TravelMate 600
Service Guide

System Specifications

Features

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

Performance

- ❏ Intel Pentium® III Coppermine processor with integrated L2 cache memory
- ❏ 64-bit main memory
- ❏ Large and vibrant Thin-Film-Transistor (TFT) XGA Liquid Crystal Display (LCD)
- ❏ 64-bit graphics acceleration with 8MB graphics memory and Accelerated Graphics Port (AGP)
- ❏ High-capacity, Enhanced-IDE removable hard disk
- ❏ AcerMedia drive bay customizable with drive modules
- ❏ Lithium-Ion battery pack
- ❏ Power management system with ACPI (Advanced Configuration and Power Interface) or APM (Advanced Power Management) support

Multimedia

- ❏ 16-bit high-fidelity PCI stereo audio with 3D sound and wavetable synthesizer
- ❏ Built-in speakers
- ❏ AcerMedia drive
- ❏ Dualview capability
- ❏ DVD playback capability (with DVD-ROM drive module installed in AcerMedia drive bay)
- ❏ USB video capture kit option

Connectivity

- ❏ High-speed fax/data PCI modem
- ❏ Built-in network feature for Ethernet 10/100 LAN
- ❏ Fast infrared (FIR) wireless communication
- ❏ Dual Universal Serial Bus (USB) ports

Human-centric Design and Ergonomics

- ❏ Slim, sleek, smooth and stylish design
- ❏ Full-sized keyboard
- ❏ Wide and curved palm rest
- ❏ Ergonomically-centered touchpad pointing device with scroll function
- ❏ Anti-shock protection system for your hard disk
- ❏ Personal identification slot

Expansion

- ❏ CardBus PC Card (formerly PCMCIA) slot (one type II/I) with Zoomed Video (ZV) support
- ❏ Upgradeable memory and hard disk
- ❏ AcerMedia drive options

Display

The large graphics display offers excellent viewing, display quality and desktop performance graphics. The computer supports a Thin-Film Transistor (TFT) liquid crystal display (LCD) displaying 32-bit true-color at 1024x768 eXtended Graphics Array (XGA) resolution.

Video performance

PCI local bus video with 64-bit graphics acceleration and 8MB high-speed Synchronous Dynamic Random Access Memory (SDRAM) boost video performance. The video also includes 3D capabilities and DVD playback support.

Simultaneous display

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

Power management

The power management system incorporates an "automatic LCD dim" feature that automatically decides the best settings for your display and at the same time conserves power. See "Power Management" on page 23 for more information on power management features.

Dualview

The computer's video chip takes advantage of the multi-display capability of Windows 98 and Windows 2000. This feature allows you to extend your desktop to an external display device, such as an external monitor or projector. With this feature enabled, you can move program windows to and from the computer LCD and external display device.

Opening and closing the display

To open the display, slide the display cover latch to the left and lift up the cover. Then tilt it to a comfortable viewing position.
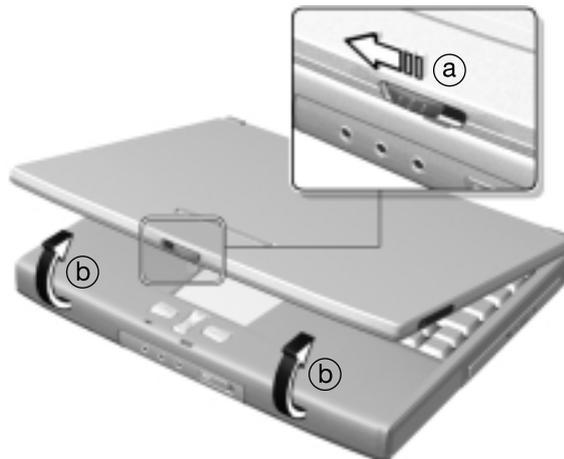

The computer employs a microswitch that turns off the display (and enters Standby mode) to conserve power when you close the display cover, and turns it back on when you open the display cover.

NOTE: If an external monitor is connected, the computer turns off the display (but does not enter standby mode) when you close the display cover.
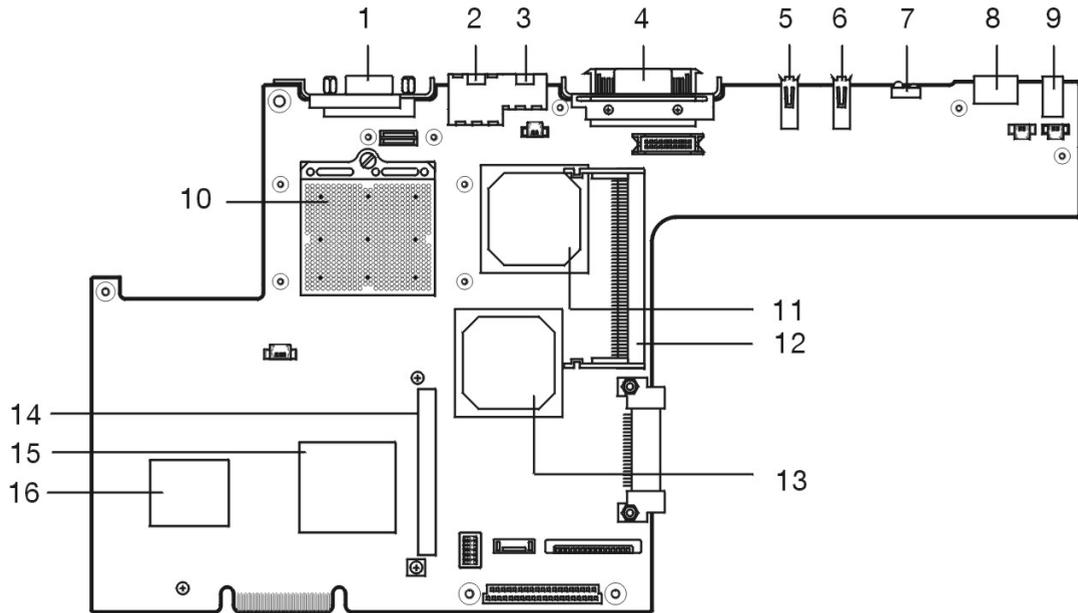
To close the display cover, fold it down gently until the display cover latch clicks into place.

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

System Block Diagram
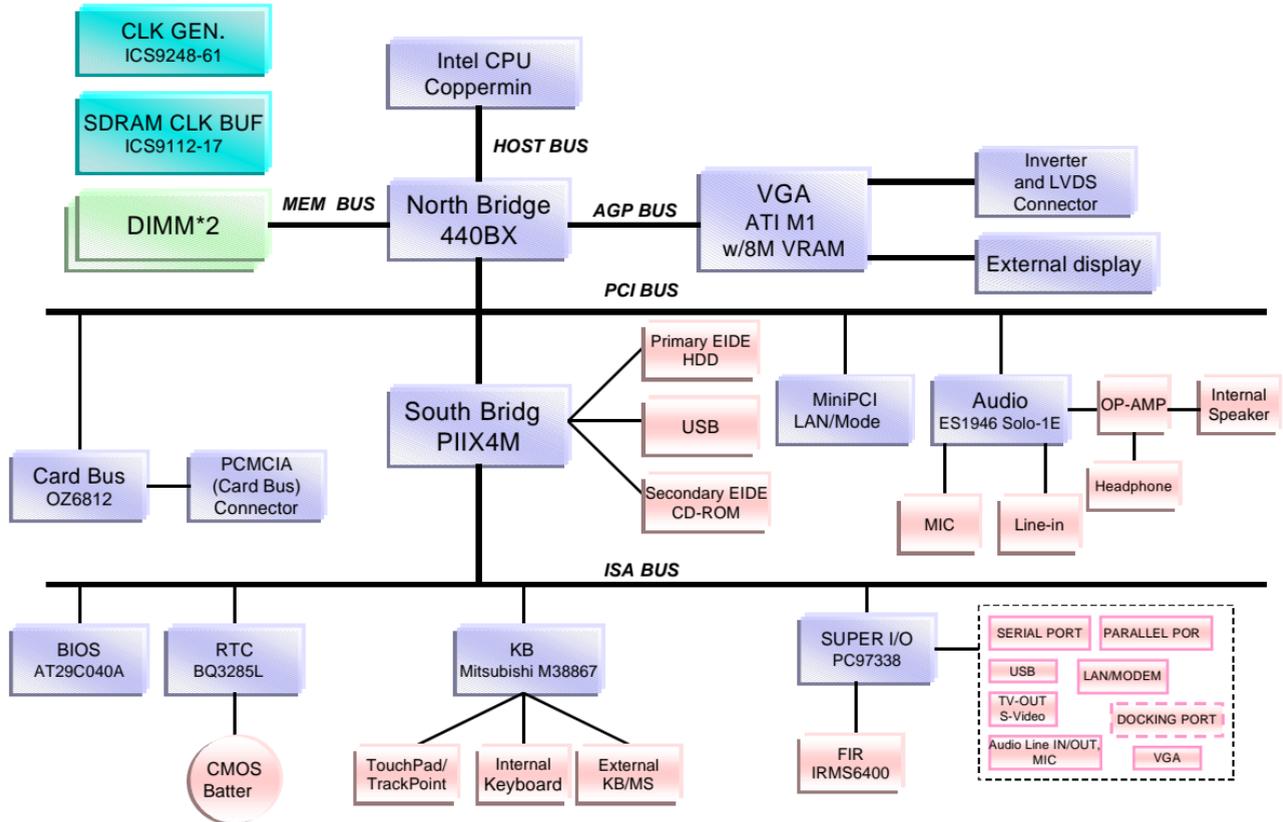
Top View

1. External display port
2. LAN port
3. Modem port
4. Expansion port
5. USB port 1
6. USB port 2
7. Infrared port
8. PS/2 keyboard and mouse port
9. DC-in port
10. CPU socket
11. VGA controller (ATI Rage Mobility-M1)
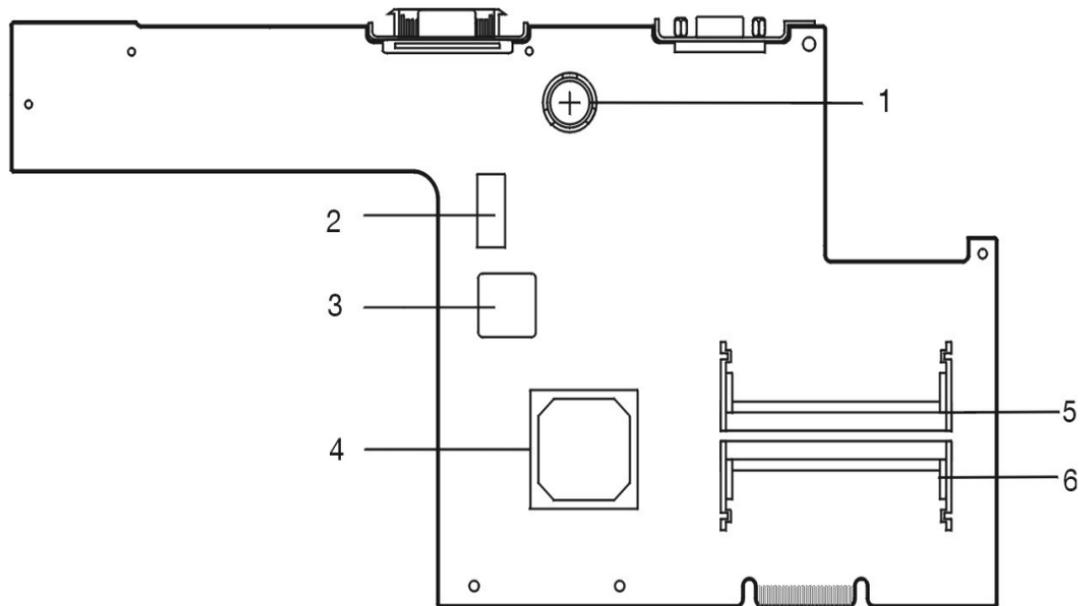12. LAN/Modem PCI combo card socket
13. North Bridge (Intel 82443BX)
14. PCMCIA (PC card) socket
15. PCMCIA (PC card) controller (OZ6812)
16. Audio controller (ESS Solo-1E)

Bottom View

1. RTC Battery
2. BIOS ROM
3. Super I/O controller (NS97338)

4. South Bridge (Intel 82371MB/ 82371EB)
5. DIMM 1 socket
6. DIMM 2 socket (reverse)

Panel

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

Front Panel
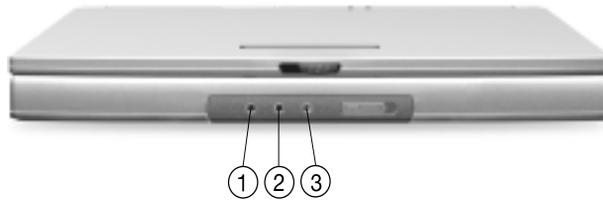
#	Icon	Port	Connects to...
1		Line-out jack	Audio line-out device (e.g., speakers, headphones)
2		Line-in jack	Audio line-in device (e.g., audio CD player, stereo walkman)
3		Microphone-in jack	Mono condenser microphone

Left Panel
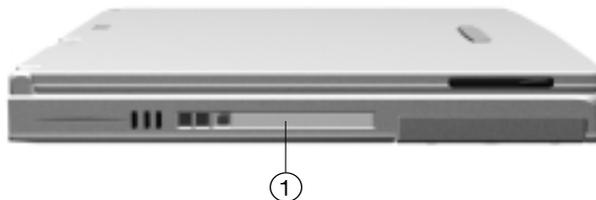
#	Icon	Port	Connects to...
1		PCMCIA (PC card) port	One Type II/I 16-bit PC Card or 32-bit CardBus PC Card (Zoomed Video supported)

Rear Panel
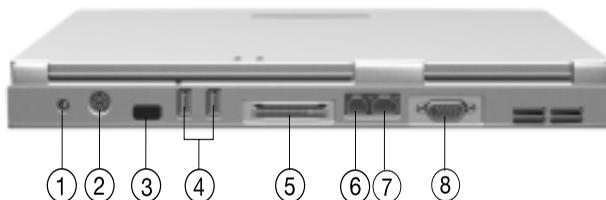
#	Icon	Port	Connects to...
1		DC-in port	AC adapter and power outlet.
2		PS/2 port	PS/2 compatible device (e.g., PS/2 keyboard/mouse/keypad)
3		Infrared port	Infrared device (e.g., infrared printer, IR-aware computers)
4		USB ports (two)	Universal Serial Bus device (e.g., USB mouse, USB camera)
5		Expansion port	I/O replicator or EasyPort expansion devices
6		Modem port	Phone line
7		LAN port	Ethernet 10/100-based network
8		External display port	Display device (e.g., external monitor, LCD projector) up to 1280x1024 resolution at 64K-colors

Indicators

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

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

| Icon	Function	Description
☼	Power	Lights when the computer is on.
z^z	Sleep	Lights when the computer enters Sleep mode.
◆	Media Activity	Lights when the floppy drive, hard disk or AcerMedia drive is active.
🔋	Battery Charge	Lights when the battery is being charged.
🔒A	Caps Lock	Lights when Caps Lock is activated.
🔒1	Num Lock	Lights when Num Lock is activated.

Keyboard

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

Special keys

Lock keys

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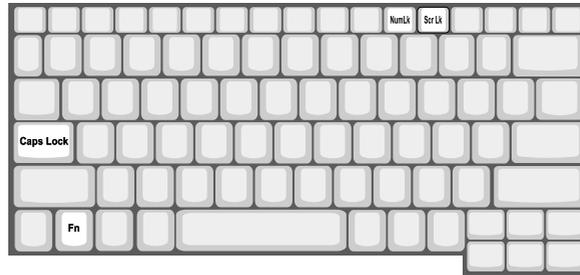
Lock key	Description
Caps Lock	When Caps Lock is on, all alphabetic characters typed are in uppercase.
Num Lock (Fn-F11)	When Num Lock is on, the embedded keypad is in numeric mode. The keys function as a calculator (complete with the arithmetic operators +, -, *, and /). Use this mode when you need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

Embedded numeric keypad

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

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

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

Windows keys

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

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

Hot Keys

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

To activate hot keys, press and hold the Fn key before pressing the other key in the hot key combination.
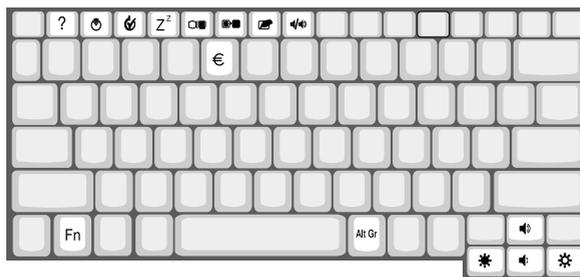
Hot key	Icon	Function	Description
Fn-F1	?	Hot Key Help	Displays help on hot keys.
Fn-F2	⊘	Setup	Accesses the computer's configuration utility.

Hot key	Icon	Function	Description
Fn-F3		Power Management Scheme Toggle	Switches the power management scheme used by the computer (function available if supported by operating system)
Fn-F4	Z^z	Sleep (ACPI) or Standby (APM)	Puts the computer in Sleep mode or Standby mode.
Fn-F5		Display Toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn-F6		Screen Blank	Turns the display screen backlight off to save power. Press any key to return.
Fn-F7		Touchpad Toggle	Turns the internal touchpad on and off.
Fn-F8		Speaker Toggle	Turns the speakers on and off.
Fn-←		Brightness Down	Decreases the screen brightness.
Fn-→		Brightness Up	Increases the screen brightness.
Fn-↑		Volume Up	Increases the volume.
Fn-↓		Volume Down	Decreases the volume.
Alt Gr-Eur	€	Euro	Types the euro symbol.

The euro symbol

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

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

To verify the keyboard type:

1. Click on **Start, Settings, Control Panel**.

2. Double-click on **Keyboard**.

3. Click on the **Language tab**.

4. Verify that the keyboard layout used for "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 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 http://www.microsoft.com/typography/faq/faq12.htm for more information.

Keyboard ergonomics

Located below the keyboard, the wide and curved palm rest is ergonomically designed to provide you with a very comfortable place to rest your hands while you type.

Touchpad

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

NOTE: When using an external USB or serial mouse, you can press **Fn-F7** to disable the touchpad. If you are using an external PS/2 mouse, the touchpad is automatically disabled.

Touchpad basics

The following items teach you how to use the touchpad:
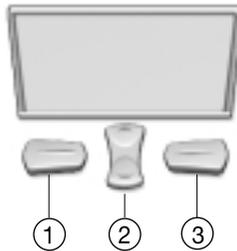
1. Move your finger across the touchpad to move the cursor.
2. Press the left (1) and right (3) buttons located on the edge of the touchpad to do selection and execution functions. These two buttons are similar to the left and right buttons on a mouse. Tapping on the touchpad produces similar results.
3. Use the center (2) buttons (top and bottom) to scroll up or down a page. This button mimics your cursor pressing on the right scroll bar of Windows applications.

Function	Left Button	Right Button	Center Button	Tap
Execute	Click twice quickly			Tap twice (at the same speed as double-clicking a 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 and drag the cursor
Access context menu		Click once		
Scroll			Click and hold the up/down buttons	

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 harder will not increase the touchpad's responsiveness.

Customizing the center button

You can customize the function of the center button as follows:

1. Click on **Start**, **Settings**, **Control Panel**.

2. Double-click on **Mouse**.

3. Click on the **Button Actions** tab.

4. Customize the settings for Rocker Switch.

5. Click on **OK**.

Main board Major Chips

Item	Controller
System core logic	Intel 443BX/PIIX4M, PIIX4E
Super I/O controller	NS97338
Audio controller	ESS ES1946 Solo-1E
Video controller	ATI Rage Mobility-M1
IDE controller	PIIX4M/ PIIX4E
Keyboard controller	M38867
RTC	BQ3285LF
PCMCIA Controller	OZ6812

Processor

Item	Specification
CPU type	Intel Coppermine 600/650+MHz processor with 256KB L2 on-die cache memory
CPU package	MBGA package
CPU core voltage	1.6V/1.3V
CPU I/O voltage	1.5V

BIOS

Item	Specification
BIOS vendor	Acer
BIOS version	V3.3
BIOS ROM type	Flash ROM
BIOS ROM size	512KB
BIOS package	32-pin TSOP
Supported protocols	ACPI 1.0a, APM 1.2, PC Card 95, SM BIOS 2.1, EPP/IEEE 1284, ECP/IEEE 1284 1.7 & 1.9, IrDA, PCI 2.1, PnP 1.0a, PS/2 keyboard and mouse, USB, VESA VGA BIOS, DDC-2B, CD-ROM bootable, Windows keyboard Microsoft Simple Boot Flag
BIOS password control	Set by switch, see SW2 settings

Second Level Cache

Item	Specification
Cache controller	Built-in CPU
Cache size	256KB
1st level cache control	Always enabled
2nd level cache control	Always enabled
Cache scheme control	Fixed in write-back

System Memory

Item	Specification
Memory controlle	Built-in Intel 440BX
Onboard memory size	0MB

System Memory

Item	Specification
DIMM socket number	2 sockets
Supports memory size per socket	64/128 MB
Supports maximum memory size	256MB (128MB x 2)
Supports DIMM type	SDRAM
Supports DIMM speed	100MH
Supports DIMM voltage	3.3V
Supports DIMM package	144-pin SO-DIMM
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications.

Memory Combinations

Slot 1	Slot 2	Total Memory
0 MB	64 MB	64 MB
64 MB	64 MB	128 MB
0 MB	128 MB	128 MB
64 MB	128 MB	192 MB
128 MB	128 MB	256 MB

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

NOTE: The shipping specification for DIMM combination is 64MB in slot 1.

LAN & Modem Interface

Item	Specification
Chipset	Intel 82559
Fax modem data baud rate (bps)	14.4K
Data modem data baud rate (bps)	56K
Supports modem protocol	V.90 data/fax modem 56K
Supports LAN protocol	10/100 Mbps
Modem/LAN connector type	RJ11/RJ45
Modem/LAN connector location	Rear side

Floppy Disk Drive Interface

Item	Specification		
Vendor & model name	Y-E DATA YD-8U10		
Floppy Disk Specifications			
Media recognition	2DD (720K)	2HD (1.2M, 3 mode)	2HD (1.44M)
Sectors/track	8	15	18
Tracks	80	80	80
Data transfer rate (Kbit/s)	250	500	500
Rotational speed (RPM)	300	360	300
Read/write heads	2		
Encoding method	MFM		
Power Requirement			
Input Voltage (V)	DC 4.40V~5.25V		

Hard Disk Drive Interface

Item	Specification		
Vendor & Model Name	IBM DBCA-206480	IBM DARA-209000	IBM DARA-212000
Capacity (GB)	6.4	9	12
Bytes per sector	512	512	512
Logical heads	15	16	16
Logical sectors	63	63	63
Drive Format			
Logical cylinders	13424	16383	16383
Physical read/write heads	4	3	4
Disks	2	2	2
Spindle speed (RPM	4200	4200	4200
Performance Specifications			
Buffer size (KB)	460	418	418
Interface	IDE (ATA-4)	IDE (ATA-4)	IDE (ATA-4)
Data transfer rate (disk buffer, MB/s)	69.0-118.0	85.5-161.6	85.5-161.6
Data transfer rate (host buffer, MB/s)	16.6 (PIO Mode-4) 33.3 (Ultra DMA Mode-2)	16.6 (PIO Mode-4) 66.6 (Ultra DMA Mode-4)	
DC Power Requirements			
Voltage tolerance	5+/-5%	5+/-5%	5+/-5%

DVD-ROM Interface

Item	Specifications	
Vendor & model name	MKE SR-8174-BXX 6X	
Performance Specification	With CD Diskette	With DVD Diskette

Transfer rate	CAV mode:
	  775~1800 blocks/sec
	Mode 1:
	  10.3X-24X 1550~3600 kBytes/sec
	Mode 2:
	  1768~4106 kBytes/sec
		CAV mode:
		  27.51~66.48 Mbits/sec.

Average Full Access time (typ.)	Random: 120 ms Full stroke: 210 ms	Random: 170 ms Full stroke: 320 ms
Data Buffer Capacity	512KB	512KB
Interface	IDE	
Applicable disc format	DVD-5, DVD-9, DVD-10, DVD-R (3.95G), CD-Audio, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode2, form 1 and form 2), CD-I, CD-RW, CD-WO, Photo CD, Video CD, Enhanced Music CD, CD-TEXT	
Loading mechanism	Soft eject (with emergency eject hole)	
Power Requirement		
Input Voltage	5V	

Audio Interface

Item	Specification
Audio controller	ESS ES1946 Solo-1E
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	16 bit
Compatibility	Windows Sound System (WSS), Microsoft PC97/PC98/PC99, WHQL audio requirement
Mixed sound source	Voice, Synthesizer, Line-in, Microphone, CD
Voice channel	8/16-bit, mono/stereo
Sampling rate	44.1 KHz
Internal microphone	Yes
Internal speaker / Quantity	Yes/ 2 pieces
Supports PnP DMA channel	DMA channel 0 DMA channel 1
Supports PnP IRQ	IRQ3, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11

Video Interface

Item	Specification
Vendor & model name	ATI Rage Mobility-M1
Chip voltage	Core/2.5V Memory/3.3V
Supports ZV (Zoomed Video) port	Yes
Graph interface	2X AGP (Accelerated Graphics Port) bus
Maximum resolution (LCD)	1024x768 (24 bit colors)
Maximum resolution (CRT)	1024x768 (24 bit colors)

Video Memory

Item	Specification
Fixed or upgradeable	Fixed, built-in video controller
Video memory size	8 MB

Video Resolutions Mode

Resolution	Refresh Rate	
	CRT Only	LCD/CRT Simultaneous
640x480x256	85	60
640x480x64K	85	60
640x480x16	85	60
800x600x256	85	60
800X600X64K	85	60
1024x768x25	60, 75	60

Parallel Port

Item	Specification
Parallel port controller	NS97338
Number of parallel port	1
Location	Use the easy port
Connector type	25-pin D-type connector, in female type
Parallel port function control	Enable/Disable by BIOS Setup
Supports ECP/EPP	Yes (set by BIOS setup)
Optional ECP DMA channel (in BIOS Setup)	DMA channel 1 and 3
Optional parallel port I/O address (in BIOS Setup)	3BCh, 378h, 278h
Optional parallel port IRQ (in BIOS Setup)	IRQ5, IRQ7

Serial Port

Item	Specification
Serial port controlle	NS97338
Number of serial port	1
Supports 16550 UART	Yes
Connector type	9-pin D-type connector, in male type
Location	Use the easy port
Serial port function control	Enable/Disable by BIOS Setup
Optional serial port (in BIOS Setup)	3F8h, 3E8h, 2E8h
Optional serial port IRQ (in BIOS Setup)	IRQ4, IRQ11

USB Port

Item	Specification
USB Compliancy Level	1.0
UHCI	USB 1.0
Number of USB port	2
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

IrDA Port

Item	Specification
IrDA FIR port controller	NS97338
Number of IrDA FIR port	1
Location	Real side
IrDA FIR port function control	Enable/disable by BIOS Setup
Optional IrDA FIR port (in BIOS Setup)	2F8h, 2E8h, 3E8h
Optional IrDA FIR port IRQ (in BIOS Setup)	IRQ3, IRQ10, IRQ11
Optional IrDA FIR port DRQ (in BIOS Setup)	DRQ3, DRQ0

PCMCIA Port

Item	Specification
PCMCIA controller	O2 OZ6812
Supports card type	Type II/I
Number of slots	One type II/I
Access location	Left side
Supports ZV (Zoomed Video) port	Yes
Supports 32 bit CardBus	Yes

Keyboard

Item	Specification
Keyboard controller	Mitsubishi M38867
Keyboard vendor & model name	JME K9811
Total number of keypads	84/85/88-key
Windows 95 keys	Yes
Internal & external keyboard work simultaneously	Yes

Battery

Item	Specification
Vendor & model name	Panasonic BTP-3201
Battery Type	Li-ion
Pack capacity	3600 mA
Cell voltage	3.6V
Number of battery cell	8
Package configuration	4S-2P
Package voltage	14.8V (16.8V full charge)

DC-AC LCD Inverter

Item	Specification
Vendor & model name	Sumida Jv090125/T Rev 1A
Input voltage (V)	+5V
Input current (mA)	200mA max
Output voltage (Vrms, no load)	1300Vrm
Output voltage frequency (kHz	60K-65K Hz
Output Current/Lamp	6.0 mA max

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

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

LCD

Item	Specification	
Vendor & model name	LG Phillips LP133X7-H2CC	L133X2-3
Mechanical Specifications		
LCD display area (diagonal, inch)	13.3	13.3
Display technology	TFT	TFT
Resolution	XGA, 1024x768	XGA, 1024x76
Supports colors	262K	262K
Optical Specification		
Brightness control	keyboard hotkey	keyboard hotkey
Contrast control	No	No
Electrical Specification		
Supply voltage for LCD display (V)	3.3	3.3
Supply voltage for LCD backlight (Vrms)	630	None

AC Adapter

Item	Specification
Vendor & model name	Delta ADT-60XB D 3P
Input Requirements	
Maximum input current (A, @90Vac, full load	1.5 A @ 90Vac 0.9 A @ 180Vac
Nominal frequency (Hz)	47 - 63
Frequency variation range (Hz)	47 - 63
Nominal voltages (V)	90 - 264
Inrush current	The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac(60Hz) and 230Vac(50Hz) respectively.
Efficiency	It should provide an efficiency of 83% minimum, when measured at maximum load under 115V(60Hz).
Output Ratings (CV mode)	
DC output voltage	19 +0.6/-0 V
Noise + Ripple	300m Vp-p max (20MHz bandwidth)
Load	0 A (min.) 3.16 A (max.)
Output Ratings (CC mode)	
DC output voltage	+12V ~ +19V
Constant output	2.75 ± 0.2 A
Dynamic Output Characteristics	
Turn-on delay time	2 sec. (@115Vac)
Hold up time	4 ms min. (@115 Vac input, full load)
Over Voltage Protection (OVP)	24 V
Short circuit protection	Output can be shorted without damage
Electrostatic discharge (ESD)	15kV (at air discharge) 8kV (at contact discharge)
Dielectric Withstand Voltage	
Primary to secondary	1500 Vac (or 2121 Vdc), 10 mA for 1 second

AC Adapter

Item	Specification
Leakage current	0.25 mA max. (@ 254 Vac, 60Hz)
Regulatory Requirements	Internal filter meets: 1. FCC class B requirements. (USA) 2. VDE 243/1991 class B requirements. (German) 3. CISPR 22 Class B requirements. (Scandinavia) 4. VCCI class II requirements. (Japan)

Power Management

Power Saving Mode	Phenomenon
Standby Mode ❑ Waiting time specified by the System Standby value or the operating system elapses without any system activity ❑ Closing the display cover ❑ When the computer is about to enter Hibernation mode (e.g., during a battery-low condition), but the Hibernation file is invalid or not present. ❑ When customized functions for power management are set to Standby and the corresponding action is taken. ❑ Invoked by the operating system power-saving modes.	❑ The buzzer beeps ❑ The Sleep indicator lights up
Hibernation Mode ❑ When customized functions for power management are set to Hibernation and the corresponding action is taken. ❑ Invoked by the operating system power-saving modes.	❑ All power shuts off
Display Standby Mode Keyboard, built-in touchpad, and an external PS/2 pointing device are idle for a specified period.	❑ The display shuts off
Hard Disk Standby Mode Hard disk is idle within a specified period of time.	❑ Hard disk drive is in standby mode. (spindle turned off)

Environmental Requirements

Item	Specification
Temperature	
Operating	+5 ~ +35°C
Non-operating	-20 ~ +60°
Non-operating	-20 ~ +60°C (storage package)
Humidity	
Operating	20% ~ 80% RH, non-condensing
Non-operating	20% ~ 90% RH, non-condensing
Non-operating	20% ~ 90% RH, non-condensing (storage package)

Environmental Requirements

Item	Specification
Vibration	
Operating (unpacked)	5 ~ 25.6 Hz: 0.38mm (peak to peak)
	25.6 ~ 250 Hz: 0.5G
Non-operating (unpacked)	5 ~ 27.1 Hz: 0.6G
	27.1 Hz ~ 50 Hz: 0.41mm (peak to peak)
	50 ~ 500 Hz: 2.0G
Non-operating (packed)	5 ~ 62.6 Hz: 0.51mm (peak to peak)
	62.6 Hz ~ 500 Hz: 4G

Mechanical Specifications

Item	Specification
Dimensions	298(W) x 238(D) x 28.5 ~ 32.9(H) mm
Weight	2.25 kg (4.95 lbs)
I/O Ports	One type II/I PCMCIA (PC card) port, one RJ11 port, one RJ-45 port, one DC-in port, one infrared (FIR) port, two USB ports, one external display port, one PS/2 keyboard/mouse port, one line-out jack, one line-in jack, one microphone-in jack, one mini docking station connector, one parallel port, one serial port
Drive Bays	One
Material	LCD Panel & Lower Case: Meg-Alloy
	Others of Housing: Plastic
Indicators	Power-on LED, Standby, Battery Status, Media access, Capslock, Numlock
Switch	Power

Memory Address Map

Memory Addres	Size	Function
00000000-0009FFFFF	640 KB	Base memory
000A0000-000BFFFF	128 KB	Video memory
000C0000-000C9FFF	40 KB	Video BIOS
000CA000-000CBFFF	8 KB	I/O ROM
000E0000-000FFFFF	128 KB	System BIOS
00100000-top limited	--	Extended (DIMM) memory
04301000-04301FFF	4 KB	PCMCIA controller (slot 1)
04302000-04302FFF	4 KB	PCMCIA controller (slot 2)
0430000-04300FFFF	64 KB	USB controller

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 8742 chip select
061	System speaker out
040B	DMA controller-1
061	System speaker
070-071	Real-time clock and NMI mask
080-08F	DMA page register

I/O Address Map

I/O Address	Function
0A0-0A1	Interrupt controller-2
0C0-0DF	DMA controller-2
0F0-0FF	Numeric data processor
120-13F 180-18F	Power management controller
170-177	2nd EIDE device (CD-ROM) select
1F0-1F7	1st EIDE device (hard drive) select
220-22F	Audio
240-24F	Audio (optional)
278-27F	Parallel port
2E8-2EF	COM4
2F8-2FF	COM2 or FIR (optional)
378, 37A	Parallel port
3BC-3BE	Parallel port
3B0-3BB 3C0-3DF	Video Controller
3F0h-3F7	Standard Floppy Disk Controller
3E8-3EF	COM3 or LT Win modem (optional)
3F0-3F7	Floppy disk controller
3F8-3FF	COM1
480-48F, 4D6	DMA controller-1
4D0-4D1 CF8-CFF	PCI configuration register

IRQ Assignment Map

Interrupt Channel	Function
IRQ0	System timer
IRQ1	Standard 101/102-key or Microsoft natural keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	IrDA Fast Interrupt Port
IRQ4	COM1
IRQ5	ESS solo-1 PCI Audio Drive (WDM) Lucent Win Modem Rage Mobility-M1 AGP
IRQ6	Floppy Disk Controller
IRQ7	Printer Port (LPT1)
IRQ8	System CMOS/real time clock
IRQ9	SCI IRQ used by ACPI bus
IRQ10	Received
IRQ11	PCMCIA CardBus Controller Intel 82371AB/EB PCI to USB Universal Host Controller
IRQ12	PS2 pointing device
IRQ13	Numeric data processor
IRQ14	1st EIDE devic
IRQ15	2nd EIDE device

DMA Channel Assignment

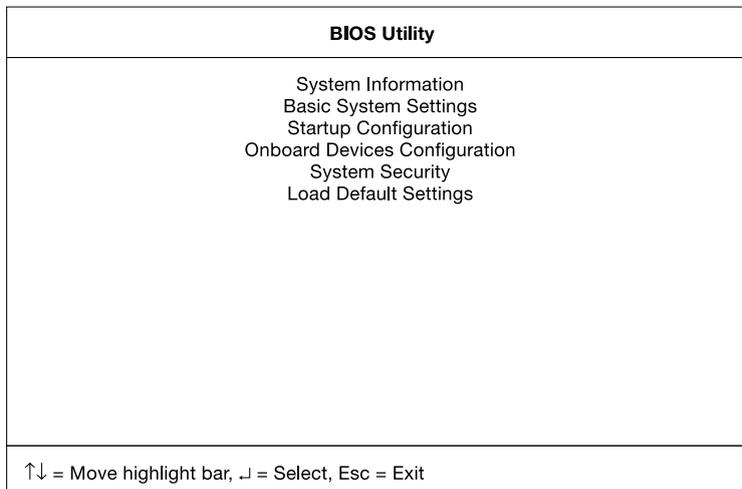| DMA Channel	Function
DRQ0	Not Used
DRQ1	Not Used
DRQ2	Floppy Disk Controller
DRQ3	IrDA Fast Infrared Port
DRQ4	Direct memory access controller
DRQ5	Not Used
DRQ6	Not Used
DRQ7	Not Used

System Utilities

BIOS Setup Utility

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

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

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

| **BIOS Utility** |
| --- |
| System Information
Basic System Settings
Startup Configuration
Onboard Devices Configuration
System Security
Load Default Settings |
| ↑↓ = Move highlight bar, ↵ = Select, Esc = Exit |

Navigating the BIOS Utility

There are six menu options. Use the cursor up/down keys to select a menu item, then press Enter. After you enter a sub-menu, you can:

❑ Use the **cursor up/down** keys to move between the parameters.

❑ Use the **cursor left/right** keys to change the value of a parameter.

You can change the value of a parameter if it is enclosed in square brackets.

❑ Press **Esc** to exit the current sub-menu.

At the main menu, press **Esc** to exit the BIOS Utility. If you make any changes, the following dialog box displays:

Settings have been changed**.** Do you want to save CMOS settings? [Yes]   [No]
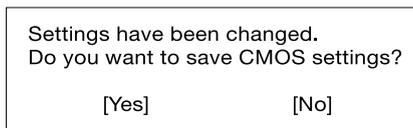
If you would like to keep the changes you made, use the cursor left/right keys to select **Yes**; then press **Enter**. Choose **No** if you want to discard the changes you made.

System Information

The System Information sub-menu displays basic and important information about your computer.

```
                    System Information              Page 1/1

CPU Type & Speed ------------------ Pentium(R) III 650 MHz
Floppy Disk Drive ------------------ 1.44MB 3.5-inch
Hard Disk Drive -------------------- 11513 MB
HDD Serial Number ----------------- XXXXXXXXXXX
System with ------------------------ CD-ROM Attached
System BIOS Version --------------- V3.3 R01-A2d
VGA BIOS Version ------------------ ATI MACH64 SDRAM BIOS 4.224T
Serial Number --------------------- XXXXXXXXXXXXXXXXXXX
Asset Tag Number ------------------ N/A
Product Name ---------------------- TravelMate 600 Series
Manufacturer Name ----------------- Acer
UUID ------------------------------ XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX




Esc = Exit
```

NOTE: The screen above is a sample and may not reflect the actual data on your computer. "X" may refer to a series of numbers and/or characters.
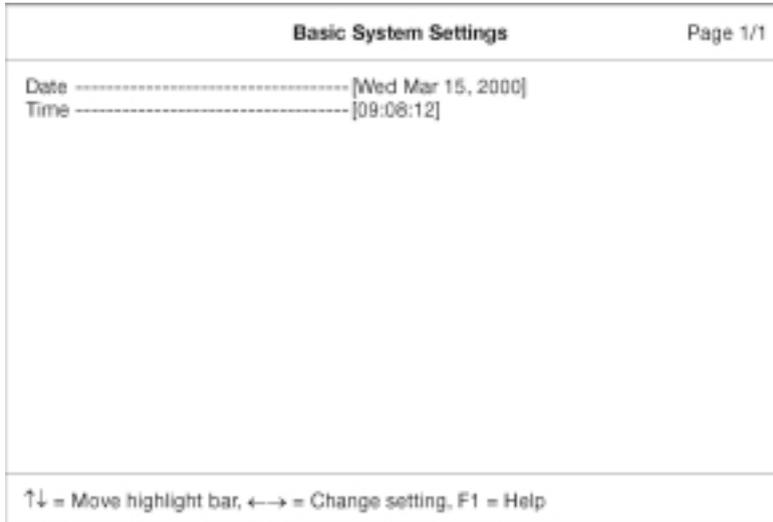
The following table describes the information in this sub-menu.

Parameter	Description
CPU Type & Speed	Shows the type and speed in Megahertz of the Central Processing Unit (CPU)
Floppy Disk Drive	Shows the floppy disk drive type.
Hard Disk Drive	Shows the size or capacity of the hard disk.
HDD Serial Number	Shows the serial number of the hard disk
System with	Shows the drive type installed in the AcerMedia Bay.
System BIOS Version	Shows the version number of the BIOS.
VGA BIOS Version	Shows the version number of the VGA display BIOS.
Serial Number	Shows the serial number of the computer.
Asset Tag Number	Shows the asset tag number of the computer.
Product Name	Shows the product name of the computer.
Manufacturer Name	Shows the manufacturer of the compute
UUID	Shows the universally unique identifier of your computer

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

Basic System Settings

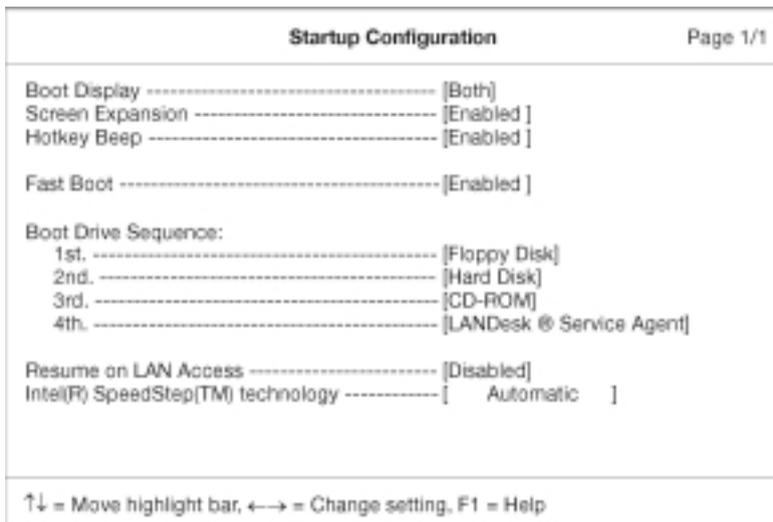The Basic System Settings sub-menu allows you to set the system date and time.

```
                    Basic System Settings              Page 1/1

Date --------------------------------------- [Wed Mar 15, 2000]
Time --------------------------------------- [09:08:12]

















↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help
```

The following table describes the parameters in this sub-menu.

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

Startup Configuration

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

```
                    Startup Configuration              Page 1/1

Boot Display -------------------------------- [Both]
Screen Expansion ---------------------------- [Enabled ]
Hotkey Beep --------------------------------- [Enabled ]

Fast Boot ----------------------------------- [Enabled ]

Boot Drive Sequence:
    1st. ------------------------------------ [Floppy Disk]
    2nd. ------------------------------------ [Hard Disk]
    3rd. ------------------------------------ [CD-ROM]
    4th. ------------------------------------ [LANDesk ® Service Agent]

Resume on LAN Access ------------------------ [Disabled]
Intel(R) SpeedStep(TM) technology ----------- [   Automatic   ]



↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help
```

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

Parameter	Description	Options
Boot Display	Sets the display on boot-up. When set to **Auto**, the computer automatically determines the display device when the computer starts up. If an external display device (e.g., monitor) is connected, it becomes the boot display; otherwise, the computer LCD is the boot display. When set to **Both**, the computer outputs to both the computer LCD and an external display device if one is connected.	**Both** or Auto
Screen Expansion	Enables or disables the screen expansion feature. When enabled, DOS screens expand to fill the LCD.	**Enabled** or Disabled
Hotkey Beep	Enables or disables a system beep when a hotkey or key combination is pressed.	**Enabled** or Disabled
Fast Boot	Fast Boot allows your computer to boot up and resume from Sleep mode (including Standby and Hibernation modes) faster. When enabled, the operating system and BIOS communicate information about Plug-and-Play resources and previous boot-ups.	**Enabled** or Disabled
Boot Drive Sequence	Specifies the order in which the computer starts up from. See the section below.	1st: Floppy Disk, 2nd: Hard Disk, 3rd: CD-ROM 4th: LANDesk (R) Service Agent
Resume on LAN Access	When enabled, allows your computer to resume when LAN access is active	**Disabled** or Enabled
Intel® SpeedStep™ technology	Intel SpeedStep technology allows your computer to automatically adjust the CPU speed depending on the power source.	**Automatic** Maximum Performance Battery Optimized

Setting the Boot Drive Sequence

The Boot Drive Sequence section lists boot priorities (1st, 2nd, 3rd and 4th) for bootable drives in your computer. For example, the default value (1st:Floppy Disk, 2nd:Hard Disk, 3rd:CD-ROM and 4th:LANDesk (R) Service Agent) tells the computer to first search for a bootable floppy disk in the floppy drive. If it finds one present, it boots up from that floppy disk. If not, the computer continues by booting up from the hard disk. If it cannot boot up from the hard disk, it continues to search for a bootable CD-ROM in the CD-ROM drive.

To set the boot drive sequence, use the **cursor up/down keys** to select a priority level (1st, 2nd, or 3rd); then use the **cursor left/right** keys to select the device for that priority level.

Onboard Devices Configuration

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

The Onboard Devices Configuration sub-menu assigns resources to basic computer communication hardware.

```
                        Onboard Devices Configuration              Page 1/1

   Serial Port ----------------------------------------[Enabled ]
       Base Address --------------------------------[3F8h]
       IRQ --------------------------------------------[4  ]

   IrDA  FIR --------------------------------------------[Enabled ]
       Base Address --------------------------------[2F8h]
       IRQ --------------------------------------------[3  ]
       DMA --------------------------------------------[3]

   Parallel  Port ---------------------------------------[Enabled ]
       Base Address --------------------------------[378h]
       IRQ ---------------------------------------------[7]
       Operation Mode -----------------------------[       ECP       ]
       ECP DMA Channel --------------------------[1]



   ↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help
```

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

Parameter	Description	Options
Serial Port	Enables or disables the serial port. When enabled, you can set the base I/O address and interrupt request (IRQ) of the serial port.	**Enabled** or Disabled **3F8h**, 3E8h, 2F8h or 2E8h **4** or 11
IrDA Port	Enables or disables the infrared port. When enabled, you can set the base I/O address, interrupt request (IRQ) and direct memory access (DMA) channel of the infrared port.	**Enabled** or Disabled **2F8h**, 3E8h, 3F8h, or 2E8h **3**, 10 or 11 **3** or 0
Parallel Port	Enables or disables the parallel port. When enabled, you can set the base I/O address, interrupt request (IRQ) and operation mode of the parallel port. If operation mode is set to ECP, the direct memory access (DMA) channel of the parallel port is set to 1.	**Enabled** or Disabled **378h**, 278h, or 3BCh **7** or 5 **ECP**, EPP, Standard, or Bi-directional **1**

System Security

The System Security sub-menu allows you to safeguard your computer and data with passwords and other security measures.

```
                          System Security                    Page 1/1

     Setup Password --------------------------------[  None  ]
     Power-on Password ----------------------------[  None  ]
     Hard  Disk  Password  ----------------------------[  None  ]
     2nd Hard Disk Password ------------------------[  None  ]

     Processor  Serial  Number  -----------------------[Enabled ]




     ↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help
```

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

Parameter	Description	Options
Setup Password	When set, this password protects the computer and this BIOS Utility from unauthorized entry. See the following section for instructions on how to set a password.	**None** or Present
Power-on Password	When set, this password protects the computer from unauthorized entry. See the following section for instructions on how to set a password.	**None** or Present
Hard Disk Password	When set, this password protects the hard disk fro unauthorized access. See the following section for instructions on how to set a password.	**None** or Present
2nd Hard Disk Password	This parameter is available when a second hard disk module is installed in the AcerMedia drive bay. When set, this password protects the hard disk from unauthorized access. See the following section for instructions on how to set a password.	**None** or Present
Processor Serial Numbe	The Pentium III processor includes a unique serial number which allows individual CPUs to be identified. You can turn off this feature by setting this parameter to Disabled.	**Enabled** or Disabled

Setting a Password

Follow these steps:

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

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

```
 ⚷
```

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

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

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

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

❑ Setup Password prevents unauthorized entry to the BIOS Utility. Once set, you must key-in this password to gain access to the BIOS Utility.

❑ Power-On Password secures your computer against unauthorized use. Combine the use of this password with password checkpoints on boot-up and resume from hibernation for maximum security.

❑ Hard Disk Password protects your data by preventing unauthorized access to your hard disk. Even if the hard disk is removed from the computer and moved to another computer, it cannot be accessed without the Hard Disk Password.

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

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

<div align="center">

Setup Password

</div>

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

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

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

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

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

You have three chances to enter a password. If you successfully entered the password, the following symbol appears.

If you fail to enter the password correctly after three tries, the following message or symbol appears.

<div align="center">

Setup   **Power-on/Hard Disk**

Incorrect password specified. System disabled.

</div>

Removing a Password

Should you decide to remove a password, do the following:

1. Use the cursor **up/down** (↑↓) keys to highlight a Password parameter (Setup, Power-on or Hard Disk).

2. Use the cursor **left/right** (→←) key to remove the password.

NOTE: When you want to remove the Hard Disk password, you are prompted for the Hard Disk password before it is removed.

Changing a Password

To change a password, follow these steps:

❏ Remove the current password. See "Removing a Password" on page 33.

❏ Set a new password. See "Setting a Password" on page 32.

Load Default Settings

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

```
Do you want to load default settings?

      [Yes]              [No]
```

If you would like to load default settings for all parameters, use the cursor **left/right** (→←) keys to select **Yes**; then press **Enter**. Choose **No** if otherwise.

BIOS Flash Utility

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

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

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

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

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

Executing Flash Program

IMPORTANT: If this diskette is not bootable, do the following actions before you use it:

1. Create a bootable disk.
2. Copy all AFlash files into this bootable diskette.
3. Put the bootable disk into TravelMate 600 series mobile, then re-boot.

IMPORTANT: Never turn off the system power while Flash BIOS is programming. This will damage your system.

4. After Flash BIOS is done, reboot the system.

NOTE: If there are any problems occurred during BIOS update, see "Index of PQA Diagnostic Error Code, Message" on page 74 for troubleshooting.

System Utility Diskette

This utility diskette is for the Acer TravelMate 600 notebook machine. It provides the following functions:

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

To use this diskette, first boot from this diskette, then a "Microsoft Windows 98 Startup Menu" prompt you to choose the testing item. Follow the instructions on screen to proceed.

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

IMPORTANT: If this diskette is not bootable, do the following actions before you use it:

1. Do system transfers. (Sys A:)
2. Copy HIMEM.SYS to A:\.
3. Copy EMM386.EXE to A:\.

Panel ID Utility

There is an EEPROM in the inverter which stores its supported LCD type ID code. If you replace an LCD with one of a different brand or use a new inverter, the ID information in the inverter EEPROM should be updated.

Follow the steps below to see the LCD Panel ID:

1. Follow the instruction on screen to read current or to set new LCD Panel ID code.

NOTE: When you set a new LCD Panel ID and the new LCD is not yet enabled (to function), so connect an external CRT to see the program execution process.

NOTE: Make sure the new ID code you choose corresponds with the LCD brand and type. If you write a wrong ID into inverter, just reboot and re-execute the program and input the correct ID code.

2. Restart computer - the new LCD should work normally.

NOTE: If LCD cannot display after change ID code, make sure you write the correct ID code, or try reconnecting the LCD FPC cable connectors.

Thermal and Fan Utility

The system is equipped with sensors to protect against system overheating. By setting System and processor thermal thresholds, the system can turn on the cooling fan or shut down automatically when temperatures reach the defined threshold parameters. This utility will test fan, processor thermal and system thermal.

Main Board Data Utility

This utility will display Main Board Data (MBD) which include header information, product name, manufacturer name, UUID (Universally Unique IDentifiers) and serial number. This function can display and create MBD data as well as store those information to LCD inverter EEPROM (not flash ROM).

System Diagnostic Diskette

IMPORTANT: [1]The diagnostics program here that we used is called PQA (Product Quality Assurance) and is provided by Acer Headquarters. You can utilize it as a basic diagnostic tool. To get this program, either download it from http://csd.acer.com.tw or find it in the TravelMate 600 service CD kit.
To better fit local service requirements, your regional office MAY have other diagnostic program. Please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

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

This diagnostic program divided into two diskettes is for the Acer TravelMate 600 notebook machine. It provides the following functions:

Disk 1:

1. PQA System Diagnostics

2. Audio Resource and Speaker Out Test

3. USB Register and Connect/Disconnect Test

NOTE: The USB setting in BIOS Setup must be set to enable and a USB device is required when executing USB Connection/Disconnection Test, or this test fails.

4. Exit

To use this diskette, first boot from this diskette, then a "Microsoft Windows 98 Startup Menu" prompts you to choose the testing item. Follow the instructions on screen to proceed.
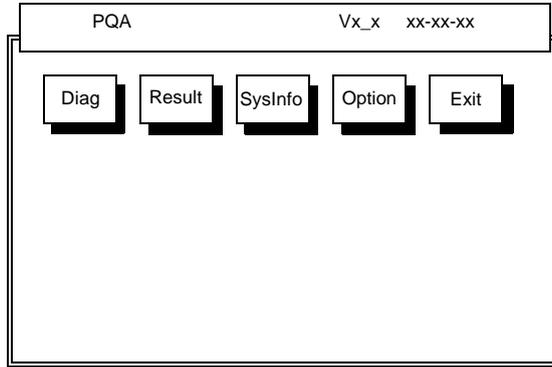
IMPORTANT: If this diskette is not bootable, do the following actions before you use it:

1. Do system transfers.

2. Copy the following files to A:\
HIMEM.SYS
MSCDEX.EXE
LASTDRV.COM
RAMDRIVE.SYS

Disk 2:

1. Infrared Ray Test

NOTE: The Infrared Ray setting in BIOS Setup must be set to enable when executing the Infrared Ray Test.

2. Modem Test

NOTE: A phone line is required for the modem test.

To use this diskette, first boot from this diskette, then a "Microsoft Windows 98 Startup Menu" prompts you to choose the testing item. Follow the instructions on screen to proceed.

IMPORTANT: If this diskette is not bootable, do the following actions before you use it:

1. Do system transfers.

2. Copy the following files to A:\
HIMEM.SYS
EMM386.EXE
CHOICE.COM

NOTE: When executing a parallel or serial port test in System Test item, a loopback tool is needed. This loopback is Acer proprietary design. You may reach the computerhwdoctor@acer.com.tw for ordering information.
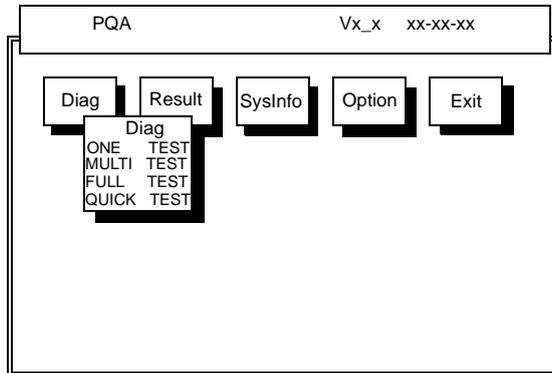
---

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

Running PQA Diagnostics Program

```
        PQA                    Vx_x    xx-xx-xx

      ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐
      │ Diag │ │Result│ │SysInfo│ │Option│ │ Exit │
      └──────┘ └──────┘ └──────┘ └──────┘ └──────┘




```

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

The Diag option lets you select testing items and times.

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

```
        PQA                    Vx_x    xx-xx-xx

      ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐
      │ Diag │ │Result│ │SysInfo│ │Option│ │ Exit │
      └──────┘ └──────┘ └──────┘ └──────┘ └──────┘
          Diag
       ONE    TEST
       MULTI  TEST
       FULL   TEST
       QUICK  TEST


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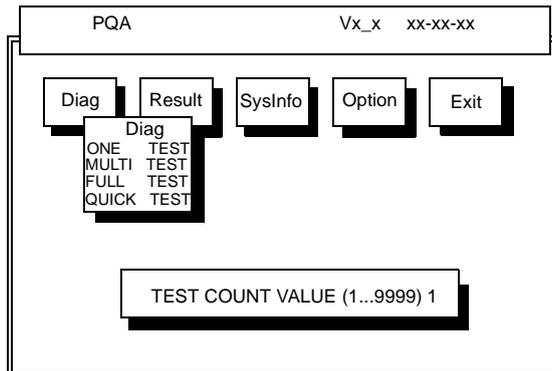
One Test performs a single test and Manual checks the selected test items in sequence.

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

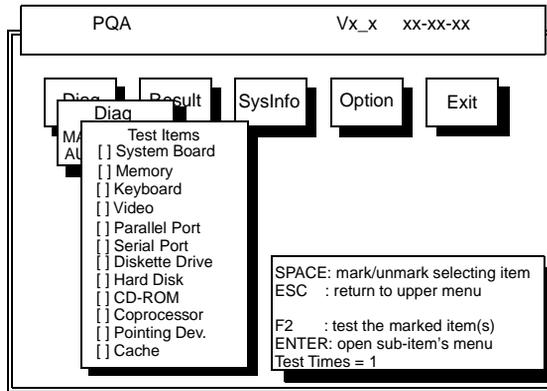Full Test performs all test items in detail for your system.

Quick Test performs all test items quickly for your system.

The screen below appears if you select MultiTest.

```
        PQA                    Vx_x    xx-xx-xx

      ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐
      │ Diag │ │Result│ │SysInfo│ │Option│ │ Exit │
      └──────┘ └──────┘ └──────┘ └──────┘ └──────┘
          Diag
       ONE    TEST
       MULTI  TEST
       FULL   TEST
       QUICK  TEST



         ┌──────────────────────────────┐
         │ TEST COUNT VALUE (1...9999) 1 │
         └──────────────────────────────┘
```

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

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

```
┌─────────────────────────────────────────────────────┐
│  PQA                          Vx_x     xx-xx-xx       │
│                                                       │
│  ┌─────┬───────┬─────────┬──────────┬────────┐        │
│  │Diag │Result │ SysInfo │ Option   │ Exit   │        │
│  ┌─────────────┘         └──────────┘└────────┘       │
│  │ Diag                                               │
│  MA    Test Items                                     │
│  AU  [ ] System Board                                 │
│      [ ] Memory                                       │
│      [ ] Keyboard                                     │
│      [ ] Video                                        │
│      [ ] Parallel Port                                │
│      [ ] Serial Port                                  │
│      [ ] Diskette Drive    ┌─────────────────────────┐│
│      [ ] Hard Disk         │SPACE: mark/unmark selecting item
│      [ ] CD-ROM            │ESC   : return to upper menu
│      [ ] Coprocessor       │
│      [ ] Pointing Dev.     │F2     : test the marked item(s)
│      [ ] Cache             │ENTER: open sub-item's menu
│                            │Test Times = 1           ││
│                            └─────────────────────────┘│
└─────────────────────────────────────────────────────┘
```

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

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

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

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

NOTE: When any errors are detected by diagnostic program, refer to "Index of PQA Diagnostic Error Code, Message" on page 74 for troubleshooting.

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.

```
                                    ┌─────────────┐
                                    │    Start    │
                                    └─────────────┘
   2screws      2screw
 ┌───────────┐ ┌──────┐ ┌─────────┐ ┌──────────┐  ┌──────────────┐ ┌──────────────┐
 │  Memory   │ │ HDD  │ │ Battery │ │ CD-ROM   │  │  Easy Port   │ │ Video Capter │
 │  Cover    │ │      │ │         │ │          │  │(Parallel Port│ │   Kit Cover  │
 └───────────┘ └──────┘ └─────────┘ └──────────┘  │ & Serial Port)│ │              │
                                                  └──────────────┘ └──────────────┘
 ┌───────────┐                      ┌─────────────┐
 │  Memory   │                      │ Middle Cover│
 └───────────┘                      └─────────────┘
```

```
                 1screws                                  2screw
 ┌───────────┐ ┌──────────────────┐      ┌───────────┐ ┌───────────────┐
 │ Keyboard  │ │Right Speaker Cable│      │ LCD Cable │ │ Inverter Cable│
 │           │ │        &          │      │           │ │               │
 │           │ │Right Speaker Pack │      └───────────┘ └───────────────┘
 └───────────┘ └──────────────────┘
```

```
                  4 screws                                        2screws
 ┌───────────┐ ┌───────────┐ ┌───────────┐           ┌───────────┐
 │ Modem/Lan │ │   CPU     │ │ TouchPad  │           │ LCD Module│
 │ Combo Card│ │ Heat Sink │ │  Cable    │           └───────────┘
 └───────────┘ └───────────┘ └───────────┘
    2screws                             5 screw    1 screws
 ┌───────────┐ ┌───────────┐ ┌───────────┐  ┌───────┐ ┌──────────────────┐ ┌───────────────┐
 │    VGA    │ │ Fan Cable │ │   CPU     │  │  LCD  │ │Right Speaker Cable│ │LCD Cable Cover│
 │ Heat Sink │ │           │ │           │  │ Bezel │ │        &          │ │               │
 └───────────┘ └───────────┘ └───────────┘  └───────┘ │Right Speaker Pack │ └───────────────┘
                                                      └──────────────────┘
```

```
                  10 screws                   4 screws          4 screws
              ┌───────────┐              ┌───────────┐   ┌───────────┐
              │ Lower Case│              │    LCD    │   │ LCD Hinge │
              └───────────┘              └───────────┘   └───────────┘
                              2screws      2screws
 ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
 │RTC Battery│ │ Mainboard │ │    Fan    │ │ Inverter  │ │ LCD Cable │
 └───────────┘ └───────────┘ └───────────┘ │     &     │ └───────────┘
                 2screws                    │Inverter Cable│
              ┌───────────┐                 └───────────┘
              │Audio Board│          ┌───────────┐   ┌───────────┐
              └───────────┘          │ LCD Panel │   │LCD Hinge Cap│
                 4screws             └───────────┘   └───────────┘
              ┌───────────┐
              │ TouchPad  │
              │ Bracket   │
              └───────────┘
 ┌───────────┐ ┌───────────┐
 │ TouchPad  │ │Microphone │
 └───────────┘ └───────────┘
              ┌───────────┐
              │ Upper Case│
              └───────────┘
```

Removing the Battery Pack

1. To remove the battery pack, push the battery release button inward.
2. Slide the battery pack out from the machine.
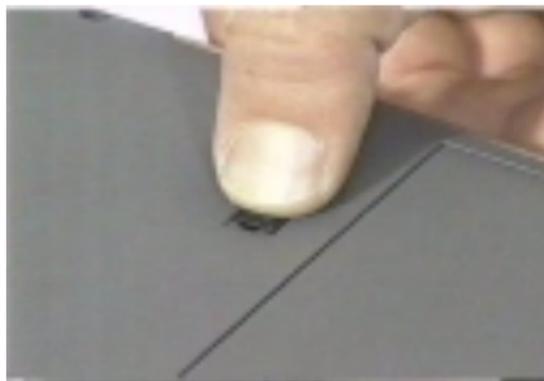
Removing the Hard Disk Drive Module

1. To remove the hard disk drive module, first remove the two screws of the hard disk drive.

2. Slide the hard disk drive module out of the machine.

Disassembling the Hard Disk Drive Module

1. To disassemble the hard disk drive module, first remove the two screws from both sides of the hard disk drive bezel.
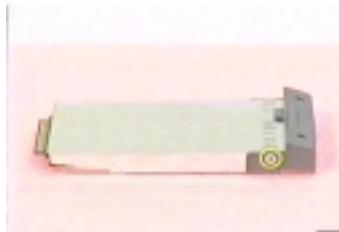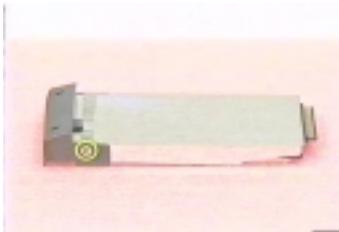
2. Remove the hard disk drive bezel from the hard disk drive module.

3. Slide the hard disk drive out from the hard disk drive case.

4. Remove the hard disk drive connector from the hard disk drive.

Removing the Memory

1. Remove the two screws from the DIMM cover.
2. Lift the cover off by a flat screwdriver to remove the memory cover.

3. Remove the memory module from the socket.

Removing the CD-RW Drive

1. Push the CD-RW release button forward, then slide the CD-RW drive out from the machine at the same time.

Disassembling the CD-RW drive module

1. To disassemble the CD-RW drive module, first remove the six screws from the CD-RW drive module.
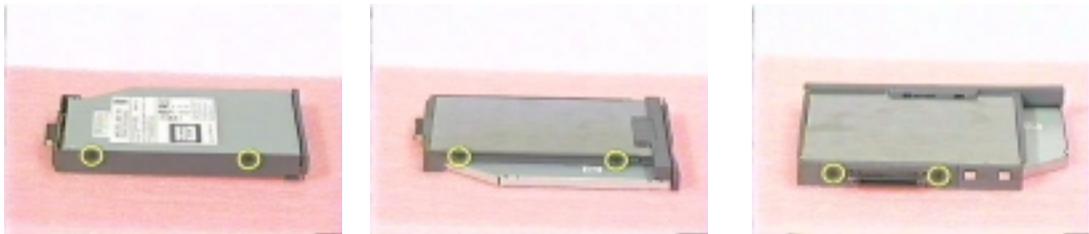
2. Remove the CD-RW drive case from the CD-RW drive module.
3. Next, remove the FPC cable from the CD-RW drive.

Removing the Middle Cover

1. Push the release button as shown here to release the middle cover gently.

2. Pull the middle cover up and lift the middle cover away.

Removing the Keyboard

1. To remove the keyboard, first pull out and upward to expose the keyboard.

2. At CN16, disconnect the keyboard cable from the main board carefully.

3. Remove the keyboard from the main board.

Removing the LCD

1. Remove the two screws from the LCD FPC cable.
2. At CN5, disconnect the LCD FPC cable from the main board.

3. At CN10, disconnect the inverter cable from the main board.

4. Remove the LCD cable cover, then remove the two screws on the base of the unit.
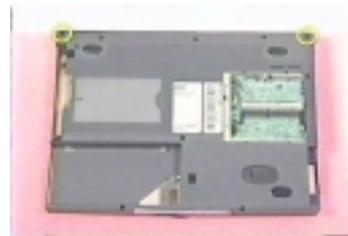
5. Remove the LCD module from the main unit.

Disassembling the LCD

1. Remove the two video capture kit cover from both sides of the LCD.

2. Remove the five LCD cushions as shown.
3. Remove the five screws from the LCD bezel.
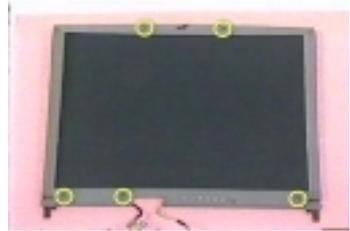
4. Snap off the LCD bezel carefully.
5. Remove the LCD bezel from the LCD module.

6. Remove the screw from the right hinge, then remove the hinge from the LCD module.
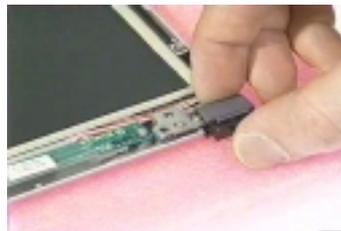
7. Remove the screw from the left hinge, then remove the hinge from the LCD module.

8. Gently, insert the flat screwdriver to detach each side of the hinge cap from the hinge.

9. Remove the hinge cap.

10. Remove the six screws from the LCD and the inverter.

11. Remove the LCD and the inverter from the LCD panel.

12. Disconnect the LCD power connector from the inverter.

13. Disconnect the inverter cable from the inverter.

14. Remove the ESD tape from the LCD, then disconnect the LCD FPC cable from the LCD.

15. To remove the LCD bracket, first remove the four screws from both sides of the LCD.

16. Remove the LCD bracket from the LCD.
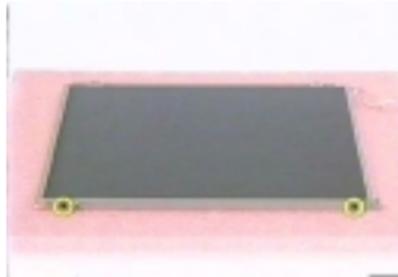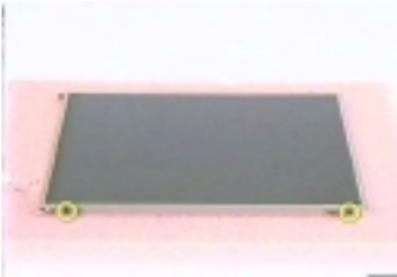
Removing the Speakers

1. To disassemble the main unit, first remove the two screws from the speaker net, and then remove it from the main unit.
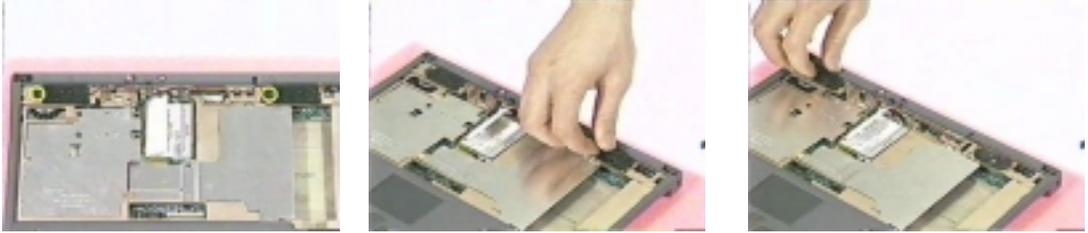
2. At CN11, disconnect the left speaker cable from the main board.
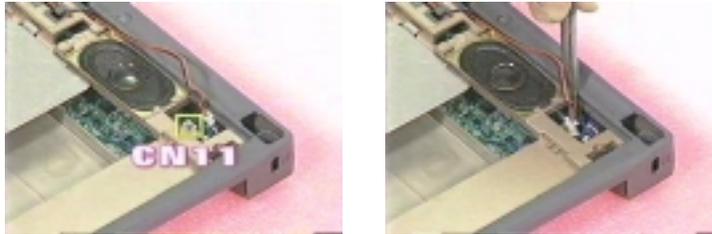
3. Remove the cable from these latches as shown, then remove the left speaker from the main unit.

4. At CN12, disconnect the right speaker cable from the main board, then remove the right speaker from the main unit.

Removing the CPU

1. Remove the four screws from the CPU heatsink, and then remove it from the main unit.

2. To remove the CPU, use a flat screwdriver to release the screw by 90 degrees for this kind of CPU socket.
3. Remove the CPU from the CPU socket.
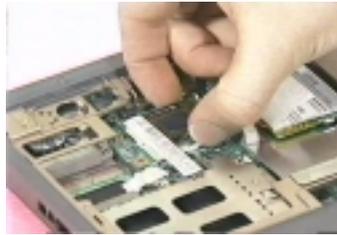
4. Here is another kind of CPU socket, release the screw by 180 degrees to loosen, then remove the CPU from the CPU socket.
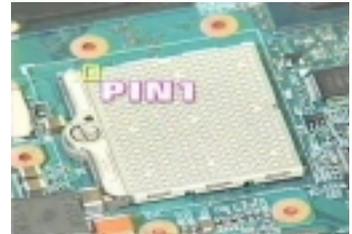
Removing the Modem and LAN Combo Card

1. At CN9, disconnect the modem cable from the main board.

2. Push out the latches on both sides of the socket, and pull it out from the socket.
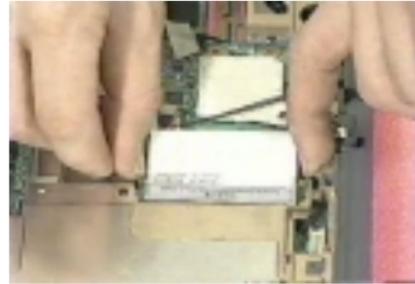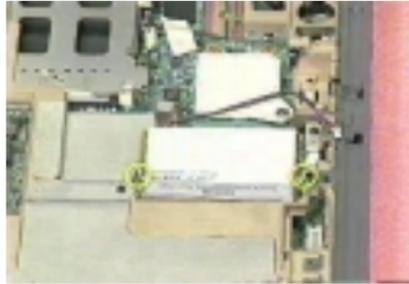
Removing the VGA Heatsink

1. Remove the two screws from the VGA heatsink, and then remove it from the main unit.
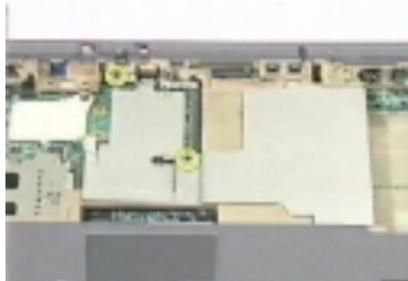
Disassembling the Lower Case

1. At CN15, disconnect the touchpad FPC cable from the main board.

2. Remove the ESD tape, then disconnect the fan cable from the main board at CN13.
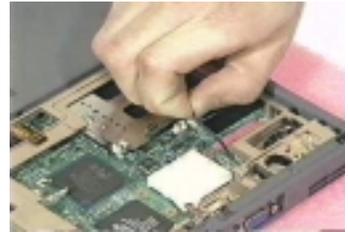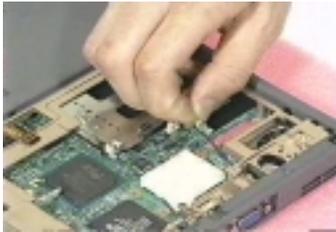
3. To remove the lower case, first remove the ten screws on the base of the unit.

NOTE: The screw in the center is longer than the other screws, it will fit on the other holes, but none of the other screws will fit in the center. Set it aside to avoid mismatch with the others when putting back the screws.

4. Pull the audio plate module forward carefully.

5. Push the main board leftward and pull it upward from the main unit.
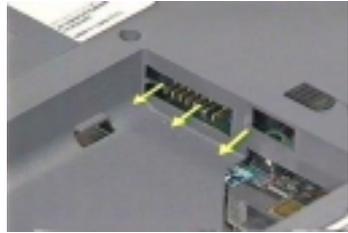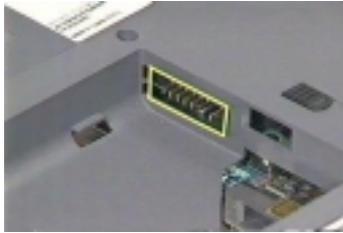
Removing the Fan

1. Remove the two screws from the fan and remove the fan from the lower case.

Removing the RTC Battery

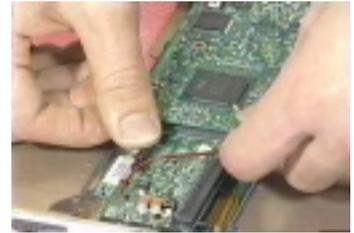**1.** Use a flat screwdriver to remove the RTC battery.

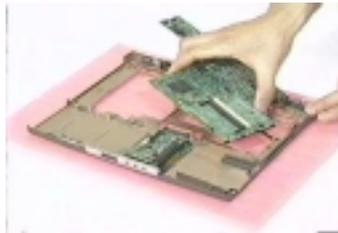**2.** To replace the RTC battery, press the RTC battery into the socket.

Removing the Main Board

1. To remove the main board, first remove the two screws as shown.

2. At CN1, disconnect the daughterboard carefully.

3. Remove the main board from the upper case.
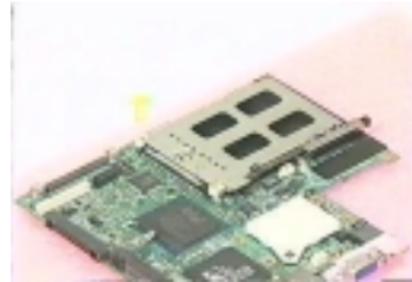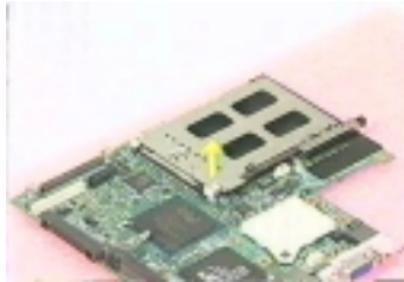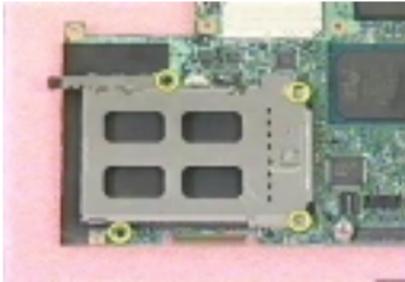

WARNING: Do not hold the main board at this position.

Removing the PCMCIA Slot

1. To remove the PCMCIA slot, first remove the four screws from the main board.

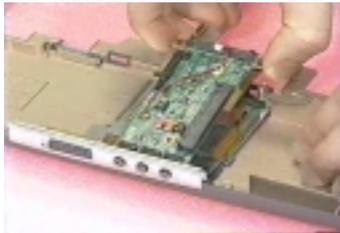2. Remove the PCMCIA slot by hand gently.

Removing the Daughter Board

1. To disassemble the upper case, first remove the microphone cable from the daughter board at CN2.

2. To remove the daughter board, first remove the two screws from the daughter board.
3. Remove it from the upper case carefully.

Removing the Touchpad Board

1. Disconnect the touchpad FPC cable from the touchpad board.
2. Remove the four screws from the audio plate module, then remove it from the upper case.
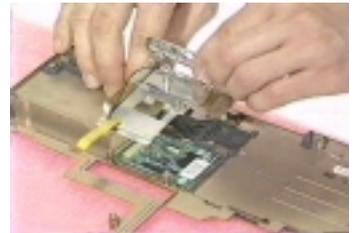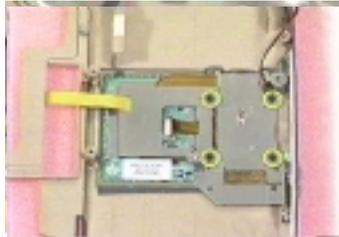
3. Remove the microphone from the upper case.
4. To remove the touchpad board, push the touchpad board upward.

5. Slide the touchpad board out gently.

Troubleshooting

Use the following procedure as a guide for computer problems.

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

1. Obtain the failing symptoms in as much detail as possible.

2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.

3. Use the following table with the verified symptom to determine which page to go to.

Symptoms (Verified)	Go To
Power failure. (The power indicator does not go on or stay on.)	"Power System Check" on page 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 72
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.	"Running PQA Diagnostics Program" on page 38
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 71 "Undetermined Problems" on page 72

System Check Procedures

External USB 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 "Running PQA Diagnostics Program" on page 38 for details.

1. Boot from the diagnostics diskette and start the PQA program (see "Running PQA Diagnostics Program" on page 38).

2. Go to the diagnostic Diskette Drive in the test items.

3. Press F2 in the test items.

4. Follow the instructions in the message window.

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

If the error still remains:

1. Reconnect the external USB diskette drive module.

2. Replace the external USB diskette drive 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 main board.

If the keyboard cable connection is correct, run the Keyboard Test. See "Running PQA Diagnostics Program" on page 38 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 PQA program (please refer to "Running PQA Diagnostics Program" on page 38).
2. Go to the diagnostic memory in the test items.
3. Press F2 in the test items.
4. Follow the instructions in the message window.

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

Power System Check

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

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

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

- ❏ "Check the Power Adapter" on page 63
- ❏ "Check the Battery Pack" on page 64

Check the Power Adapter

Unplug the power adapter cable from the computer and measure the output voltage at the plug of the power adapter cable. See the following figure
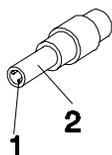
Pin 1: +19 to +20.5V
Pin 2: 0V, Ground

1. If the voltage is not correct, replace the power adapter.
2. If the voltage is within the range, do the following:

- ❏ Replace the main board.
- ❏ If the problem is not corrected, see "Undetermined Problems" on page 72.
- ❏ If the voltage is not correct, go to the next step.

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

3. If the power-on indicator does not light up, check the power cord of the power adapter for correct continuity and installation.
4. If the operational charge does not work, see "Check the Battery Pack" on page 64.

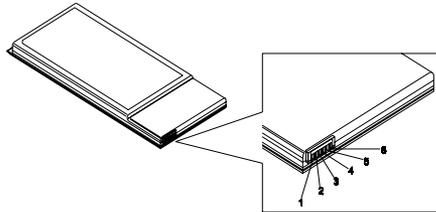### Check the Battery Pack

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. Reconnect the touchpad cables.

2. Replace the touchpad.

3. Replace the main board.

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

Power-On Self-Test (POST) Error Message

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

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

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

If the symptom is not listed, see "Undetermined Problems" on page 72.

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
Failure Fixed Disk	Reconnect hard disk drive connector. "Load Default Settings" in BIOS Setup Utility. Hard disk drive main board
Stuck Key	see Keyboard or Auxiliary Input Device Check" on page 62 .
Keyboard error	see Keyboard or Auxiliary Input Device Check" on page 62.
Keyboard Controller Failed	see Keyboard or Auxiliary Input Device Check" on page 62.
Keyboard locked - Unlock key switch	Unlock external keyboard
Monitor type does not match CMOS - Run Setup	Run "Load Default Settings" in BIOS Setup Utility.
Shadow RAM Failed at offset: nnnn	BIOS ROM Main board
System RAM Failed at offset: nnnn	SO-DIMM Main board
Extended RAM Failed at offset: nnnn	SO-DIMM Main board
System battery is dead - Replace and run Setup	Replace RTC battery and Run BIOS Setup Utility to reconfigure system time, then reboot system.
System CMOS checksum bad - Default configuration used	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system.
System timer error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main board
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	Run "Load Default Settings" in BIOS Setup Utility. RTC battery Main board
Memory size found by POST differed from CMOS	Run "Load Default Settings" in BIOS Setup Utility. SO-DIMM Main board
Diskette drive A error	Check the drive is defined with the proper diskette type in BIOS Setup Utility See "External USB Diskette Drive Check" on page 62.
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility See "External USB Diskette Drive Check" on page 62.
System cache error - Cache disable	Main board
CPU ID:	Main board
DMA Test Failed	SO-DIMM Main board
Software NMI Failed	SO-DIMM Main board
Fail-Safe Timer NMI Failed	SO-DIMM Main board

Error Message List

Error Messages	FRU/Action in Sequence
Device Address Conflict	Run "Load Default Settings" in BIOS Setup Utility. RTC battery Main board
Allocation Error for device	Run "Load Default Settings" in BIOS Setup Utility. RTC battery Main board
Failing Bits: nnn	DIMM BIOS ROM Main board
Fixed Disk n	None
Invalid System Configuration Data	BIOS ROM Main board
I/O device IRQ conflict	Run "Load Default Settings" in BIOS Setup Utility. RTC battery Main board
Operating system not found	Enter Setup and see if fixed disk and drive A: are properly identified. Diskette drive Hard disk drive Main board

Error Message List

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

Index of Symptom-to-FRU Error Message

LCD-Related Symptoms

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

Indicator-Related Symptoms

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

Power-Related Symptoms

Symptom / Error	Action in Sequenc
Power shuts down during operation	Power source (battery pack and power adapter). See "Power System Check" on page 63. Battery pack Power adapter Hard drive & battery connection board Main board
The system doesn't power-on.	Power source (battery pack and power adapter). See "Power System Check" on page 63. Battery pack Power adapter Main board
The system doesn't power-off.	Power source (battery pack and power adapter). See "Power System Check" on page 63. Hold and press the power switch for more than 4 seconds. Main board
Battery can't be charged	See "Check the Battery Pack" on page 64. Battery pack Main board

PCMCIA-Related Symptoms

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

Memory-Related Symptoms

Symptom / Error	Action in Sequenc
Memory count (size) appears different from actual size.	Enter BIOS Setup Utility to execute "Load Default Settings, then reboot system. SO-DIMM Main board

Speaker-Related Symptoms

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

Power Management-Related Symptoms

Symptom / Error	Action in Sequenc
The system will not enter hibernation	Keyboard (if control is from the keyboard) Hard disk drive Main board
The system doesn't enter hibernation mode and four short beeps every minute.	See "Hibernation Mode" on page 23. Press Fn+F4 and see if the computer enters hibernation mode. Touchpad Keyboard Hard disk connection board Hard disk drive Main board
The system doesn't enter standby mode after closing the LCD	See "Standby Mode" on page 23. LCD cover switch Main board
The system doesn't resume from hibernation mode.	See "Hibernation Mode" on page 23. Hard disk drive Main board
The system doesn't resume from standby mode after opening the LCD.	See "Standby Mode" on page 23. LCD cover switch Main board
Battery fuel gauge in Windows doesn't go higher than 90%.	Remove battery pack and let it cool for 2 hours. Refresh battery (continue use battery until power off, then charge battery). Battery pack Main board
System hangs intermittently.	See "Thermal and Fan Utility" on page 36. Reconnect hard disk/CD-ROM drives. Hard disk connection board Main board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequenc
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute "Load Default Settings", then reboot system. Reconnect hard disk/CD-ROM/diskette drives.
External display does not work correctly.	Press Fn+F5, LCD/CRT/Both display switching See "Running PQA Diagnostics Program" on page 38. Main board
USB does not work correctly	See "System Diagnostic Diskette" on page 37. Main board
Printer problems.	Ensure the "Parallel Port" in the "Onboard Devices Configuration" of BIOS Setup Utility is set to Enabled. Onboard Devices Configuration Run printer self-test. Printer driver Printer cable Printer Main board
Serial or parallel port device problems.	Ensure the "Serial Port" in the Devices Configuration" of BIOS Setup Utility is set to Enabled. Device driver Device cable Device Main board

Keyboard/Touchpad-Related Symptoms

Symptom / Error	Action in Sequenc
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-Related Symptoms

Symptom / Error	Action in Sequenc
Internal modem does not work correctly.	See "System Diagnostic Diskette" on page 37. Modem phone port modem/LAN combo board Main board

NOTE: If you cannot find a symptom or an error in this list and the problem remains, see "Undetermined Problems" on page 72.

Intermittent Problems

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

When analyzing an intermittent problem, do the following:

1. Run the advanced diagnostic test for the main 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

   ❏ CD-RW/DVD

   ❏ 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:

   ❏ Main board

   ❏ LCD assembly

Index of AFlash BIOS Error Message

Error Message	Action in Sequence
Hardware Error	See "System Diagnostic Diskette" on page 37
VPD Checksum Error	Reboot the system and then retest with this diskette.
BIOS Update Program Error	Turn off the power and restart the system.
System Error	Make sure this AFlash BIOS diskette for this model.
Without AC adapter	make sure to connect AC adapter
Battery Low	make sure to install a highly charged battery, and reboot system.

Index of PQA Diagnostic Error Code, Message

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

Top View
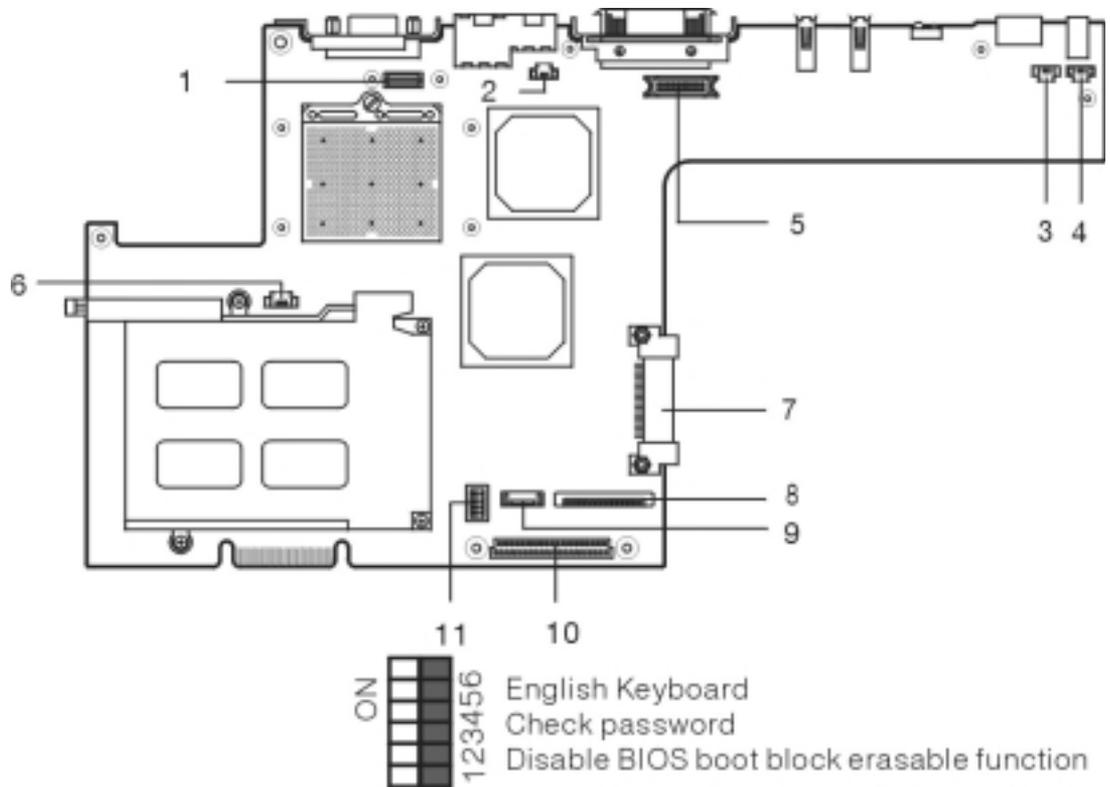
1. CN5 - LVDS connector
2. CN9 - LAN/Modem PCI combo card cable connector
3. CN11 - Left speaker connector
4. CN12 - Right speaker connector
5. CN10 - LCD cable connector
6. CN13 - FAN connector
7. CN14 - Secondary IDE connector
8. CN16 - Keyboard cable connector
9. CN15 - Touchpad FPC cable connector
10. CN17 - Daughter board connector
11. SW2 - Switch

Keyboard Switch Settings

SW2

	SW2-1	SW2-2	SW2-3
English KBD	OFF	OFF	OFF
Japan	ON	OFF	OFF
Europe KBD	OFF	ON	OFF
US International	ON	ON	OFF

SW2-4: Check password

SW2-4 =OFF, Enable

SW2-4 = ON, Disable

SW2-5: BIOS boot block erasable

SW2-5 =OFF, Disable

SW2-5 = ON, Enable

SW2-6: Reserve

FRU (Field Replaceable Unit) List

[1]This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of TravelMate 600. 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.
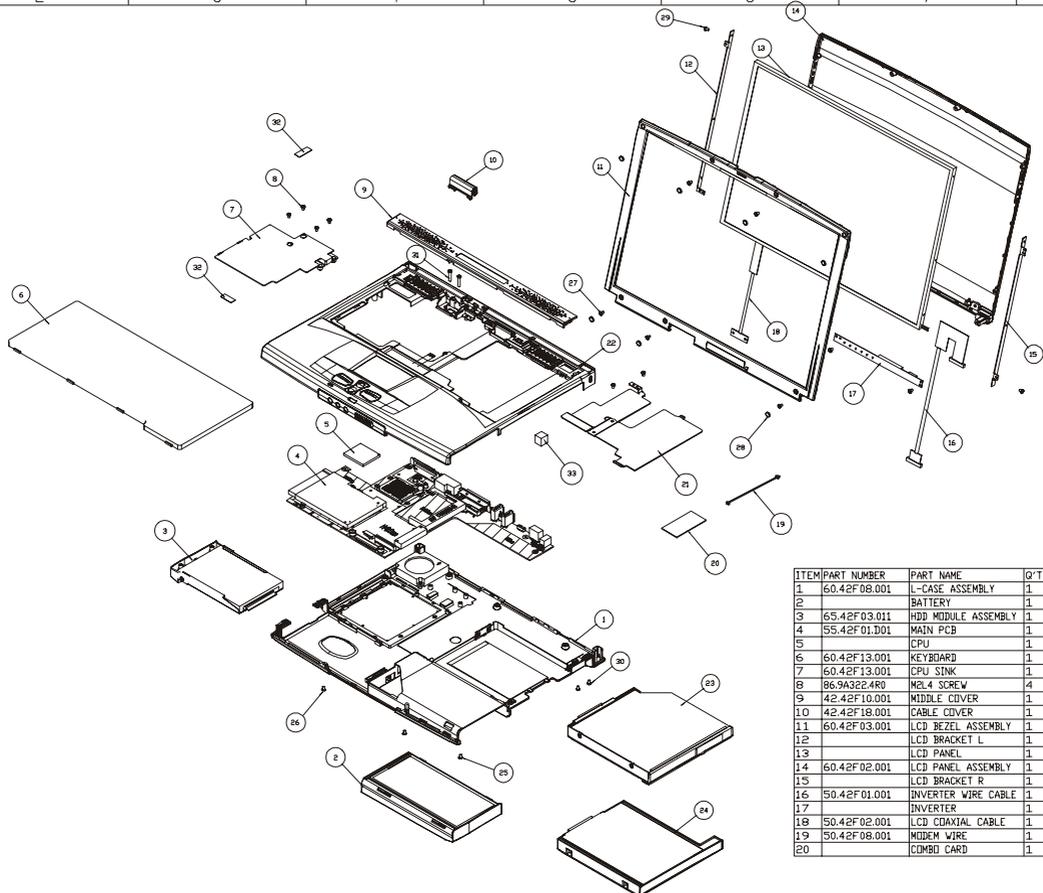
ITEM	PART NUMBER	PART NAME	Q'TY
1	60.42F08.001	L-CASE ASSEMBLY	1
2		BATTERY	1
3	65.42F03.011	HDD MODULE ASSEMBLY	1
4	55.42F01.D01	MAIN PCB	1
5		CPU	1
6	60.42F13.001	KEYBOARD	1
7	60.42F13.001	CPU SINK	1
8	86.9A322.4R0	M2L4 SCREW	4
9	42.42F10.001	MIDDLE COVER	1
10	42.42F18.001	CABLE COVER	1
11	60.42F03.001	LCD BEZEL ASSEMBLY	1
12		LCD BRACKET L	1
13		LCD PANEL	1
14	60.42F02.001	LCD PANEL ASSEMBLY	1
15		LCD BRACKET R	1
16	50.42F01.001	INVERTER WIRE CABLE	1
17		INVERTER	1
18	50.42F02.001	LCD COAXIAL CABLE	1
19	50.42F08.001	MODEM WIRE	1
20		COMBO CARD	1

ITEM	PART NUMBER	PART NAME	Q'TY
21	60.42F21.001	K/B SUPPORT ASSY	1
22	60.42F07.011	UPPER CASE ASSEMBLY	1
23	65.42F05.001	CD ROM MODULE ASSY	1
24	65.42F03.001	2nd HDD MODULE ASSY	1
25	86.1A353.8R0	M2.5L8 SCREW	1
26	86.1A353.6R0	M2.5L6 SCREW	10
27	86.1A552.4R0	M2L4 SCREW	7
28	47.40C01.001	LCD CUSHION	7
29	86.9A322.3R0	M2L3 SCREW	4
30	86.9A353.3R5	M2.5L3.5 SCREW	3
31	86.1A522.100	M2L10 SCREW	2
32	34.42F24.001	COPPER TAPE	2
33	34.42F25.001	GASKET 6X8X6	1

DO NOT SCALE DRAWING

TOL±								
RANGE	M1	M2	S1	S2	P1	P2	C	USR
0~6	.05	0.1	0.15	0.2	.05	0.1	0.5	
6~30	0.1	0.2	0.15	0.25	0.1	0.15	1	
30~80	.15	0.25	0.2	0.3	0.2	0.4	2	
80~180	.15	0.3	0.25	0.45	0.4	0.8	3	
180~315	0.2	0.5	0.4	0.6	0.6	1.2	3	
315~800	0.3	0.8	0.7	1.1	0.8	1.5	4	
ANG. TOL±	0°~30°	0.2°	30°~60°	0.5°	60°~90°	1°		

MODEL: TM600

NAME: EXPLODED DRAWING

DRN: RICHARD

DSN

CKD

APPD

MATERIAL

FINISH

QTY 1

REV

DESCRIPTION

SIGN | DATE

DIM IN mm SCALE

SHEET OF

Acer Incorporated

DRAWING NO.

0315
2000

Picture	No.	Partname	Description	Part No.
CPU/ Processor				
	5	CPU, PIII-600, INTEL	IC CPU COPP600 W/GEY UPGA2	01.COPRM.60C
		CPU, PIII-650, INTEL	IC CPU COPPERM 650 W/ GEY UPGA2	01.COPRM.65A
Memory				
	NS	DIMM, 64M, Winbond	SODIMM 64M W9864CASB-75(WINBON	72.W9864.00N
LCD				
	NS	LCD Module	ASSY LCD 13.3 TFT MODULE TM600	6M.42F01.011
	NS	LCD, 13.3" TFT, ADT	LCD 13.3" XGA ADT/ L133X2-3	56.0749C.061
	17	Inverter	INVERTER IV09125/T REV: 1A B-NO	19.21042.011
	16	Inverter cable	W.A INV. 175MM TM350	50.42F01.001
	18	LCD Cable	W.A LCD 140MM TM350	50.42F02.001
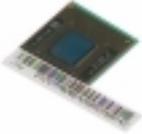
Picture	No.	Partname	Description	Part No.
	11	LCD Bezel	LCD Bezel Assy	60.42F03.001
	13	LCD Panel	LCD Panel Assy	60.42F02.001
	12, 15	LCD Bracket	ADT BRACKET KIT FOR TM600	6K.42F02.001
	22	Upper case module	ASSY UPPER CASE FIRST LAYER	60.42F07.011
	1	Lower case module	L-CASE ASSEMBLY	60.42F08.001
	NS	Hinge pack	HINGE PACK KIT FOR TM600	6K.42F01.002
	NS	LCD module	ASSY LCD 13.3 TFT MODULE TM600	6M.42F01.021

Picture	No.	Partname	Description	Part No.
	NS	LCD, 13.3" TFT, LG	LCD 13.3" XGA TFT LG/ LP133X7	56.0742F.011
	17	Inverter	INVERTER IV09125/T REV:1A B-NO	19.21042.011
	16	Inverter cable	W.A INV. 175MM TM350	50.42F01.001
	18	LCD Cable	W.A LCD 140MM TM350	50.42F02.001
	11	LCD Bezel	LCD Bezel Assy	60.42F03.001
	13	LCD Panel	LCD Panel Assy	60.42F02.001
	12, 15	LCD Bracket	LG BRACKET KIT FOR TM600	6K.42F02.002

Picture	No.	Partname	Description	Part No.
	22	Upper case module	U-CASE ASSEMBLY	60.42F07.001
	1	Lower case module	L-CASE ASSEMBLY	60.42F08.001
	NS	Hinge pack	HINGE PACK KIT FOR TM600	6K.42F01.002
HDD/ Hard Disk Drive				
	3	HDD module	ASSY HDD 12G MODULE TM600	6M.42F03.011
	NS	HDD, 12G, IBM, 9.5mm	HDD SM9.5" 12G IBM/ DARA212K A51	56.02A24.002
	NS	HDD Plate	ASSY HDD PLT TM330	60.40C15.001
	NS	HDD Connector	CONN CTR ML 22P HH98227-A2 (HDD	20.80056.022
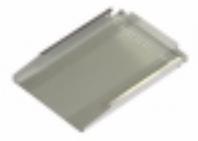
Picture	No.	Partname	Description	Part No.
	NS	HDD Bezel	HDD BEZEL ASSY (60)	60.42F24.001
FDD/ Floppy Disk Drive				
	NS	FDD Module, USB, External, YE-Data	FDD MODULE SLIM USB YD-8U10	90.42F05.001
CD-RW Drive				
	NS	CD-RW Module, 20X4W4RW, IDE, KME	ASSY CD-R/RW 24X MODULE TM600	6M.42F04.001
	NS	CD-RW Drive, 20X4W4RW, IDE, KME	CD-R/RW 24X SLIM KME/ UJDA310	56.1942F.001
	NS	CD-ROM FPC Cable	C.A FPC CD-ROM TM350	50.42F05.001
	NS	CD-RW Case	CD-RW CHASSIS ASSY (60)	60.42F18.001
DVD-ROM Drive				
	NS	DVD-ROM Module, 6X, IDE, MKE	ASSY DVD 6X MODULE TM600	6M.42F02.001
	NS	DVD-ROM Drive, 6X, IDE, MKE	DVD ROM 12.7" 6XMKE/ SR-8174-BAA	56.2242F.001
	NS	CD-ROM FPC Cable	C.A FPC CD-ROM TM350	50.42F05.001
	NS	DVD-ROM Case	DVD ROM CHASSIS ASSY (60)	60.42F19.001

Picture	No.	Partname	Description	Part No.
Fan				
	NS	Fan	FAN 5V 45*45*10 AB4505MB-GD3(A	23.10041.001
Microphone				
	NS	Microphone	ASSY MICROPHONE MODULE TM600	6M.42F05.001
Heatsink				
	7	CPU heatsink plate	CPU HEAT SINK	60.42F13.001
	NS	VGA heatsink plate	BRKT VGA	33.42F07.001
Keyboard				
	6	Keyboard, 86key, Chinese, DARFON	KB CHI DARFON/NSK-84X1C B-NOTE	91.63X07.01
Pointing Device				
	NS	Touchpad FPC Cable	TOUCHPAD FPC	50.42F07.001

Picture	No.	Partname	Description	Part No.
	NS	Touchpad Bracket	TOUCHPAD PLATE	31.42F02.001
	NS	Touchpad Board	TOUCHPAD MULTI-SWITCH SYNAPTIC	56.1740C.001
Cables				
	NS	Power cord, 3pin	CORD 125V UL 3P K01081B1183WP	27.01618.051
	19	Network Cable	W.A 2/2P 75MM MODE TM350	50.42F08.001
Main board				
	4	Mainboard/TM600	B-NOTE MAIN BOARD	55.42F01.001
Boards				
	NS	Daughter board	B-NOTE DAUGHTER BD	55.42F02.001
	NS	LAN/Modem PCI Combo card, 10/100 Mbps, 56K, AMBIT	MDM/LAN 56K AMBIT/ T60.082.C.00	54.09051.001

Picture	No.	Partname	Description	Part No.
PCMCIA Slot/ PC Card Slot				
	NS	PCMCIA Slot	SKT PCMCIA 68P WZ2131-G2 SMD	62.10024.061
Adapter				
	NS	Adapter, 60W, 19V, 2.4Amp, 3pin, ADT	ADT 60W ADP-60XB D 3P 730/340	25.10064.041
Battery				
	2	Battery, Li-Ion (8cell), Panasonic	ASSY BTY PACK 4S2P B-NOTE	60.42F15.001
	NS	RTC Battery, LI	BTY LI 3V CR1220 36MAH	23.20004.091
Case/Cover/Bracket Assembly				
	10	LCD cable cover	CABLE COVER	42.42F18.001
	9	Middle cover	MIDDLE COVER	42.42F10.001
	NS	Audio plate module	AUDIO PLATE ASSEMBLY	60.42F06.001

Picture	No.	Partname	Description	Part No.
	NS	Hinge Cap Pack	HINGE PACK KIT FOR TM600	6K.42F01.001
	NS	Memory Cover	DIMM DOOR ASSEMBLY	60.42F14.001
Miscellaneous				
	NS	Camera Rubber	RUBBER CAMERA TM340	47.40F07.002
	NS	LOGO	LOGO	40.42F09.001
Screws				
	NS	INVERTER SCREW	SCRW MACH PAN M2*4L NI	86.1A522.4R0
	29	LCD BRACKET SCREW	SCRW BIND M2*L3 B-ZN SHIVA	86.9A322.3R0
	27	LCD SCREW	Screw2x4 PH + N	86.1A552.4R0
	8	CPU HEATSINK SCREW	SCREW M2.0X4(BLACK)	86.9A322.4R0
	NS	VGA HEATSINK SCREW	SCREW M2*3L B/ZN	86.9A322.2R5
	NS	HDD PLATE COVER SCREW	SCREW M3*4L W/F NI	86.5A524.4R0
	NS	MEMORY COVER SCREW	Screw2x3 FCH + CB	86.5A322.3R0
	26	CASE SCREW	SCRW PAN NYLOK M2.5*6L B-ZN	86.1A353.6R0
	25	CASE SCREW	SCRW PAN NYLOK M2.5*8L B-ZN	86.1A353.8R0
	31	HINGE SCREW	SCRW MACH PAN M2*10L	86.1A522.100
	NS	MAINBOARD SCREW	SCRW MACH PAN M2*8L	86.1A522.8R
Speaker				
	NS	Speaker-L, 0.5W, Gento	SPK 0.5W 40*20 SP99010-1	23.40052.001

Picture	No.	Partname	Description	Part No.
	NS	Speaker-R, 0.5W, Gento	SPK 0.5W 40*20 SP99010-2	23.40052.011
	NS	SPEAKER NET	SPEAKER PLATE	31.42F03.001

Model Definition and Configuration

TravelMate 600 Model Number Definitions

Model	LCD	CPU	Memory	Hard Disk Drive	CD-ROM	Floppy Disk Drive	Battery
600TER	13.3" TFT	P-III 600	64 MB	12 GB	CD-RW	External	Li-Ion
602TER	13.3" TFT	P-III 650	64 MB	12 GB	CD-RW	External	Li-Ion
603TER	13.3" TFT	P-III 700	64 MB	12 GB	CD-RW	External	Li-Ion

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 98, Windows NT 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 600 Compatibility Test Report released by the Acer Mobile System Testing Department.

Microsoft Windows 98 Environment Test

Item	Specifications
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com 10/100 16 bits Fast EtherLink 3Com EtherLink III D-Link Ethernet JITI Accton Ethernet Xircom CreditCard Ethernet Adapter TDK Ethernet IBM EtherJet PC Card
LAN Token Ring	3Com TokenLink III 16/4 IBM Turbo 16/4 TokenRing PC card
Multi-Function Card	3Com Ethernet III LAN+33.6 Modem Global PC Card Combo 3Com 10/100 Fast EtherLink Lan+56K D-Link WinConnect 33.6 LAN/FAX Modem Megahertz PC Card 33.6 Ethernet-Modem with XJACK Xircom CreditCard Ethernet 10/100+Modem 56K Xircom CreditCard Ethernet+Modem 33.6
CardBus	3Com Fast EtherLink XL Cardbus 3Com Megahertz 10/100 LAN CardBus PC Card Intel EtherExpress PRO/100 Mobile Adapter Xircom CardBus Ethernet 10/100 Xircom CardBus Ethernet II 10/100 TDK LAN 10/100BASE-TX CardBus card IBM 10/100 EtherJet CardBus Adapter (32-bit) Ambit Built-in LAN
Other Adapters	Xircom Pocket Ethernet III JetEye Wireless Infrared Connection
Modem Adapters	
Modem (up to 33.6K)	Dlink Winconnect 33.6 Fax mode Hayes Optima 336 V34 + Ax for PCMCIA w/EZ jack IBM PCMCIA Data/Fax Modem International 33.6/14.4
Modem (up to 56K)	IBM 56K Double Jack Modem TDK V.90/56K Flex Data/Fax Modem TDK K56K Flex Data/Fax Modem ActionTec DataLink 56Kbps Fax Modem USR Megahertz 56K modem
ISDN	IBM ISDN Internet PC card USR Megahertz ISDN 128K
I/O Peripherals	
I/O - Display	IBM G42 IBM 9514-B04 TFT monitor AcerView 76i Compaq Color monitor V70 NEC 20" color monito NANAO Flex Scan E35F
I/O - Keyboard	IBM 104key Keyboard Black IBM 101 keyboard Chicony Keyboard (USB)

Item	Specifications
I/O - Mouse	IBM PS/2 Mini Mouse II
	Logitech PS/2 Style mouse
	Logitech Serial mouse
	Microsoft IntelliMouse (USB)
	Logitech USB mouse
I/O - Projector	Mitsubishi LVP-X100A
I/O - Parallel (Printer)	HP DeskJet 890C
	HP LaserJet 5MP
	HP LaserJet 6MP
	Canon BJC-43
I/O - Parallel (Scanner)	AcerScan Prisa 620s
I/O - USB (HUB)	Sanwa USB Hub
	USB HUB 4 PORTS TI-CHIPS
	EIZO I. Station USB HUB
	ELECOM USB HUB 4-PORT
I/O - USB (Speaker	Panasonic USB Speaker
	AIWA MultiMedia Digital Speaker System (USB)
I/O - USB (Joystick)	Microsoft SideWinder Precision Pro (USB)
I/O - USB (Other)	EPSON Stylus Color 740 (USB printer)
	Intel USB camera
	Acer DVC-V6
I/O Adapter - PCMCIA	
PCMCIA - SCSI	Adaptec 1480A slim SCSI CB
PCMCIA - CD-ROM	Panasonic 20x Portable CD-ROM Player
PCMCIA - ATA	TDK Flash memory card 20MB
	EPSON Flash Packer 6MB
PCMCIA - ZV (MM)	Margi DVD-to-go

Microsoft Windows NT Environment Test

Item	Specifications
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com 10/100 16 bits Fast EtherLink 3Com EtherLink III D-Link Ethernet JITI Accton Ethernet IBM EtherJet PC Card
LAN Token Ring	3Com TokenLink III 16/4 IBM Turbo 16/4 TokenRing PC card
Multi-Function Card	3Com Ethernet III LAN+33.6 Modem Global PC Card Combo D-Link WinConnect 33.6 LAN/FAX Modem Megahertz PC Card 33.6 Ethernet-Modem with XJACK Xircom CreditCard Ethernet 10/100+Modem 56K Xircom CreditCard Ethernet+Modem 33.6
CardBus	3Com Fast EtherLink XL cardbus 3Com Megahertz 10/100 LAN CardBus PC Card Intel EtherExpress PRO/100 Mobile Adapter Xircom CardBus Ethernet 10/100 Xircom CardBus Ethernet II 10/100 TDK Lan 10/100BASE-TX CardBus card IBM 10/100 EtherJet CardBus Adapter (32-bit) Ambit Built-in Lan
Other Adapters	Xircom Pocket Ethernet III JetEye Wireless Infrared Connection
Modem Adapters	
Modem (up to 33.6K)	DLink WinConnect 33.6 Fax modem Hayes Optima 336 V34 + Ax for PCMCIA w/EZ jack IBM PCMCIA Data/Fax Modem International 33.6/14.4
Modem (up to 56K)	IBM 56K Double Jack Modem TDK V.90/56K Flex Data/Fax Modem TDK K56K Flex Data/Fax Modem ActionTec DataLink 56kbps Fax Modem USR Megahertz 56K modem
ISDN	IBM ISDN Internet PC card USR Megahertz ISDN 128K
I/O Peripherals	
I/O - Display	IBM G42 IBM 9514-B04 TFT monitor AcerView 76i Compaq Color monitor V70 NEC 20" color monitor NANAO Flex Scan E35F
I/O - Keyboard	IBM 104key Keyboard Black IBM 101 keyboard Microsoft Natural Keyboard
I/O - Mouse	IBM PS/2 Mini Mouse II Logitech PS/2 Style mouse Logitech Serial mouse
I/O - Projector	Mitsubishi LVP-X100A

Item	Specifications
I/O - Parallel (Printer)	HP DeskJet 890C
	HP LaserJet 5MP
	HP LaserJet 6MP
	Canon BJC-43
I/O - Parallel (Scanner)	AcerScan Prisa 620s
I/O Adapter - PCMCIA	
PCMCIA - SCSI	Adaptec 1480A slim SCSI CB
	NewMedia BUSToaster PCMCIA to SCSI
PCMCIA - CD-ROM	Panasonic 20x Portable CD-ROM Player
PCMCIA - ATA	TDK Flash memory card 20MB
	EPSON Flash Packer 6MB

Microsoft Windows 2000 Environment Test

Item	Specifications
Network Adapters	
LAN Ethernet/10baseT/100baseT	3Com 10/100 16 bits Fast EtherLink 3Com EtherLink III D-Link Ethernet JITI Xircom CreditCard Ethernet Adapter IIps IBM EtherJet PC Card
LAN Token Ring	3Com TokenLink III 16/4 IBM Turbo 16/4 TokenRing PC card
Multi-Function Card	3Com Ethernet III LAN+33.6 Modem Global PC Card Combo 3Com 10/100 Fast EtherLink Lan+56K D-Link WinConnect 33.6 LAN/FAX Modem Megahertz PC Card 33.6 Ethernet-Modem with XJACK Xircom CreditCard Ethernet 10/100+Modem 56K Xircom CreditCard Ethernet+Modem 33.6
CardBus	3Com Fast EtherLink XL Cardbus 3Com Megahertz 10/100 LAN CardBus PC Card Intel EtherExpress PRO/100 Mobile Adapter Xircom CardBus Ethernet 10/100 Xircom CardBus Ethernet II 10/100 TDK LAN 10/100BASE-TX CardBus card IBM 10/100 EtherJet CardBus Adapter (32-bit) Ambit Built-in LAN
Other Adapters	Xircom Pocket Ethernet III JetEye Wireless Infrared Connection
Modem Adapters	
Modem (up to 33.6K)	Hayes Optima 336 V34 + Ax for PCMCIA w/EZ jack IBM PCMCIA Data/Fax Modem International 33.6/14.4
Modem (up to 56K)	IBM 56K Double Jack Modem TDK V.90/56K Flex Data/Fax Modem TDK K56K Flex Data/Fax Modem ActionTec DataLink 56Kbps Fax Modem USR Megahertz 56K modem
ISDN	USR Megahertz ISDN 128K
I/O Peripherals	
I/O - Display	IBM G42 IBM 9514-B04 TFT monitor AcerView 76i Compaq Color monitor V70 NEC 20" color monitor NANAO Flex Scan E35F
I/O - Keyboard	IBM 104key Keyboard Black IBM 101 keyboard Microsoft Natural Keyboard Chicony Keyboard (USB)
I/O - Mouse	IBM PS/2 Mini Mouse II Logitech PS/2 Style mouse Logitech Serial mouse Microsoft IntelliMouse (USB) Logitech USB mouse

Item	Specifications
I/O - Projector	Mitsubishi LVP-X100A
I/O - Parallel (Printer)	HP DeskJet 890C
	HP LaserJet 5MP
	HP LaserJet 6MP
	Canon BJC-43
I/O - Parallel (Scanner)	HP ScanJet 3300C color Scanner
	AcerScan Prisa 620s
I/O - USB (HUB)	Sanwa USB Hub
	USB HUB 4 PORTS TI-CHIPS
	EIZO I. Station USB HUB
	ELECOM USB HUB 4-PORT
I/O - USB (Speaker)	JS USB Digital Speakers
	Panasonic USB Speaker
	AIWA MultiMedia Digital Speaker System (USB)
I/O - USB (Joystick)	Microsoft SideWinder Precision Pro (USB)
I/O - USB (Other)	EPSON Stylus Color 740 (USB printer)
	3Com USB Network Interface
	Intel USB camera
	Acer DVC-V6
I/O Adapter - PCMCIA	
PCMCIA - SCSI	Adaptec 1480A slim SCSI CB
PCMCIA - ATA	TDK Flash memory card 20MB
	EPSON Flash Packer 6MB