
Board Layout

Top View



1	S-Video	13	HDD connector
2	CRT	14	Keyboard connector
3	LPT	15	Touchpad board connector
4	Docking	16	IR
5	RJ45	17	Main battery connector
6	RJ11	18	Second battery connector
7	Power jack	19	Swap bay connector
8	CPU socket	20	DDR Dimm
9	Fan connector	21	LCD cable connector
10	USB connector	22	LED board connector
11	1394 connector	23	Internal microphone connector
12	PCMCIA		

Bottom View



1	LAN cable connector	6	RTC battery connector
2	MDC connector	7	Line-in connector
3	DDR Dimm 1	8	Microphone-in connector
4	Smart card connector	9	Headphone out connector
5	Mini PCI connector	10	LAN cable connector

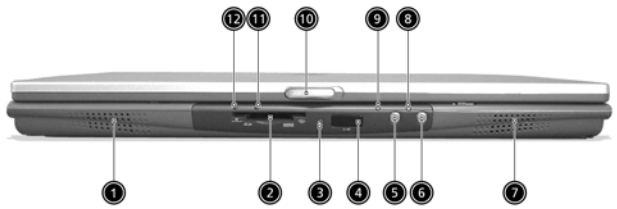
Outlook View

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

Front Open View

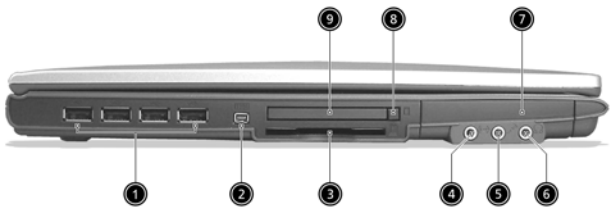
#	Icon	Item	Description
1	1	Display screen	Also called LCD (liquid-crystal display), displays computer output.
2		Launch keys	Special keys for launching Internet browser, E-mail program and frequently used programs. Located at the top of the keyboard are five buttons. They are designated as P1, P2, P3, E-mail button and Web browser button. P1, P2 and P3 launch user-programmable applications; E-mail and Web browser launch E-mail and Internet browser applications.
3		Touchpad	Touch-sensitive pointing device which functions like a computer mouse. Turns on the computer power.
4		Click buttons (left, center and right)	The left and right buttons function like the left and right mouse buttons; the center button serves as a 4-way scroll button.
5		Palmrest	Comfortable support area for your hands when you use the computer.
6		Keyboard	Inputs data into your computer.
7		Microphone	Internal microphone for sound recording.
8		Status indicators	LEDs (light-emitting diode) that turn on and off to show the status of the computer, its functions and components.

Front Panel



#	Icon	Item	Description
1		Left Speaker	Outputs sound for the left stereo speaker.
2		4-in-1 memory reader	Reads cards from Smart Media, Memory Stick, MultiMedia, and Secure Digital cards.
3		4-in-1 status indicator	Displays activity of 4-in-1 memory reader.
4		Infrared port	Interfaces with infrared devices (e.g., infrared printer, IR-aware computer).
5		Bluetooth button	Starts Bluetooth functionality.
6		InviLink button	Opens wireless connectivity.
7		Right Speaker	Outputs sound for the right stereo speaker.
8		Wireless communication light	Indicates status of wireless communication.
9		Bluetooth light	Indicates that Bluetooth is on.
10		Latch	Latch for opening and closing the laptop.
11		Battery light	Indicates the status of the battery.
12		System power/Sleep light	Signals the power mode of the system.

Left Panel



#	Icon	Item	Description
1		Four (4) USB ports	Connect to Universal Serial Bus devices (e.g., USB mouse, USB camera).
2	1394	IEEE 1394 port	Connects to IEEE 1394 devices.
3		Smart Card slot	Slot for Smart Card interface with pre-boot authentication system.
4		Line-in jack	Accepts audio line-in devices (e.g., audio CD player, stereo walkman).
5		Microphone Jack	Accepts input from external microphones.
6		Headphone Jack	Connect to headphones for other line-out audio devices (speakers).
7		Hard disk bay	Houses the computer's hard disk (secured by a screw).
8		PC Card eject button	Ejects the PC Card from the slot.
9		PC Card slot	Accepts one Type II 16-bit PC Card or 32-bit CardBus PC Card.

Right Panel

#	Icon	Item	Description
1		AcerMedia drive	Houses a removable media drive module.
2		AcerMedia indicator	Lights up when the AcerMedia drive is active.
3		Eject button	Ejects the drive tray.
4		Emergency eject slot	Ejects the drive tray when the computer is turned off.
5	⎓	Power jack	Connects to an AC adapter.

Rear Panel

#	Icon	Item	Description
1			Connects to a phone line.
2			Connect to an Ethernet 10/100-based network.
3			Connects to I/O port replicator or EasyPort expansion devices.
4		Parallel port	Connects to a parallel device (e.g., parallel printer).
5			Connects to a display device (e.g., external monitor, LCD projector) and display up to 16.7 million colors and upt 1400X1050 resolution.
6		S-video	Connects t a television or display device with S-video input.
7		Cooling fan	Helps keep the computer cool
8		Security keylock	Connects to a Kensington-compatible computer security lock.

Bottom Panel

#	Icon	Item	Description
1		AcerMedia bay release latch	Unlatches the AcerMedia drive for removal or swapping.
2		AcerMedia bay	Houses an AcerMedia drive module.
3		Battery bay	Houses the computer's battery pack.
4		Battery release latches	Unlatches the battery to remove the battery pack.
5		Battery lock	Locks the battery in place.
6		Mini-PCI slot	Slot for adding mini-PCI cards.
7		Hard disk protector	Protects the hard disk from accidental bumps and vibration.
8		Hard disk bay	Houses the computer's hard disk (secured by a screw).
9		Memory slot	Slot for adding memory (DRAM).
10		Cooling fan	Helps keep the computer cool. Note: Don't cover or obstruct the opening of the fan.
11		Personal identification slot	Insert a business card or similar-sized identification card to personalize your computer.

Indicators

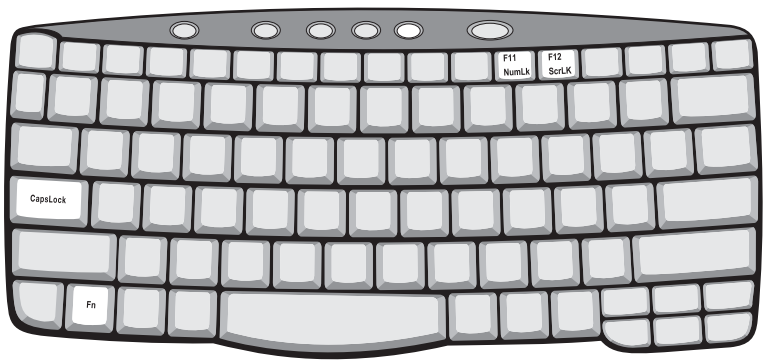
The computer has seven easy-to-read status icons below the display screen.

The status LCD displays icons that show the status of the computer and its components.

Icon	Function	Description
	Caps lock	Lights when Caps Lock is activated.
	Num lock	Lights when Num Lock is activated.
	Hard Drive	Lights when the hard drive is in use.

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 ↑ and ↓ 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.	
Cursor-control keys on embedded keypad	Hold SHIFT while using cursor-control keys.	Hold Fn while using cursor-control keys.
Main keyboard keys	Hold Fn while typing letters on embedded keypad.	Type the letters in a normal manner.

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

Hot Keys

The computer uses hotkey or key combinations to access most of the computer's controls like sreen brightness, volume output.

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 help on hot keys.
Fn-F2		System Property	Displays the System Property.
Fn-F3		Power Options	Display the Power Options Properties used by the computer (function available if supported by operating system). See "Power management" on page 25.
Fn-F4	z z	Sleep	Puts the computer in Sleep mode. See "Power management" on page 25.
Fn-F5		Display toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn-F6		Screen blank	Turns the display screen backlight off to save power. Press any key to return.
Fn-F7		Touchpad toggle	Turns the internal touchpad on and off.
Fn-F8		Speaker toggle	Turns the speakers on and off.
Fn-		Volume up	Increases the speaker volume.

Hot Key	Icon	Function	Description
Fn-		Volume down	Decreases the speaker volume.
Fn-		Brightness up	Increases the screen brightness.
Fn-		Brightness down	Decreases the screen brightness

The Euro Symbol

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

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

To verify the keyboard type in Windows 2000, follow the steps below:

1. Click on **Start, Settings, Control Panel**.
2. Double-click on **Keyboard**.
3. Click on the **Language** tab.
4. Verify that keyboard layout used for En English (United States)" is set to United States-International. If not, select and click on **Properties**; then select **United States-International** and click on **OK**.
5. Click on **OK**.

To verify the keyboard type in Windows XP, follow the steps below:

1. Click on **Start**, **Control Panel**.
2. Double-click on **Regional and Language Options**.
3. Click on the **Language** tab and click on **Details**.
4. Verify that the keyboard layout used for "En English (United States)" is set to United States-International. If not, select and click on **ADD**; then select **United States-International** and click on **OK**.
5. Click on **OK**.

To type the Euro symbol:

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

NOTE: Some fonts and software do not support the Euro symbol. Please refer to www.microsoft.com/typography/faq/faq12.htm for more information.

Launch Keys

Located at the top of keyboard are five buttons. These buttons are called launch keys. They are designated as P1, P2, P3 Email button and Web browser button.

NOTE: To the left of these five launch keys is the wireless communication button. This wireless communication button works for model with 802.11b wireless LAN only.

Launch Key	Default application
P1	User-programmable
P2	User-programmable
P3	User-programmable
Email	Email application
Web browser	Internet browser application

Touchpad

The built-in touchpad is a 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 optimal comfort and support.

NOTE: If you are using an external USB mouse, you can press **Fn-F7** to disable the touchpad.

Touchpad Basics

The following teaches you how to use the touchpad:

- Move your finger across the touchpad to move the cursor.
- Press the left (1) and right (3) 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.
- Use the 4-way scroll (2) button (top/bottom/left/and right) to scroll.

Function	Left Button	Right Button	Scroll Button	Tap
Execute	Click twice quickly			Tap twice (at the same speed as double-clicking the mouse button)
Select	Click once			Tap once
Drag	Click and hold, then use finger to drag the cursor on the touchpad			Tap twice (at the same speed as double-clicking a mouse button) then hold finger to the touchpad on the second tap to drag the cursor
Access context menu		Click once		

Function	Left Button	Right Button	Scroll Button	Tap
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 Mobile Pentium 4 celeron 1.8G~2.6G
CPU package	/μ -PGA package
CPU core voltage	1.3V

BIOS

Item	Specification
BIOS vendor	Phneoix
BIOS Version	3A01
BIOS ROM type	Flash ROM
BIOS ROM size	512KB
BIOS package	PLCC
Supported protocols	ACPI 1.0b,PC Card 95, SM BIOS 2.3, EPP/IEEE 1284, ECP/IEEE 1284 1.7 & 1.9, PCI 2.2, PnP 1.0a, DMI 2.0, PS/2 keyboard and mouse, USB 2.0, VGA BIOS, CD-ROM bootable, IEEE 1394
BIOS password control	Set by setup manual

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	Intel 845MP built-in
Memory size	0MB (no on-board memory)
DIMM socket number	2 sockets
Supports memory size per socket	512MB
Supports maximum memory size	1G (by two 512MB SO-DIMM module)
Supports DIMM type	DDR Synchronous DRAM
Supports DIMM Speed	133 MHz
Supports DIMM voltage	2.5V
Supports DIMM package	200-pin soDIMM
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications.

Memory Combinations

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

NOTE: Above table lists some system memory configurations. You may combine DIMMs with various capacities to form other combinations. On above table, the configuration of slot 1 and slot 2 could be reversed.

LAN Interface

Item	Specification
Chipset	BroadCom 4401
Supports LAN protocol	10/100 Mbps
LAN connector type	RJ45
LAN connector location	Rear panel

Modem Interface

Item	Specification
Data modem data baud rate (bps)	56K
Supports modem protocol	V.90 MDC
Modem connector type	RJ11
Modem connector location	Rear panel

Blue-MODEM Interface

Item	Specification
Chipset	CSR BC02 (Blue-tooth)/Agere Scorpio I (MODEM)
Data throughput	200k bps (Blue-tooth)/56K bps (MODEM)
Protocol	Blue-tooth 1.1
Interface	USB 1.1+MDC
Connector type	RJ11 (MODEM)

Wireless Module 802.11b (optional device)

Item	Specification
Chipset	Intersil Prism 3
Data throughput	11M bps
Protocol	802.11b
Interface	Mini-PCI type III

Wireless Module 802.11a/b (optional device)

Item	Specification
Chipset	Atheros
Data throughput	11M~54M bps
Protocol	802.11 a+b
Interface	Mini_PCI type III

Four-in-One Card Reader

Item	Specification
Chipset	ST7265
Data throughput	USB 1.1
Protocol	SMC, MS, MMC, and SD

Hard Disk Drive Interface

Item	Specification								
Vendor & Model Name	IBM 20G	IBM 30G	IBM 40G	Toshiba 20G (MK2018)	Toshiba 30G (MK3018)	Toshiba 40G (MK4018)	Hitachi 20G DK23DA-20F	Hitachi 30G DK23DA-30F	Hitachi 40G DK23DA-40F
Capacity (MB)	20000	30000	40000	20000	30000	40000	20000	30000	40000
Bytes per sector	512	512	512	512	512	512	512	512	512
Data heads	2	3	4	2	3	4	2	3	4
Drive Format									
Disks	1	2	2	1	2	2	1	2	2
Spindle speed (RPM)	4200 RPM	4200 RPM	4200 RPM	4200 RPM	4200 RPM	4200 RPM	4200 RPM	4200 RPM	4200 RPM
Performance Specifications									
Buffer size	2048KB	2048KB	2048KB	2048KB	2048KB	2048KB	2048KB	2048KB	2048KB
Interface	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5
Max. media transfer rate (disk-buffer, Mbytes/s)	216	287	245	287	235	290	366	366	296
Data transfer rate (host~buffer, Mbytes/s)	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5	100 MB/ Sec. Ultra DMA mode-5
DC Power Requirements									
Voltage tolerance	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%	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)	Sustained: Max 3.6Mbytes/sec	Sustained: Max 10.8Mbytes/sec
Data Buffer Capacity	128 KBytes	

DVD-ROM Interface

Item	Specification
Interface	IDE/ATAPI
Applicable disc format	DVD: DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18),DVD-R (read, single border) CD: CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, CD-I, CD-I Bridge (Photo-CD, Video-CD) Multisession CD (Photo-CD, CD-EXTRA, CD-R, CD-RW), CD-R (read), CD-RW (read)
Loading mechanism	Load: Manual Release: (a) Electrical Release (Release Button) (b) Release by ATAPI command (c) Emergency Release
Power Requirement	
Input Voltage	5 V +/- 5 % (Operating)

Audio Interface

Item	Specification
Audio Controller	RealTek ALC202
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	20 bit stereo Digital to analog converter 18 bit stereo Analog to Ditial converter
Compatibility	AC97
Mixed sound source	Line-in, CD
Voice channel	8/16-bit, mono/stereo
Sampling rate	44,1 KHz (48K byte for AC97 interface)
Internal microphone	Yes
Internal speaker / Quantity	Yes/2
Supports PnP IRQ	IRQ10

Speakers

Item	Specification
Number of speaker	2
Rating	1W, max; 4 ohm
Connector type	Headphone out, microphone in and line-in

Video Interface

Item	Specification
Chipset	ATI M7-CSP32
Interface	AGP 4X
Supports ZV (Zoomed Video) port	No
Maximum resolution LCD	1400X1050 (SXGA+)
Maximum resolution CRT	1920X1200

Video Resolutions Mode (for both LCD and CRT)

Resolution	16 bits (High color)	32 bits (True color)
480x600	Yes	Yes

Video Resolutions Mode (for both LCD and CRT)

Resolution	16 bits (High color)	32 bits (True color)
800x600	Yes	Yes
1024x768	Yes	Yes
1152x864	Yes	Yes
1280x1024	Yes	Yes
1400x1050 (SXGA+panel only)	Yes	Yes

Video Memory

Item	Specification
Chipset	Video chip built-in
Memory size	Video chip built-in 32M
Interface	DDR

Parallel Port

Item	Specification
Parallel port controller	SMSC LPC47N227
Number of parallel port	1
Location	Rear side
Connector type	25-pin D-SUB
Parallel port function control	Enable/Disable/Auto (BIOS or operating system chooses configuration) by BIOS Setup **Note**: Depending on your operating system, disabling an unused device may help free system resources for other devices.
Supports ECP/EPP/Bi-directional/Output only (PS/2 compatible)	Yes (set by BIOS setup) **Note**: When Mode is selected as EPP mode, “3BCh” will not be available.
Optional ECP DMA channel (in BIOS Setup)	DMA channel 3
Optional parallel port I/O address (in BIOS Setup)	378h, 278h, 3BCH
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
Chipset	Via VT6202
USB Compliancy Level	2.0
OHCI	USB 2.0
Number of USB port	4
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

IEEE 1394 Port

Item	Specification
Chipset	TI 43AB21
InterfaceUSB Compliancy Level	IEEE 1394 1.0

IEEE 1394 Port

Item	Specification
Number of IEEE 1394 port	1
Location	Left side
Connector type	IEEE 1394

PCMCIA Port

Item	Specification
PCMCIA controller	O2 Micro OZ7111EC1
Supports card type	Type-II
Number of slots	One type-II
Access location	Right panel
Supports ZV (Zoomed Video) port	No ZV support
Supports 32 bit CardBus	Yes (IRQ10)

Smart Card Reader

Item	Specification
Chipset	PCMCIA chip built-in
Number of slot	1
Location	Front side

System Board Major Chips

Item	Controller
Core logic	Intel MCH-M+ICH3M
VGA	ATI M7CSP32
LAN	BroadCom 4401
IEEE 1394	TI 43AB21
USB 2.0	Via VT6202
Super I/O controller	NS 87391
MODEM	Agere Scorpio I
Blue tooth	CSR BC02
Wireless 802.11 b	Intersil Prism 3
Wireless 802.11 a+b	Atheros
PCMCIA	O2 Micro OZ7111EC1
Smart card reader	O2 Micro OZ7111EC1
Audio	RealTek ALC202
Four-in-one card reader	ST7265
Touchpad	Synaptics TM41P-353

Keyboard

Item	Specification
Keyboard controller	NS 87591
Keyboard vendor & model name	Chicony
Total number of keypads	84/85 key
Windows logo key	Yes

Keyboard

Item	Specification
Internal & external keyboard work simultaneously	No **Note: Internal and external keyboard can not work simultaneously by software specification.**

Battery

Item	Specification		
Vendor & model name	Main battery: Simplo QCI: AHA84222149	Main battery: Sanyo QCIAHA84222351	Aux battery: Sanyo
Battery Type	Li-ion	Li-ion	Li-ion
Pack capacity	4400 Ah	4400 Ah	3600 Ah
Cell voltage	3.7V/cell	3.7V/cell	3.7V/cell
Number of battery cell	8	8	6
Package configuration	4 cells in series, 2 series in parallel	4 cells in series, 2 series in parallel	3 cells in series, 2 series in parallel
Package voltage	14.8V	14.8V	11.1V

LCD

Item	Specification		
Vendor & model name	QDI QD141X1LH12 Samsung LTN141XB HannStar HSD141PX13-B	Sharp LQ150X1LHA2 CPT CLAA150XH01 AU B150XG01 V2 LG LP150X05-A2C1	CPT CLAA150PA01 Sharp LQ150F1LH32 AU B150PG01 LG LP150E02
Mechanical Specifications			
LCD display area (diagonal, inch)	14.1	15.0	15.0
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

LCD Inverter

Item	Specification
Vendor & model name	QCI: 34KT1IV0001
Brightness conditions	Vadj=3.3V
Input voltage (V)	14.4
Input current (mA)	410 (max)
Output voltage (V, rms)	1400 (no load)
Output current (mA, rms)	5.6~5.4
Output voltage frequency (k Hz)	55~58K Hz

AC Adaptor

Item	Specification
Model number	Lite-On PA-1750-02CA (PFC), 3pins Delta ADP-75FB BA (PFC), 3pins
Input rating	90VAC to 264VAC, 47Hz to 63Hz
Output rating	75W, 19V (18.8V, min to 20V, max), 4A (0A, min to 4A, max)

System Power Management

ACPI mode	Power Management
Mech. Off (G3)	All devices in the system are turned off completely.
Soft Off (G2/S5)	OS initiated shutdown. All devices in the system are turned off completely.
Working (G0/S0)	Individual devices such as the CPU and hard disk may be power managed in this state.
Suspend to RAM (S3)	CPU set power down VGA Suspend PCMCIA Suspend Audio Power Down Hard Disk Power Down CD-ROM Power Down Super I/O Low Power mode
Save to Disk (S4)	Also called Hibernate state. System saves all system states and data onto the disk prior to power off the whole system.

Memory Address Map

Memory Address	Size	Function
00100000h-000F0000h	512 KB	System BIOS
000CFFFFh-000C0000h		VGA BIOS
00009FFFFh-00000000h	640KB	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 87570 chip select
061	System speaker
000-00F	DMA controller-1
020-021	Interrupt controller-1
040-043	Timer 1
060, 064	Keyboard controller NS87591 chip select
070-073	Real-time clock and CMOS
0A0-0A1	Interrupt controller-2
0C0-0DF	DMA controller-2
066, 062	ACPI EC interface (NS87591)
170-177	Secondary IDE channel

I/O Address Map

I/O Address	Function
1F0-1F7	Primary IDE channel
378, 37F	Parallel port
3B0-3BB 3C0-3DF	VGA I/O adress
CF8-CFF	PCI configuration register
000-00F	DMA controller-1

IRQ Assignment Map

Interrupt Channel	Function(Hardware)
IRQ00	System timer
IRQ01	Keyboard
IRQ02	Programmable interrupt controller
IRQ03	IrDA Fast Infrared Port
IRQ04	Communication port (COM1)
IRQ05	Winbond SD controller
IRQ06	Standard floppy disk controller
IRQ07	ECP printer port (LPT1)
IRQ08	CMOS/RTC
IRQ09	SCI IRQ used by ACPI bus
IRQ12	PS/2 mouse
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

DMA Channel Assignment

Item	Specification
Channel 1	IrDA Fast Infrared Port
Channel 3	ECP printer port
Channel 4	DMA controller

System Utilities

BIOS Setup Utility

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

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

To activate the BIOS Utility, press F2 during POST (when "Press <F2> to enter Setup" message is prompted on the bottom of screen).

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

Navigating the BIOS Utility

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

Follow these instructions:

- To choose a menu, use the cursor left/right keys (← →).
- To choose a parameter, use the cursor up/down keys (↑ ↓).
- To change the value of a parameter, press F5 or F6.
- A plus sign (+) indicates the item has sub-items. Press ENTER to expand this item.
- Press ESC while you are in any of the menu options to go to the Exit menu.
- In any menu, you can load default settings by pressing F9. You can also press F10 to save any changes made and exit the BIOS Setup Utility.

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

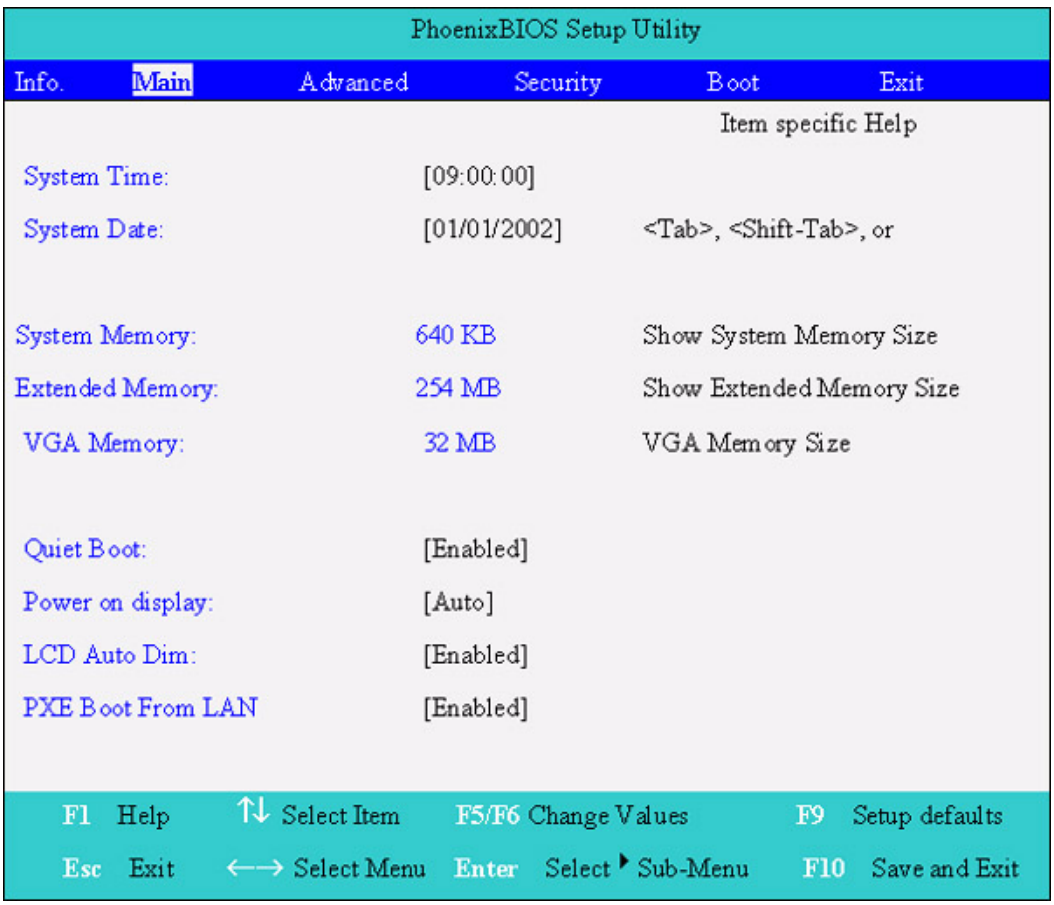
This menu provides you the information of the system.

Info.

Parameter	Description
Floppy Disk Drive	Shows floppy drive type informaiton.
Serial Number	This field displays the serial number of this unit.
UUID Number	UUID=32bytes

Main

The Main screen displays a summary of your computer hardware information, and also includes basic setup parameters. It allows the user to specify standard IBM PC AT system parameters.



NOTE: The screen above is for reference only. Actual values may differ.

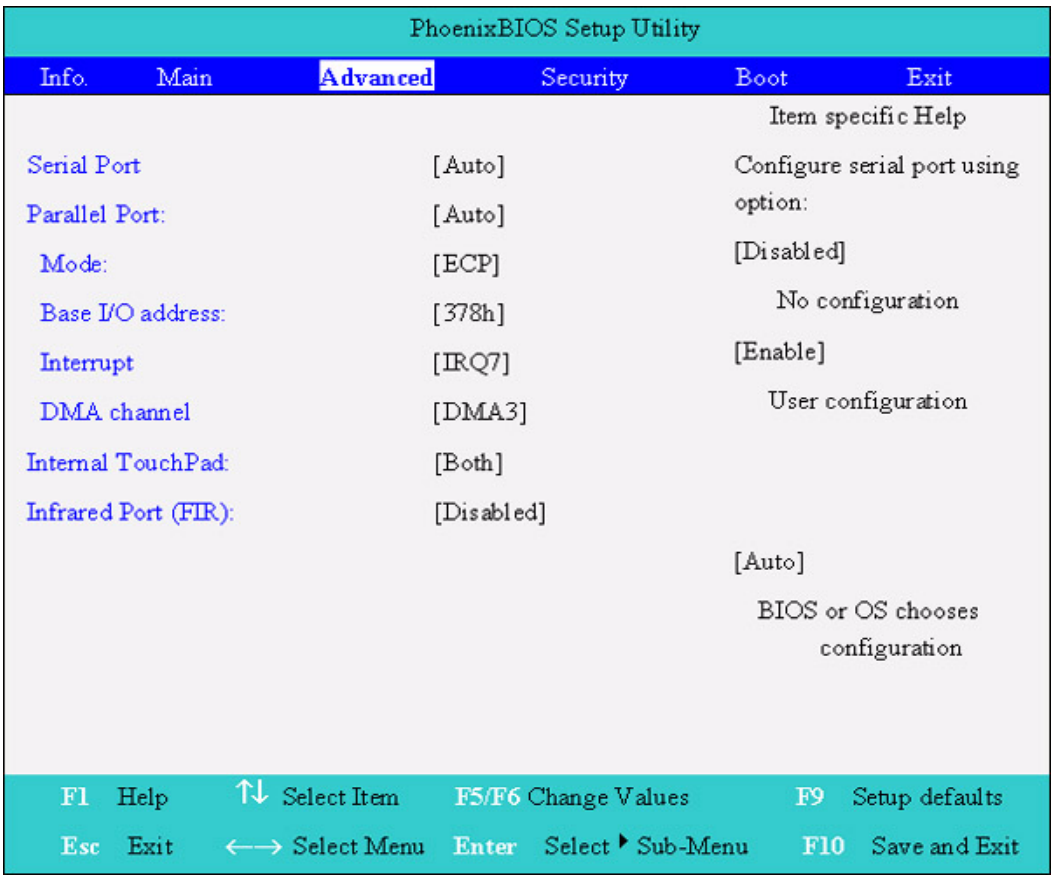
The table below describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

Parameter	Description	Format/Option
System Time	Sets the system time.	Format: HH:MM:SS (hour:minute:second) System Time
System Date	Sets the system date.	Format MM/DD/YYYY (month/day/ year) System Date
System Memory	This field reports the memory size of the system. Memory size is fixed to 640MB	
Extended Memory	This field reports the memory size of the extended memory in the system. Extended Memory size=Total memory size-1MB	
Video Memory	Shows the VGA memory size. The default value is set to 32MB	Option:**32**/64MB
Quiet Boot	Determines if Customer Logo will be displayed or not; shows Summary Screen is disabled or enabled. Enabled: Customer Logo is displayed, and Summary Screen is disabled. Disabled: Customer Logo is not displayed, and Summary Screen is enabled.	Option: **Enabled** or Disabled
Power on display	Auto: During power process, the system will detect if any display device is connected on external video port. If any external display device is connected, the power on display will be in CRT (or projector) only mode. Otherwise it will be in LCD only mode. Both: Simultaneously enable both the integrated LCD screen and the system's external video port (for an external CRT or projector).	Option: **Auto** or Both
LCD Auto Dim	Determines if the system will automatically dim the LCD brightness in order to save power when AC is not present.	Option: **Enabled** or Disabled

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

Advanced

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

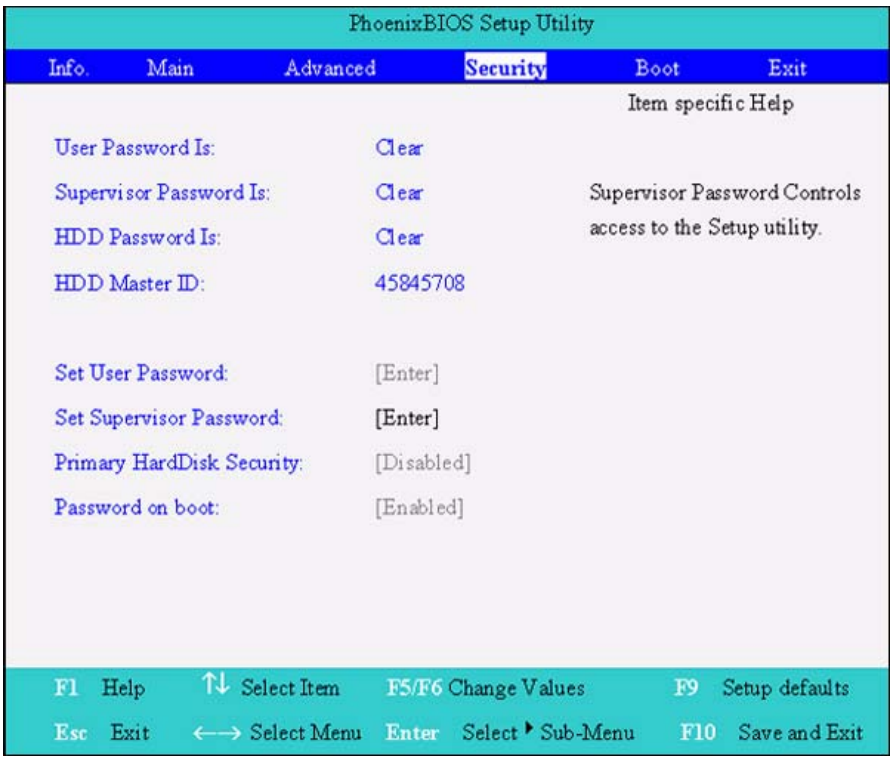


The table below describes the parameters in the screen. Settings in **boldface** are the default and suggested parameter settings.

Parameter	Description	Options
Serial Port	Enables, disables or auto detects the serial port.	**Enabled**/Disabled/Auto
Parallel Port	Enables, disables or auto detects the parallel port.	**Enabled**/Disabled/Auto
Mode	Sets the operation mode of the parallel port.	**ECP**, EPP, Normal or Bi-directional
Base I/O address	Sets the I/O address of the parallel port. This parameter is enabled only if Mode is set to ECP or Bi-directional. This parameter is enabled only if Mode is set to ECP.	**378h**/278h/3BCH
Interrupt	Sets the interrupt request of the parallel port.	**IRQ7**/IRQ5
DMA channel	Sets a DMA channel for the printer to operate in ECP mode. This parameter is enabled only if Mode is set to ECP.	**DMA3**/DMA1
Internal Touchpad	Determines whether or not to disable the internal pointing device as the PS/2 mouse is connected.	**Both** or Auto
Infrared Port (FIR)	Enables, disables or auto detects the infrared port.	**Disabled**/EnabledDisabled/Auto

Security

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



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

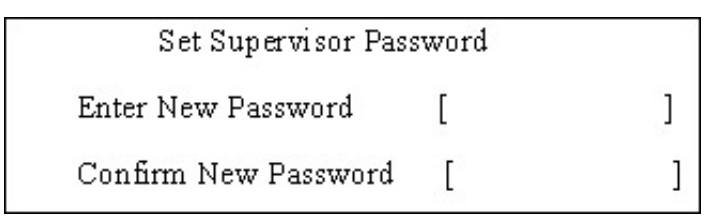
Parameter	Description	Option
User Password is	Shows the setting of the uer password.	**Clear** or Set
Supervisor Password is	Shows the setting of the Supervisor password	**Clear** or Set
Set User Password	Press Enter to set the user password. When set, this password protects the BIOS Setup Utility from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

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

Setting a Password

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

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



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

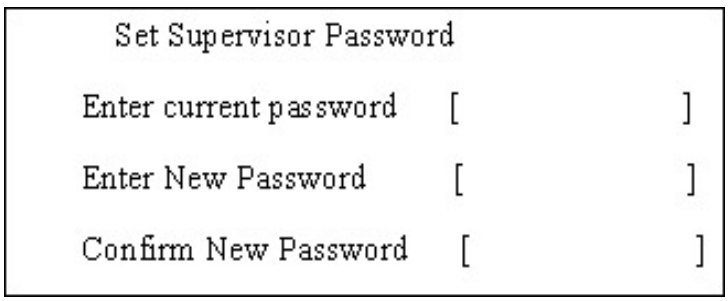
IMPORTANT: Be very careful when typing your password because the characters do not appear on the screen.

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

Removing a Password

Follow these steps:

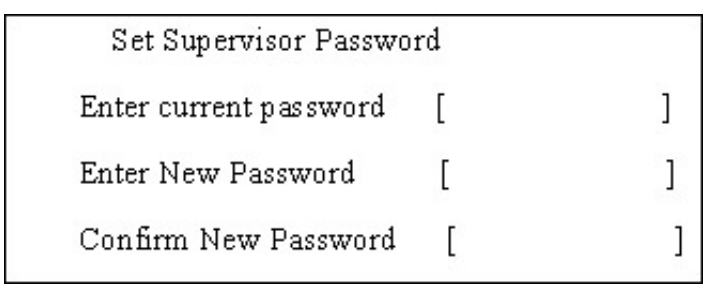
1. Use the ↑ and ↓ keys to highlight the Set Supervisor Password parameter and press the ENTER key. The Set Password box appears:



2. Type the current password in the Enter Current Password field and press ENTER.
3. Press ENTER twice **without** typing anything in the Enter New Password and Confirm New Password fields. The computer then sets the Supervisor Password parameter to “Clear”.
4. When you have changed the settings, press F10 to save the changes and exit the BIOS Setup Utility.

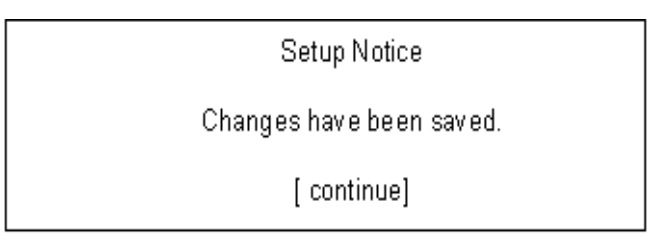
Changing a Password

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



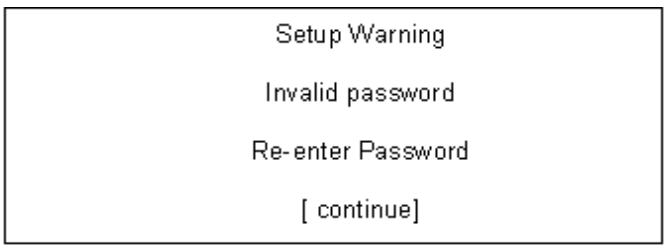
2. Type the current password in the Enter Current Password field and press ENTER.
3. Type a password in the Enter New Password field. Retype the password in the Confirm New Password field.
4. Press ENTER. After setting the password, the computer sets the User Password parameter to “Set”.
5. If desired, you can enable the Password on boot parameter.
6. When you are done, press F10 to save the changes and exit the BIOS Setup Utility.

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

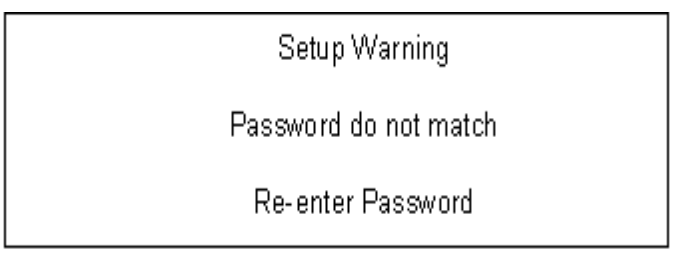


The password setting is complete after the user presses F10.

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

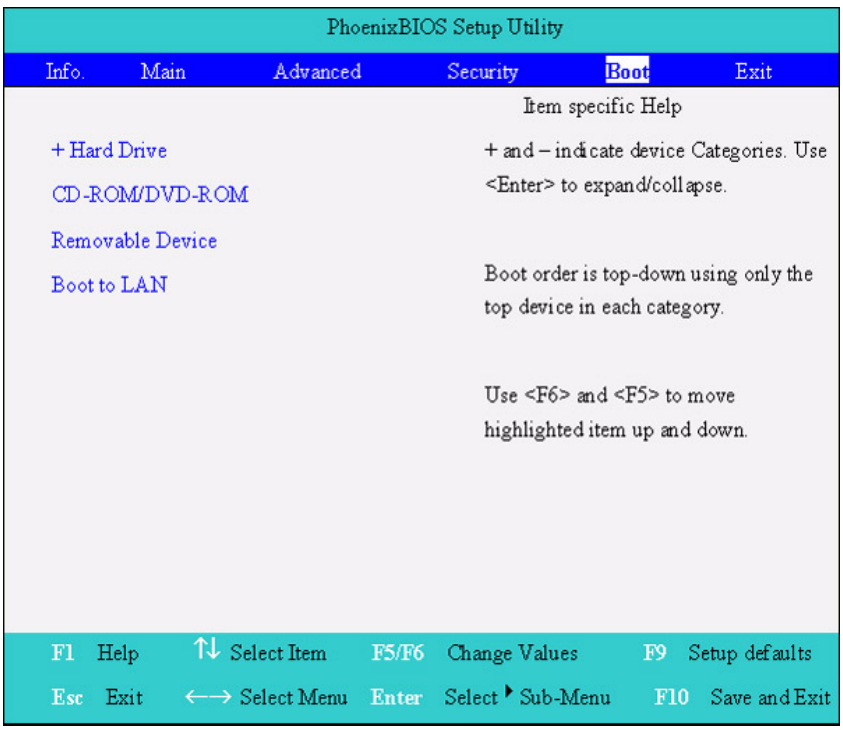


If the new password and confirm new password strings do not match, the screen will display the following message.



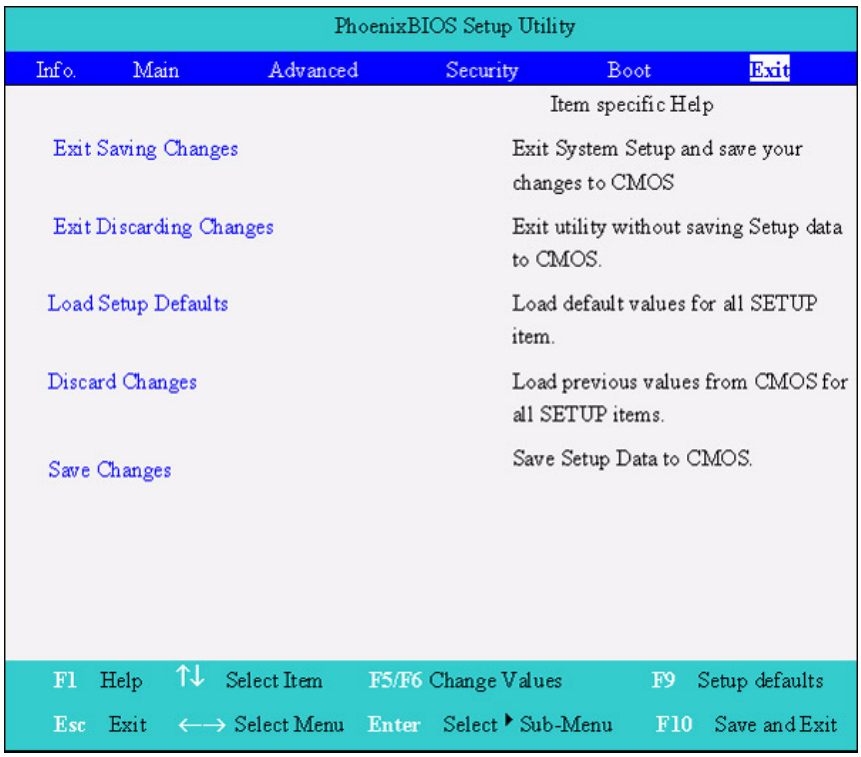
Boot

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



Exit

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



The table below describes the parameters in this screen.

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

BIOS Flash Utility

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

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

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

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

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

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

Fellow the steps below to run the Phlash.

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

System Diagnostic Diskette

This diagnostic diskette is for the Acer TravelMate 650 series notebook machine. However, system diagnostic utility is not ready as service CD released. Acer HQ CSD will upload the utility to CSD website as soon as it is ready.

Machine Disassembly and Replacement

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

To disassemble the computer, you need the following tools:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge
- Small Philips screw driver
- Philips screw driver
- Flat head screwdriver
- Plastic flat head screw driver
- Hex screw driver
- Tweezers

NOTE: The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components. When you remove the stripe cover, please be careful not to scrape the cover.

General Information

Before You Begin

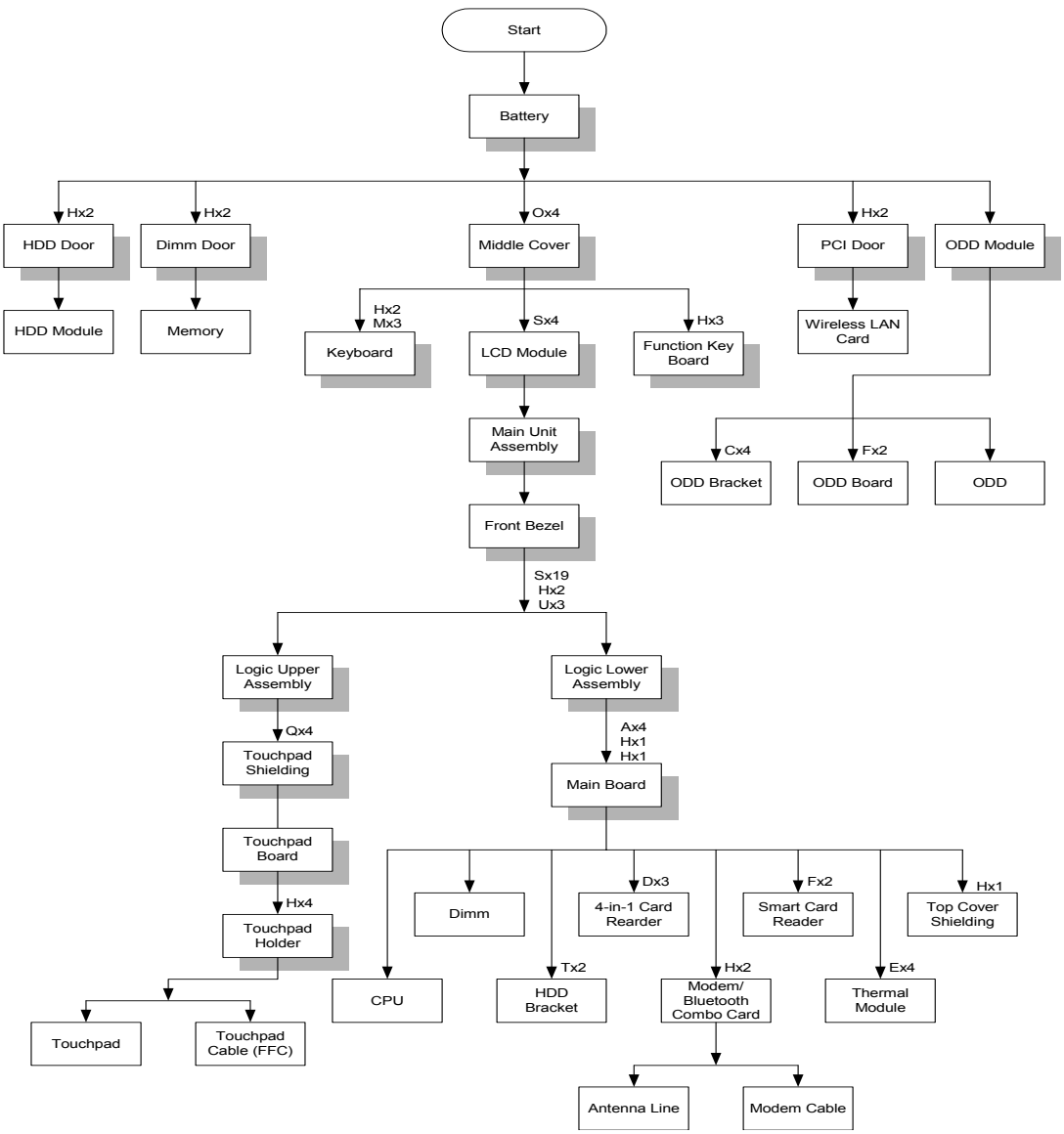
Before proceeding with the disassembly procedure, make sure that you do the following:

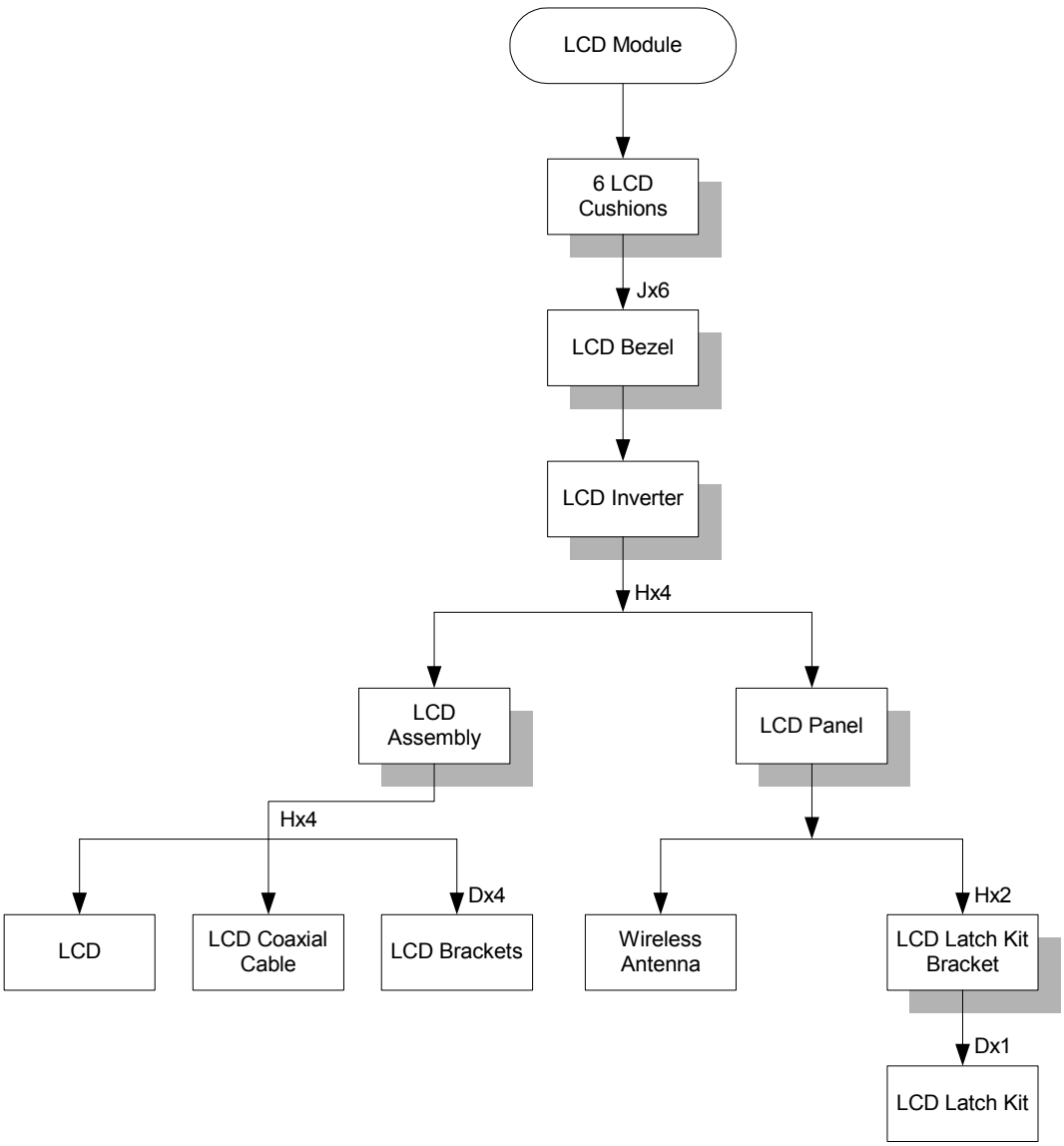
1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.
3. Remove the battery pack.

NOTE: TravelMate 650 series product uses mylar or tape to fasten the FFC/FPC/connectors/cable, you may need to tear the tape or mylar before you disconnect different FFC/FPC/connectors.

Disassembly Procedure Flowchart

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





Screw List

Item	Description
A	NUT-I/O
B	SCREW M1.6X4.0-I-NI-NYLOK
C	SCREW M2.0X2.5-I-NI-NYLOK
D	SCREW M2.0X3.0-I-NI-NYLOK
E	SCREW M2.0X3.5-I-NI-NYLOK
F	SCREW M2.0X5-I-NI-NYLOK
G	SCREW M2.5X3-I-NI-NYLOK
H	SCREW M2.5X4.0-B-NI-NYLOK
I	SCREW M2.5X4-I-NYLOK
J	SCREW M2.5X5.0-I-NI-NYLOK
K	SCREW M2.5X5.5-P-NI-NYLOK

Item	Description
L	SCREW M2.5X0.45+7I-NYLOK
M	SCREW M1.7X3.5-I-BZN
N	SCREW M2X3-I-BNI-NYLOK
O	SCREW M2.0X5.0-I-BNI-NYLOK
P	SCREW M2.0X6.0-I-NI-NYLOK
Q	SCREW M2.5X2-I-NI-NYLOK
R	SCREW M2.5X4-I-BNI
S	SCREW M2.5X7
T	SCREW M3.0X3.5
U	SCREW M2.5X5 (BLACK)

Removing the Battery Pack

1. Release the battery lock.
2. Slide the battery latch then remove the battery.

Removing the Optical Module/HDD Module/Wireless Lan Card and LCD module

Removing the Optical Module

1. Slide the optical disk drive latch.
2. Remove the ODD module.


Removing the HDD Module

1. Remove the two screws holding the HDD cover.
2. Remove the HDD cover.
3. Remove the HDD module.



Removing the Wireless LAN Card

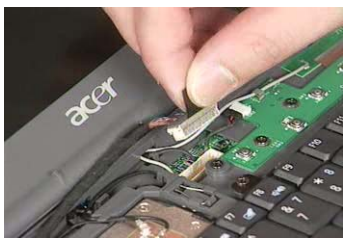
1. Remove the screw that secures the PCI door then remove the PCI door.
2. Disconnect the right and the left wireless antenna.
3. Pop out the wireless LAN card then remove it.



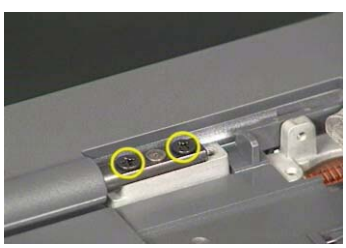
Removing the LCD Module

1. Remove the four screws that secures the middle cover; two one each side.
2. Detach middle cover with the assistance of a plastic flat head screw driver.
3. Disconnect the LCD cable then take out the cable from the upper case.





4. Disconnect the left wireless LAN antenna line. Then take out the antenna from the upper case with a tweezers.
5. Unscrew the four screws holding the LCD hinges; two on each side.
6. Then remove the entire LCD module.

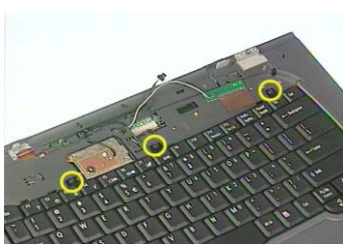
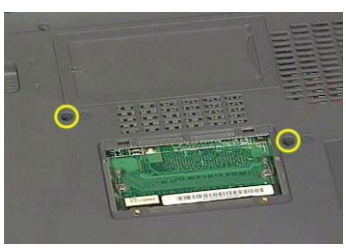

Disassembling the Main Unit

Remove the function key board and the keyboard

1. Take the wireless antenna out of the hook on the function key board.
2. Disconnect function key board connector
3. Unscrew the three screws holding the function key board.

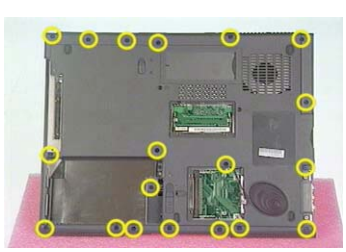


4. Remove the three screws that secure the keyboard.
5. Turn over the unit and remove the two screws as the picture shows.
6. Turn over the keyboard. Disconnect the keyboard FFC then remove the keyboard.

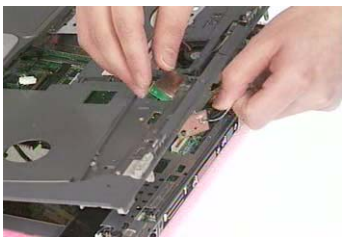

Separate the main unit into the logic upper and the logic lower assembly

1. Remove the three screws on the rear panel.
2. Unscrew the 19 screws on the bottom panel.
3. Detach the front bezel from the main unit.

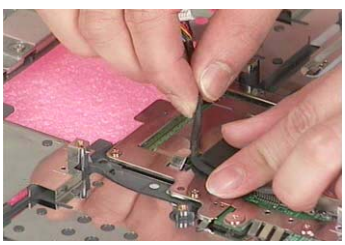
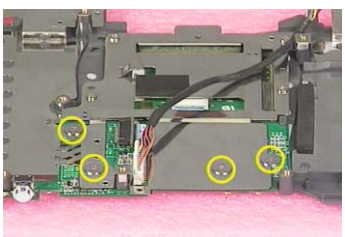

4. Remove the two screws. Then take the right and the left antenna off the main unit.
5. Disconnect the touchpad cable.
6. Pull out the right and the left wireless LAN antenna, then detach the logic upper assembly from the logic lower assembly.



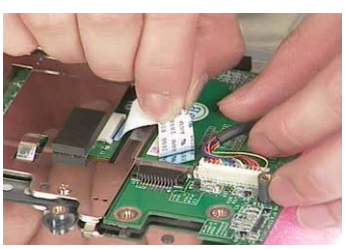


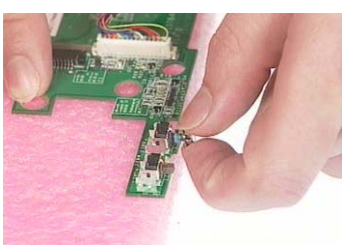
Disassembling the logic upper assembly

1. Take out the touchpad cable from the small hook on touchpad holder.
2. Remove the four screws holding the touchpad shielding and the touchpad board.

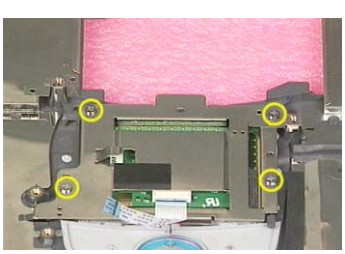
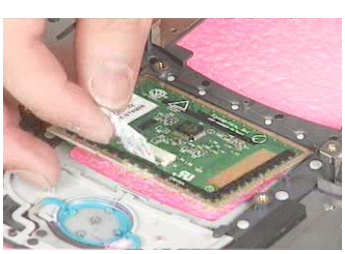
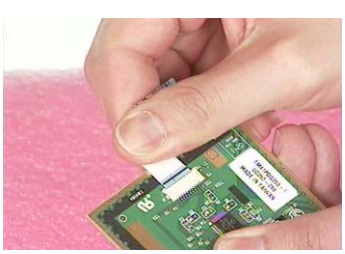



3. Disconnect the touchpad FFC from the touchpad board.
4. Remove the touchpad board.
5. Remove the wireless and bluetooth button off the touchpad board.



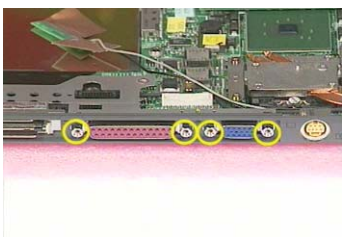
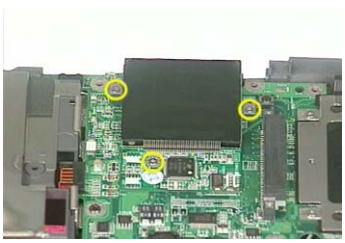


6. Remove the four screws that fasten the touchpad holder.
7. Remove the touchpad off the logic upper assembly.
8. Disconnect touchpad FFC.

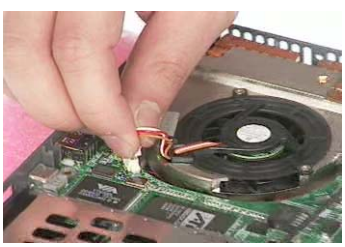




Disassembling the logic lower assembly

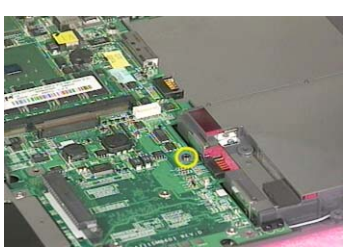
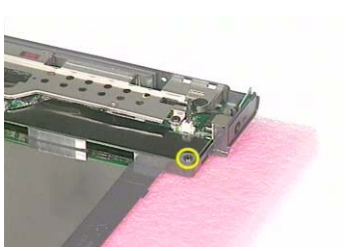
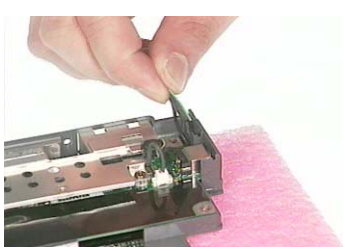
1. In order to take out the main board from the upper case, first remove the four screws that fasten the top cover shielding.
2. Remove the three screws holding the 4-in-1 card reader, then remove it.

3. Unscrew the four screws that secure the thermal module.
4. Disconnect the fan connector then remove the thermal module.

5. Remove one screw that secures the main board as picture shows.
6. Remove another screw that fastens the main board.
7. Take out the bluetooth antenna.

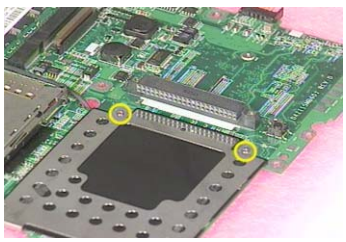
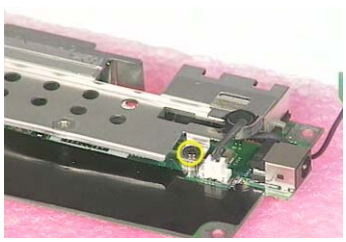
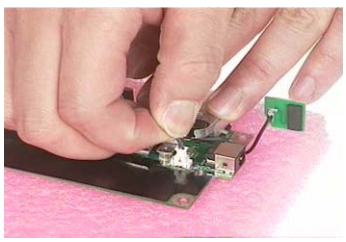




8. Disconnect the speaker set cable.
9. To remove the main board from the lower case assembly, first press the PCMCIA card button.
10. Then take the main board off the lower case assembly.

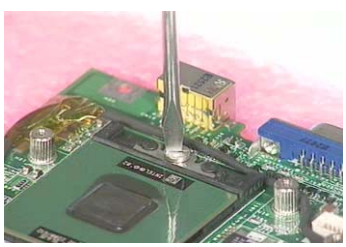
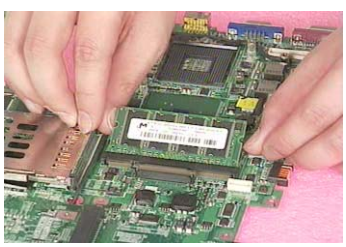
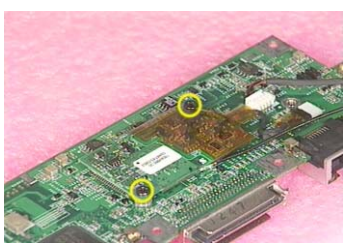


11. Unscrew the two screws that fasten the HDD bracket.
12. Remove one screw holding the top cover shielding.

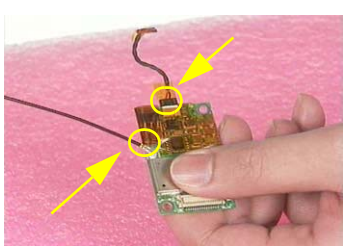
13. Disconnect the microphone cable. Then remove the top cover shielding.

14. Turn the CPU lock counter clock-wise with a flat head screw driver. Then remove the CPU.
15. Pop out the memory then remove it.
16. Unscrew the two screws that secure the modem/bluetooth combo card. Remove the modem/bluetooth combo card then disconnect the connector.

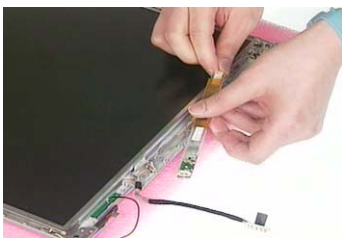
17. Disconnect the bluetooth antenna and the modem cable.
18. Disconnect the smart card reader FPC.
19. Unscrew the two screws holding the smart card reader then remove it.



Disassembling the LCD Module

1. Remove the six screw pad and the six screws.
2. Detach the LCD bezel carefully.
3. Disconnect LCD inverter.



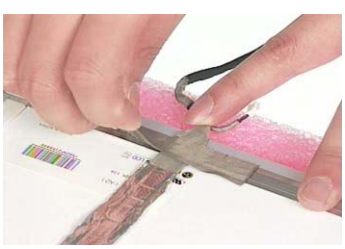


4. Remove the two screws holding the LCD to LCD panel.
5. Then remove the LCD.
6. Remove the four screws that fasten the right and the left LCD brackets. Then remove the right and the left LCD brackets.

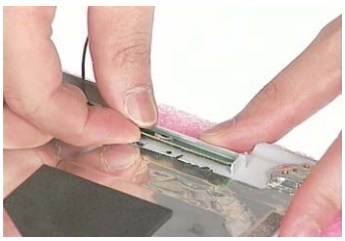
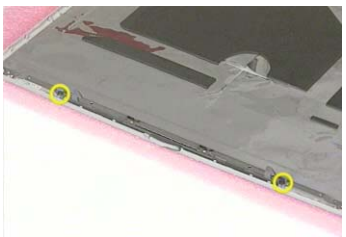


7. Tear off the electric conductive tape that fastens the LCD coaxial cable.
8. Tear off another electric conductive tape that fastens the LCD coaxial cable.
9. Disconnect the LCD coaxial cable.

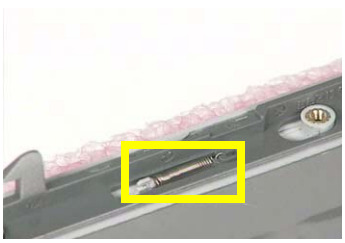
.



10. Detach the wireless antenna from the LCD panel.
11. Remove the two screws holding the LCD latch kit.
12. Remove the LCD latch kit bracket.


13. Unhook the spring.
14. Remove the screw that fastens the LCD latch kit.
15. Then remove the LCD latch kit.



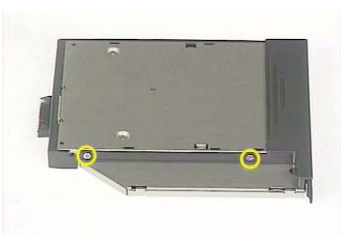
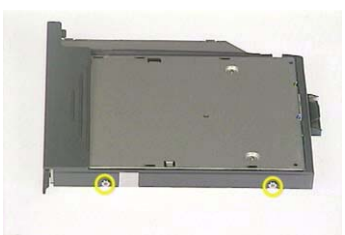
Disassembling the External Modules

Disassembling the HDD Module

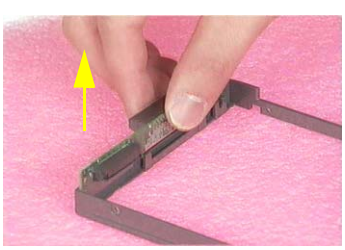
1. Remove the four screws holding the HDD bracket; two on each side.
2. Take out the HDD from the HDD bracket.


Disassembling the Optical Drive Module

1. Remove the two screws holding the ODD bracket.
2. Remove another screw as the picture shows.
3. Then remove the last two screws on the back side of the ODD module.


4. Slide the ODD from the ODD bracket.
5. Then remove the optical bracket.

6. In order to open the ODD, use an uncurved pin to press the emergency eject hole.
7. Remove the three screws that fasten the ODD door.
8. Then detach the ODD door.



Troubleshooting

Use the following procedure as a guide for computer problems.

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

1. Duplicate symptom and obtain the failing symptoms in as much detail as possible.
2. Distinguish symptom. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.
3. Disassemble and assemble the unit without any power sources.
4. If any problem occurs, you can perform visual inspection before you fellow this chapter's instructions. You can check the following:

   power cords are properly connected and secured;

   there are no obvious shorts or opens;

   there are no obviously burned or heated components;

   all components appear normal.
5. 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 63.
POST does not complete. No beep or error codes are indicated.	"Power-On Self-Test (POST) Error Message" on page 65 "Undetermined Problems" on page 73
POST detects an error and displayed messages on screen.	"Error Message List" on page 66
The diagnostic test detected an error and displayed a FRU code.	"System Diagnostic Diskette" on page 43
Other symptoms (i.e. LCD display problems or others).	"Power-On Self-Test (POST) Error Message" on page 65
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to "Power-On Self-Test (POST) Error Message" on page 65 "Intermittent Problems" on page 72 "Undetermined Problems" on page 73

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 43 for details.

1. Boot from the diagnostics diskette and start the diagnostics program (see “System Diagnostic Diskette” on page 43).
2. See if FDD Test is passed as the program runs to FDD Test.
3. Follow the instructions in the message window.

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

If the error still remains:

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

External CD-ROM Drive Check

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

Do the following to select the test device:

1. Boot from the diagnostics diskette and start the diagnostics program (refer to “System Diagnostic Diskette” on page 43.
2. See if CD-ROM Test is passed when the program runs to CD-ROM Test.
3. Follow the instructions in the message window.

If an error occurs, reconnect the connector on the System board. If the error still remains:

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

Keyboard or Auxiliary Input Device Check

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

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

If the keyboard cable connection is correct, run the Keyboard Test. See “System Diagnostic Diskette” on page 43 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 main board.

The following auxiliary input devices are supported by this computer:

- ❑ Numeric keypad

- External keyboard

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

Memory check

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

1. Boot from the diagnostics diskette and start the doagmpstotics program (please refer to main board.
2. Go to the diagnostic memory in the test items.
3. Press F2 in the test items.
4. Follow the instructions in the message window.

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

Power System Check

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

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

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

- “Check the Battery Pack” on page 64

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. After rebooting, run Tracking Pad PS2 Mode Driver. For example, run Syn touch driver.
2. Run utility with the PS/2 mouse function and check if the mouse is working.
3. If the the PS/2 mouse does not work, then check if the main board to switch board FPC is connected O.K.
4. If the main board to switch board FPC is connected well, then check if the FCC on touch pad PCB connects properly.
5. If the FFC on touch pad PCB connects properly, then check if LS851 JP1 Pin6=5V are pulese. If yes, then replace switch board. If no, then go to next step.
6. Replace touch pad PCB.
7. If the touch pad still does not work, then replace FPC on Track Pad PCB.

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 73.

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 Message List

Error Messages	FRU/Action in Sequence
Struck Key	See ““Keyboard or Auxiliary Input Device Check” on page 62
System CMOS checksum bad - Default configuration used	RTC battery Run BIOS Setup Utility to reconfigure system, then reboot system.
Real time clock error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main board
Previous boot incomplete - Default configuration used	“Load Default Settings” in BIOS Setup Utility. RTC batter Main baord.
Invalid System Configuration Data	“Load Default Settings” in BIOS Setup Utility. Main board.
Operating system not found	Enter Setup and see if fixed disk and drive A are properly identified. Dikette drive Hard disk drive Main board.

Error Message List

No beep Error Messages	FRU/Action in Sequence
Power-on indicator turns off and LCD is blank.	Power source (battery pack and power adapter.) See “Power System Check” on page 63 Ensure every connector is connected tightly and correctly. Reconnect the DIMM. Main board.
Power-on indicator turns on and LCD is blank.	Power source (battery pack and power adapter.) See “Power System Check” on page 63 Reconnect the LCD connector Hard disk drive LCD cable LCD inverter LCD Main board
Power-on indicator turns on and LCD is blank. But you can see POST on an external CRT.	Reconnect the LCD connectors. LCD cable LCD inverter LCD Main board
Power-on indicator turns on and a blinking cursor shown on LCD during POST.	Ensure every connector is connected tightly and correctly. Main board

Index of Symptom-to-FRU Error Message

LCD-Related Symptoms

Symptom / Error	Action in Sequence
LCD backlight doesn't work	First, plug a monitor to CRT port. Next, enter BIOS utility to running “Load Default Settings” then reboot the system. Reconnect the LCD connectors. Keyboard (if the brightness function key doesn't work). LCD cable LCD inverter LCD Main board
LCD is too dark LCD brightness cannot be adjusted	Enter BIOS Utility to execute “Load Setup Default Settings”, then reboot system. Reconnect the LCD connectors. Keyboard (if the brightness function key doesn't work). LCD cable LCD inverter LCD Main board
Unreadable LCD screen Missing pels in characters Abnormal screen Wrong color displayed LCD has extra horizontal or vertical lines displayed.	Reconnect the LCD cable LCD cable LCD Main board

Indicator-Related Symptoms

Symptom / Error	Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly	Main board
HDD/CD-ROM active indicators cannot work	HDD/CD-ROM drive Device driver Main 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 63. Battery pack AC adapter See if the thermal module is overheat (Heat sink or fan). Main board
The system cannot power-on.	Power source (battery pack and power adapter). See “Power System Check” on page 63. Battery pack Power adapter CPU Main board
The system cannot power-off.	In Windows XP operating system, hold and press the power switch for more than 4 seconds. If the system can power off, then the main board is OK. Verify OS in the HDD. Main board

Power-Related Symptoms

Symptom / Error	Action in Sequence
Battery can't be charged or discharged	See "Check the Battery Pack" on page 64. Battery pack Main board
System hang during POST	ODD/HDD/FDD/RAM module Main board

PCMCIA-Related Symptoms

Symptom / Error	Action in Sequence
System cannot detect the PC Card (PCMCIA)	PCMCIA slot assembly Main board
PCMCIA slot pin is damaged.	PCMCIA slot assembly
PC Card cannot be inserted or ejected	Check if the PCMCIA slot is blocked Main board

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. RAM module Main board Check BIOS revision
System can power on, but you hear two long beeps: "B--, B--" and the LCD is blank.	Reinsert DIMM DIMM Main board

Speaker-Related Symptoms

Symptom / Error	Action in Sequence
In Windows, multimedia programs, no sound comes from the computer.	OS volume control Audio driver Speaker Main board
Internal speakers make noise or emit no sound.	Speaker Main board
Microphone cannot work	Audio driver Volume control in Windows XP Main board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
The system will not enter hibernation mode	Power option in Windows XP Hard disk drive Main board
The system doesn't enter standby mode after closing the lid of the portable computer.	Driver of Power Option Properties Lid close switch in upper case Main board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
The system doesn't resume from hibernation/ standby mode.	Connect AC adapter then check if the system resumes from Standby/Hibernation mode. Check if the battery is low. Hard disk drive Main board
The system doesn't resume from standby mode after opening the lid of the portable computer.	LCD cover switch Main board
Battery fuel gauge in Windows doesn't go higher than 90%.	Refresh battery (continue use battery until power off, then charge battery). Battery pack Main board
System hangs intermittently.	Reconnect hard disk/CD-ROM drives. Main board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequence
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute "Load Setup defaults", then reboot system. Reconnect hard disk/CD-ROM drives/FDD or other peripherals. Main board
External display does not work correctly.	Press Fn+F5, LCD/CRT/Both display switching Keyboard Main board
USB does not work correctly	See "System Diagnostic Diskette" on page 43 Main board
Print problems.	Enter BIOS Setup Utility to execute "Load Default Settings" then reboot the system. Run printer self-test. Printer driver Printer cable Printer Main board
Parallel port device problems	Enter BIOS Setup Utility to execute "Load Default Settings" then reboot the system. Device driver Device cable Device Main board

Keyboard/Touchpad-Related Symptoms

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

Modem/LAN-Related Symptoms

Symptom / Error	Action in Sequence
Internal modem does not work correctly.	See “System Diagnostic Diskette” on page 43. Phone cable Driver Reconnect the Internal modem cable to the main board tightly. Main board
Internal LAN does not work correctly	Lan cable Driver Main board

NOTE: If you cannot find a symptom or an error in this list and the problem remains, see “Undetermined Problems” on page 73.

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 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 63):

1. Power-off the computer.
2. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
    - ❑ Non-Acer devices
    - ❑ Printer, mouse, and other external devices
    - ❑ Battery pack
    - ❑ Hard disk drive
    - ❑ DIMM
    - ❑ 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

FRU (Field Replaceable Unit) List

This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of TravelMate 650 series products. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

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

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

NOTE: Exploded diagram is not ready as service CD released. We will update the service guide to CSD website, please download the exploded diagram from the website if you need the files

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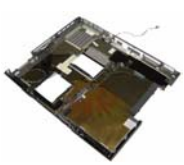
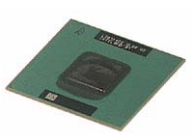
Picture	No.	Partname And Description	Part Number
Adapter			
	NS	ADPATER LITEON 75W 3P PA-1750-02CA PFC	AP.T2301.001
		ADPATER LITEON 75W 3P PA-1750-02CA PFC	AP.T2303.001
Battery			
	NS	BATTERY SANYO LI-ION 8CELL 4UR18650F-2-QC-ZG1 4400mAH	BT.T2303.001
		BATTERY SIMPLO LI-ION 8CELL (LI-ION BATTERY PACK ZG14S2P, 4400mAH)	BT.T2306.001
		BATTERY SANYO LI-ION 6CELL 3UF103450P-2-QC-20 3600 mAH	BT.T2303.002
Boards			
		MODEM BOARD AMBIT U98M005.05	54.T23V7.001
		MODEM /BLUETOOTH COMBO BOARD AMBIT T60M665.00	54.T23V7.002
		WIRELESS LAN BOARD (802.11b) AMBIT T60H656.02	54.T23V7.003
	NS	WIRELESS LAN BOARD (802.11a+b) AMBIT T60H677.01	54.T23V7.004
	NS	LAUNCH BOARD	55.T23V7.001
	NS	TOUCH PAD BOARD W/CABLE	55.T23V7.002
Cables			

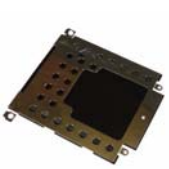
Picture	No.	Partname And Description	Part Number
		TOUCHPAD CABLE	50.T23V7.001
		MODEM CABLE	50.T23V7.002
		COVER SWITCH CABLE	50.T23V7.003
		POWER CORD US (3 pin)	27.T23V7.001
		POWER CORD PRC (3 Pin)	27.T23V7.003
		POWER CORD KOREA (3 Pin)	27.T23V7.006
Case/Cover/Bracket Assembly			
		MIDDLE COVER W/ NAME PLATE	42.T23V7.001
		DIMM DOOR W/SCREW	42.T23V7.002
		LOWER CASE W/O SPEAKER	60.T23V7.001
		UPPER CASE W/TOUCHPAD HOLDER	60.T23V7.002
		I/O BRACKET W/MICROPHONE	6K.T23V7.001
		FRONT BEZEL FOR 4 IN 1 MODEL	42.T23V7.003

Picture	No.	Partname And Description	Part Number
		FRONT BEZEL FOR NON-4 IN 1 MODEL	42.T23V7.004
		TOUCH PAD SHIELDING FOR TOUCH PAD BOARD	33.T23V7.001
		TOUCH PAD BRACKET FOR TOUCH PAD	33.T23V7.002
		WIRELESS BOARD COVER	42.T23V7.003
Communication Module			
		BLUETOOTH ANTENNA	50.T23V7.004
		WIRELESS LAN ANTENNA Y CABLE	50.T23V7.005
		WIRELESS LAN ANTENNA	50.T23V7.006
CPU			
	NS	INTEL PENTIUM 4-M (NORTHWOOD) 1.8GHZ/ 512K/400FSB/1.3V/478PIN/ C-1 STEPPING	01.P4MNW.1G8
		INTEL PENTIUM 4-M (NORTHWOOD) 1.9GHZ/ 512K/400FSB/1.3V/478PIN/ C-1 STEPPING	01.P4MNW.1G9
		INTEL PENTIUM 4-M (NORTHWOOD) 2.0GHZ/ 512K/400FSB/1.3V/478PIN/ C-1 STEPPING	01.P4MNW.2G0
		INTEL PENTIUM 4-M (NORTHWOOD) 2.2GHZ/ 512K/400FSB/1.3V/478PIN/ C-1 STEPPING	01.NORTH.22B
		INTEL PENTIUM 4-M (NORTHWOOD) 2.2GHZ/ 512K/400FSB/1.3V/478PIN/ C-1 STEPPING	01.P4MNW.2G4

Picture	No.	Partname And Description	Part Number
HDD/ Hard Disk Drive			
	NS	HDD 20GB/2.5 IN./4200RPM/TOSHIBA TITAN MK2018GAP	KH.25204.001
		HDD 30GB/2.5 IN./4200RPM/HITACHI EUCALYPTUS DK23EA/30	KH.33005.002
		HDD 30GB/2.5 IN./4200RPM/FUJITSU HORNET 16L MHS2030AT	KH.03006.001
		HDD 30GB/2.5 IN./4200RPM/TOSHIBA NEPTUNE MK3021GAS	KH.33004.001
		HDD 40GB/2.5 IN./4200RPM/HITACHI EUCALYPTUS DK23EA-40	KH.34005.002
		HDD 40GB/2.5 IN./4200RPM/TOSHIBA NEPTUNE MK4021GAS	KH.34004.001
		HDD 40GB/2.5 IN./4200RPM/FUJITSU HORNET 16L MHS2040AT	KH.04006.001
		HDD 60GB/2.5 IN./4200RPM/TOSHIBA NEPTUNE MK6021GAS	KH.36004.001
		HDD 60GB/2.5 IN./4200RPM/HITACHI EUCALYPTUS DK23EA-60	KH.06005.001
		HDD 60GB/2.5 IN./4200RPM/FUJITSU HORNET 16L MHS2060AT	KH.06006.001
		HDD 60GB/2.5 IN./5400RPM/TOSHIBA TRITON MK6022GAX	KH.06004.001
		HDD COVER	42.T23V7.010
		HDD CASE	33.T23V7.004
Keyboard			
	NS	KEYBOARD DARFON US INTERNATIONAL (Model name: 99.N3482.41D, 84 keys)	KB.T2307.001
		KEYBOARD DARFON CHINESE (Model name : 99.N3482.02, 84 keys)	KB.T2307.002
		KEYBOARD DARFON SPANISH (Model name : 99.N3482.40S, 85 keys)	KB.T2307.003
		KEYBOARD DARFON THAI (Model name : 99.3482N.403, 84 keys)	KB.T2307.004
		KEYBOARD DARFON BRAZILIAN PROTUGESE (Model name : 99.N3482.406, 85 Keys)	KB.T2307.005

Picture	No.	Partname And Description	Part Number
		KEYBOARD DARFON Korea (Model name : 99.3482N.40K, 84 keys)	KB.T2307.006
LCD			
		LCD MODULE 14.1" TFT XGA QDI QD141X1LH12	6M.T23V7.011
		LCD MODULE 14.1" TFT XGA SAMSUNG LTN141XB	6M.T23V7.012
		LCD MODULE 14.1" TFT XGA HANNSTAR HSD141PX13-B	6M.T23V7.013
		LCD MODULE 15" TFT XGA AU B150XG01 V2	6M.T23V7.021
		LCD MODULE 15.1" TFT XGA LG LP150X05-A2C1	6M.T23V7.022
		LCD MODULE 15" TFT XGA SHARP LQ150X1LHA2	6M.T23V7.023
		LCD MODULE 15" TFT XGA CPT CLAA150XH01	6M.T23V7.024
		LCD MODULE 15" TFT SXGA+ AU B150PG01	6M.T23V7.025
		LCD MODULE 15" TFT SXGA+ LG LP150E02	6M.T23V7.026
		LCD MODULE 15" TFT SXGA+ SHARP LQ150F1LH32	6M.T23V7.027
		LCD MODULE 15" TFT SXGA+ CPT CLAA150PA01	6M.T23V7.028
		LCD 14.1" TFT XGA QDI QD141X1LH12	LK.14109.003
		LCD 14.1" TFT XGA SAMSUNG LTN141XB	LK.14106.001
		LCD 14.1" TFT XGA HANNSTAR HSD141PX13-B	LK.14107.001
		LCD 15" TFT XGA AU B150XG01 V2	LK.15005.001
		LCD 15" TFT XGA LG LP150X05-A2C1	LK.15008.003
		LCD 15" TFT XGA SHARP LQ150X1LHA2	LK.1500C.001
		LCD 15" TFT XGA CPT CLAA150XH01	LK.1500A.001
		LCD 15" TFT SXGA+ AU B150PG01	LK.15005.002
		LCD 15" TFT SXGA+ LG LP150E02	LK.15008.004
		LCS 15" TFT SXGA+ SHARP LQ150F1LH32	LK.1500C.002
		LCD 15" TFT SXGA+ CPT CLAA150PA01	LK.15009.001
		INVERTER BOARD W/MAYLAR E AMBIT T18I064	19.T23V7.001
		INVERTER BOARD W/MAYLAR E SUMIDA 53261-0590	19.T23V7.002
		LCD BRACKET 14.1" RIGHT W/HINGE	33.T23V7.005
		LCD BRACKET 15" RIGHT W/HINGE	33.T23V7.007

Picture	No.	Partname And Description	Part Number
		LCD BRACKET 14.1” LEFT W/HINGE	33.T23V7.006
		LCD BRACKET 14.1” LEFT W/HINGE	33.T23V7.008
		LCD PANEL WITH LOGO-14”	60.T23V7.003
		LCD PANEL WITH LOGO-15”	60.T23V7.005
		LCD BEZEL 14”	60.T23V7.004
		LCD BEZEL 15”	60.T23V7.006
		LCD COAXIAL CABLE 14.1" FOR QDI	50.T23V7.011
		LCD COAXIAL CABLE 14.1" FOR SAMSUNG	50.T23V7.012
		LCD COAXIAL CABLE 14.1" FOR HANNSTAR	50.T23V7.013
		LCD COAXIAL CABLE 15" FOR AU XGA	50.T23V7.021
		LCD COAXIAL CABLE 15" FOR LG XGA	50.T23V7.022
		LCD COAXIAL CABLE 15" FOR SHARP XGA	50.T23V7.023
		LCD COAXIAL CABLE 15" FOR XGA CPT	50.T23V7.024
		LCD COAXIAL CABLE 15" FOR AU SXGA+	50.T23V7.025
		LCD COAXIAL CABLE 15" FOR LG SXGA+	50.T23V7.026
		LCD COAXIAL CABLE 15" FOR SHARP SXGA+	50.T23V7.027
		LCD COAXIAL CABLE 15" FOR CPT SXGA+	50.T23V7.028
Main Board			
	251-The System	TM650 (ZI1S) MAINBOARD W/SMART CARD READER,PCMCI SLOT,W/O CPU MEORY	MB.T2306.001
	NS	PCMCIA SLOT	21.T23V7.001
Memory			

Picture	No.	Partname And Description	Part Number
	NS	MEMORY SO-DIMM DDR266/128MB / INFINEON HYS64D16000GDL-7-B	KN.12802.004
		MEMORY SO-DIMM DDR266/256MB/0.14U / INFINEON HYS64D32020 GDL-7-B	KN.25602.001
		MEMORY SO-DIMM DDR266/256MB/0.15U / MICRON MT8VDDT3264HDG-265C3	KN.25604.004
		MEMORY SO-DIMM DDR266/256MB/0.14U / NANYA NT256D64SH8B0GM-75B	KN.25603.004
		MEMORY SO-DIMM DDR266/256MB/ ELPIDA W30256A6EP1652A	KN.25609.001
		MEMORY SO-DIMM DDR266/512MB/0.14U / INFINEON HYS64D64020GBDL-7-B	KN.51202.003
		MEMORY SO-DIMM DDR266/512MB/ MICRON MT16VDDS6464HG-265B4	KN.51204.002
Optical Drive			
		CD-ROM MODULE 24X QSI SCR-242-S	6M.T23V5.001
		CD-ROM MODULE 24X SAMSUNG SN-124P	6M.T23V5.002
		DVD-ROM MODULE 8X MKE SR-8178	6M.T23V5.003
		DVD-ROM MODULE 8X QSI SDR-083	6M.T23V5.004
		DVD-RW COMBO MODULE 24X QSI SBW-242	6M.T23V7.005
		DVD-RW COMBO MODULE 24X KME UJDA740	6M.T23V7.006
		CD-ROM DRIVE 24X QSI SCR-242-S	KD.24X03.001
		CD-ROM DRIVE 24X SAMSUNG SN-124P	KD.24X02.001
		DVD-ROM DRIVE 8X MKE SR-8178	KV.08X02.002
		DVD-ROM DRIVE 8X QSI SDR-083	KV.08X03.001
		DVD-RW COMBO DRIVE 24X QSI SBW-242	
		DVD-RW COMBO DRIVE 24X KME UJDA740	KO.24X03.001
		CD-ROM BEBEL FOR QSI	42.T23V7.004
		CD-ROM BEBEL FOR SAMSUNG	42.T23V7.005
		DVD-ROM BEZEL FOR MKE	42.T23V7.006
		DVD-ROM BEZEL FOR QSI	42.T23V7.007
		DVD-RW COMBO BEZEL FOR QSI	42.T23V7.008
		DVD-RW COMBO BEZEL FOR KME	42.T23V7.009
	NS	OPTICAL DEVICE BOARD	55.T23V7.003
		OPTICAL DEVICE BRACKET	33.T23V7.003
Pointing Device			

Picture	No.	Partname And Description	Part Number
		TOUCHPAD	56.T23V7.001
Speaker			
		SPEAKER SET	6K.T23V7.002
Heatsink			
		HEATSINK W/FAN	6K.T23V7.003
Reader			
		SMART CARD READER	60.T23V7.007
		4 IN 1 READER	6K.T23V7.004
Microphone			
		MICROPHONE	23.T23V7.001
Others			
		LCD LATCH W/O SPRING	6K.T23V7.005
		LCD SCREW RUBBER UPPER	47.T23V7.001
		LCD SCREW RUBBER LOWER	47.T23V7.002
Screws			
		NUT-I/O	86.T23V7.001
		SCREW M1.6X4.0-I-NI-NYLOK	86.T23V7.002
		SCREW M2.0X2.5-I-NI-NYLOK	86.T23V7.003
		SCREW M2.0X3.0-I-NI-NYLOK	86.T23V7.004
		SCREW M2.0X3.5-I-NI-NYLOK	86.T23V7.005
		SCREW M2.0X5-I-NI-NYLOK	86.T23V7.006
		SCREW M2.5X3-I-NI-NYLOK	86.T23V7.007
		SCREW M2.5X4.0-B-NI-NYLOK	86.T23V7.009
		SCREW M2.5X4-I-NYLOK	86.T23V7.010
		SCREW M2.5X5.0-I-NI-NYLOK	86.T23V7.011

Picture	No.	Partname And Description	Part Number
		SCREW M2.5X5.5-P-NI-NYLOK	86.T23V7.012
		SCREW M2.5X0.45+7I-NYLOK	86.T23V7.013
		SCREW M1.7X3.5-I-BZN	86.T23V7.014
		SCREW M2X3-I-BNI-NYLOK	86.T23V7.015
		SCREW M2.0X5.0-I-BNI-NYLOK	86.T23V7.016
		SCREW M2.0X6.0-I-NI-NYLOK	86.T23V7.017
		SCREW M2.5X2-I-NI-NYLOK	86.T23V7.018
		SCREW M2.5X4-I-BNI	86.T23V7.019

Model Definition and Configuration

TravelMate 650 Series

Model Number	CPU	LCD	Memory	HDD (GB)	ODD	Card Reader	Wireless LAN
653XV	P4-M2.0G	14.1XGA	256MB	40	8XDVD	4-in-1	N
653XC	P4-M2.0G	14.1XGA	256MB	40	24x CDRW+DVD	4-in-1	N
653XCi	P4-M2.0G	14.1XGA	256MB	40	24x CDRW+DVD	4-in-1	11b
653LCi	P4-M2.0G	15.0 SXGA+	256MB	30/40	24x CDRW+DVD	4-in-1	11b
654LCi	P4-M2.2G	15.0 SXGA+	512MB/ 256MB	40	24x CDRW+DVD	4-in-1	11b

Main Features

- Mobile Intel® Pentium® Processor-M at 1.4GHz or higher, featuring Intel® Enhanced SpeedStep™ technology
- SiS 650 chipset with embedded VGA, featuring 16MB DDR shared video memory (default, or 32/64MB configurable through BIOS setup)
- Standard 128/256MB of DDR-266 SDRAM, upgradeable to 1024MB on dual SoDIMM sockets
- 14.1” or 15.0” XGA TFT colour LCD, 1024x768 pixel resolution, 16.7 million colours
- 20GB or higher Ultra DMA-100 removable HDD
- 1.44” floopy disk drive or optional 4-in-1 card reader (depending on availablity)
- Optical drive bay for optional 24X CD-ROM, 8X DVD-ROM or 8X DVD/24X (8/8/24) CD-RW combo drive
- Embedded 10/100Mbps Fast Ethernet; optional Acer InviLink™ IEEE 802.11b wireless LAN with internal antenna
- International 56K ITU V.90 data/fax software modem (Wake-on-Ring ready)
- ACPI 2.0 power management; 57Wh li-ion battery pack; 3-hour battery life[1]; 3-hour rapid-charge, 6-hour charge-in-use
- FineTouch keyboard with 5° curve; built-in touchpad pointing device with integrated scroll key; 5 launch keys and 3 programmable keys; InviLink™ button for wireless models

[1] Actual battery life may be different because of the usage and configuration.

Test Compatible Components

This computer's compatibility is tested and verified by Acer's internal testing department. All of its system functions are tested under Windows® XP Home, Windows® XP Pro and Windows® 2000 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 TravelMate 650 series Compatibility Test Report released by the Acer Mobile System Testing Department.

Microsoft® Windows® XP Pro Environment Test

Item	Specifications
Display	Philips 109P 10 Dell Trinitron 21” ViewSonic GS773 ViewSonic GS790 ViewSonic PF775
Parallel Port	HP Laser Jet 5M HP Desk Jet 930C HP Desk Jet 840C IOMega ZIP (LPT Port) LL5 cable
1394 Port	1394 30GB HDD 1394 CCD (Stealth Fire) 1394 HUB: Aten 1394 HUB 1394 DV (Sony DCR-PC100)
Projector	Panasonic PT_L757U Acer 7755c
USB 2.0	USB HUB: 4 Port USB HDD: Easy Box USB CD-RW (YAMAHA CRW-70) USB DVD/CD-RW (Pioneer DVR-104) Adaptec USB 2.0 PCMCIA card
GB LAN HUB	3 Com GB LAN Hub
PS/2 Port	**Keyboard:** Microsoft Natural Keyboard Keyboard (MODE: 5121) **Keypad:** PC Concepts Keypad KB-5640 **Mouse:** Microsoft IntelliMouse Explorer Microsoft PS/2 Mouse COMPAQ Mouse
COM Port	Microsoft Serial Mouse 2.1

Item	Specifications
PC Card	**Modem Card:** Xircom CreditCard Modem 56 CM-56 Xircom CreditCard Modem 56 CM-56G 3Com 56K Modem XJ1560 **LAN Card:** D-Link Fast Ethernet DFE-650 D-Link CardBus DFE-660 3COM 10/100 16Bit LAN Card (3CCFE574BT) 3COM 10/100 CardBus LAN Card (3CCFE575BT) 3COM 10M CardBus LAN Card (3CCFE589eT) Xircom CreditCard Ethernet 10/100 (CE3B-100BTX) Xircom CardBus Ethernet II 10/100 (CBE2-100BTX) **SCSI:** Adaptec SlimSCSI APA-1460D Card Adaptec SlimSCSI 1480A CardBus UltraSCSI Card **LAN+Modem Card:** 3COM 10/100 LAN+56k Modem Card (3CCFEM556B) Xircom CreditCard Ethernet + Modem 56k (CEM56-100) **ATA Card:** KingMax 40MB Compact Flash 96MB **1394 CardBus Card:** Compaq Flash 96MB **Wireless LAN Card:** Gemtek Wireless LAN Card **MMC Card:** Apacer 32MB **MS Card:** Apacer 128MB **SD Card:** Apacer 128MB **SM Card:** Apacer 128MB **CF Card:** Apacer 128MB

Item	Specifications
USB Port	**USB Mouse:** Microsoft Optical USB Mouse Logitech Wheel Mouse Acer USB Mouse M012B0 **USB Keyboard:** Microsoft Internet Keyboard Pro Gateway Keyboard SK-9910U Gateway Keyboard SK-9926 **USB Camera:** Microtek EyeStar U2S PC Camera USC-1 Dlink DSC 350 USB CCD **USB HDD:** Argosy HDD **USB CD-ROM:** IOMEGA ZIP CD650 **USB Printer:** HP DeskJet 930C HP DeskJet 840C **USB FDD:** MIC USB FDD YD-8U10 Teac USB FDD Y-E Data USB FDD Sharp USB FDD **USB LAN:** 3Com USB LAN LINKSYS USB LAN **USB Zip:** IOMEGA USB ZIP **USB Scanner:** HP ScanJet 5300c **USB Speaker:** Philips USB Speaker dss330 USB HUB PCI USB Hub XeXtreme USB Hub **USB Gamepad:** Microsoft Sidewinder Gamepad Logitech WingMan FORMULA FORCE **USB CCD:** Intel USB CCD Veo USB CCD **USB Modem:** V.90 56Kbps Voice/Fax/Data Modem USB Card Reader: 5 in 1 USB to PS/2 Transfer Connector USB to Serial Transfer Connector
Audio Jack	JS-100 Jazz 3D Speaker SONY Earphone MDR-CD60 Microsoft microphone
Microphone	Condenser Microphone Dynamic Microphone
Access Point	Intel Access Point

Item	Specifications
Bluetooth	Logitech M-BD58 Logitech M-UA34 Logitech M-UB48 Microsoft IntelliMouse Explorer
Port Replicator	Acer Port Replicator

Microsoft® Windows® 2000 Environment Test

Item	Specifications
Display	Philips 109P 10 Dell Trinitron 21” ViewSonic GS773 ViewSonic GS790 ViewSonic PF775
Parallel Port	HP Laser Jet 5M HP Desk Jet 930C HP Desk Jet 840C IOMega ZIP (LPT Port) LL5 cable
1394 Port	1394 30GB HDD 1394 CCD (Stealth Fire) 1394 HUB: Aten 1394 HUB 1394 DV (Sony DCR-PC100)
Projector	Panasonic PT_L757U Acer 7755c
USB 2.0	USB HUB: 4 Port USB HDD: Easy Box USB CD-RW (YAMAHA CRW-70) USB DVD/CD-RW (Pioneer DVR-104)
GB LAN HUB	3 Com GB LAN Hub
PS/2 Port	**Keyboard:** Microsoft Natural Keyboard Keyboard (MODE: 5121) **Keypad:** PC Concepts Keypad KB-5640 **Mouse:** Microsoft IntelliMouse Explorer Microsoft PS/2 Mouse COMPAQ Mouse
COM Port	Microsoft Serial Mouse 2.1

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Item	Specifications
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Port Replicator	Acer Port Replicator

Online Support Information

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

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

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

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

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

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

Also contained on this website are:

- Detailed information on Acer's International 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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