Connecting the LAN cable

To connect the LAN cable, follow the steps as detailed below:

⚠ ■ *Connect the AC adaptor before connecting the LAN cable. The AC adaptor must remain connected during LAN use. If you disconnect the AC Adaptor while the computer is accessing a LAN, the system may hang up.*

■ *Do not connect any other cable to the LAN jack except the LAN cable. Otherwise, malfunctions or damage may occur.*

■ *Do not connect any power supplying device to the LAN cable that is connected to the LAN jack. Otherwise, malfunctions or damage may occur.*

1. Turn off the power to the computer and to all external devices connected to the computer.

2. Plug one end of the cable into the LAN jack. Press gently until you hear the latch click into place.
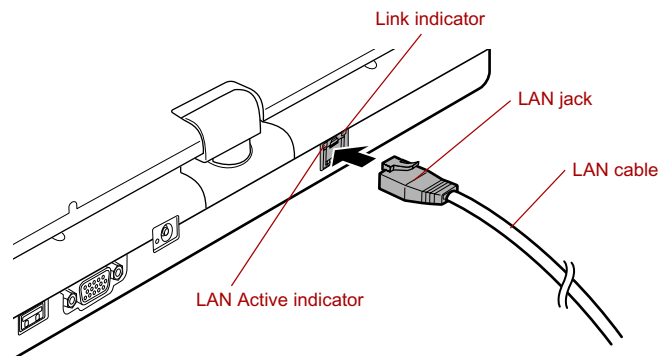

Figure 4-29 Connecting the LAN cable

3. Plug the other end of the cable into a LAN hub connector or router. Check with your LAN administrator and hardware or software vendor before using or configuring a network connection.

ⓘ *When the computer is exchanging data with the LAN, the* **LAN Active** *indicator glows orange. When the computer is connected to a LAN hub but is not exchanging data, the* **Link** *indicator glows green.*

Disconnecting the LAN cable

To disconnect the LAN cable, follow the steps as detailed below:

Make sure the **LAN Active** *indicator (orange LED) is out before you disconnect the computer from the LAN.*

1. Pinch the lever on the connector in the computer's LAN jack and pull out the connector.
2. Disconnect the cable from the LAN hub or router in the same manner. Check with your LAN administrator and hardware or software vendor before disconnecting from the hub.

Computer Handling

This section explains computer handling and maintenance.

Cleaning the computer

To help ensure long, trouble-free operation, keep the computer free of dust and dirt, and use care with all liquids around it.

■ Be careful not to spill liquids into the computer. If the computer does get wet, turn the power off immediately and let the computer dry completely - in these circumstance you should get the computer inspected by an authorized service provider in order to assess the scope of any damage.

■ Clean the plastics of the computer using a slightly water dampened cloth.

■ You can clean the display screen by spraying a small amount of glass cleaner onto a soft, clean cloth and then wiping the screen gently with the cloth.

Never spray cleaner directly onto the computer or let liquid run into any part of it. Never use harsh or caustic chemical products to clean the computer.

Moving the computer

While the computer is designed for rugged durability you should exercise a few simple precautions when moving it in order to help ensure trouble-free operation.

■ Before moving the computer, it is recommended that you change the setting associated with the Hard Disk Drive Protection feature. Please refer to the section, *Using the Hard Disk Drive (HDD) Protection*, in this chapter for further information.

■ Make sure all disk/disc activity has ended before moving the computer - check that the HDD and other indicators on the front of the computer are off.

■ Turn off (shut down) the computer.

■ Disconnect the AC adaptor and all peripherals before moving the computer.

■ Close the display panel.

Always make sure the display panel is closed in Laptop mode before turning the computer upside down.

■ Do not pick up the computer by its display panel.

■ Before carrying your computer, shut it down, disconnect the AC adaptor and allow it to cool down - a failure to follow this instruction may result in minor heat injury.

■ Be careful not to subject the computer to impact or shock - a failure to follow this instruction could result in damage to computer, computer failure or loss of data.

■ Never transport your computer with any cards installed - this may cause damage to either the computer and/or the card resulting in product failure.

■ Always use a suitable carry case when transporting the computer.

■ When carrying your computer, be sure to hold it securely so that it does not fall or hit anything.

■ Do not carry your computer by holding any of its protruding elements.

Using the Hard Disk Drive (HDD) Protection

This computer has a function for reducing the risk of damage on the hard disk drive.

Using an acceleration sensor built into the computer, TOSHIBA HDD Protection detects vibration shocks and similar signs of movement of the computer, and automatically moves the Hard Disk Drive head to a safe position to reduce the risk of damage that could be caused by head-to-disk contact.

■ *This function does not guarantee that the hard disk drive will not be damaged.*

■ *The secondary hard disk drive is not supported by the TOSHIBA HDD protection function.*

When vibration is detected, a message will be displayed on the screen, and the icon in the Taskbar notification area will change to the protection state. This message is displayed until the **OK** button is pressed or 30 seconds pass. When vibration subsides, the icon returns to the normal state.

Taskbar icon

State	Icon	Description
Normal		TOSHIBA HDD Protection is enabled.
Protection		TOSHIBA HDD Protection is active. The hard disk drive head is in a safe position.
OFF		TOSHIBA HDD Protection is disabled.

TOSHIBA HDD Protection Properties

You can change the TOSHIBA HDD Protection settings by using the TOSHIBA HDD Protection Properties window. To open the window, click **Start** -> **All Programs** -> **TOSHIBA** -> **Utilities** -> **HDD Protection Settings**. The window can also be started from the icon on the Taskbar or from the **Control Panel**.

HDD Protection

You can choose whether to enable or disable TOSHIBA HDD Protection.

Detection Level

This function can be set to four levels. The sensitivity levels in which vibrations, impacts and their similar signs are detected can be set to OFF, 1, 2 and 3 in ascending order. Level 3 is recommended for better protection of the computer. However, when the computer is used in a mobile environment or in other unstable conditions, setting the detection level to 3 could result in frequent execution of TOSHIBA HDD Protection, which will slow Hard Disk Drive reading and writing. Set a lower detection level when the speed of Hard Disk Drive reading and writing is a priority.

Different detection levels can be set depending on whether the computer is used as handheld or mobile usages, or whether it is used in a stable environment such as on a table in the workplace or at home. By setting different detection levels for the computer depending on whether it runs with the AC power (desktop) or with batteries (handheld or mobile usage), the detection level automatically switches according to the power connection mode.

3D Viewer

This feature displays a 3D object on the screen which moves in according to tilting or vibration of the computer.

When the TOSHIBA HDD Protection detects computer vibration the Hard Disk Drive head is parked and the 3D object disk rotation will stop. When the head is un-parked the disk will begin to rotate again.

The **3D Viewer** can be started from the icon in the task tray.

■ *This 3D object virtually represents the Computer's internal Hard Disk Drive. This representation may vary from the actual number of disks, disk rotation, head movement, part size, shape and direction.*

■ *This feature may use a large amount of CPU and memory on some models. The computer may become slow or sluggish when attempting to run other applications while the 3D Viewer is displayed.*

■ *Intensely shaking the computer or other subjecting it to strong impacts may cause damage to the computer.*

Details

To open the Details window, click the **Setup Detail** button in the TOSHIBA HDD Protection Properties window.

Detection Level Amplification

When the AC adaptor is disconnected or the lid is closed, HDD Detection assumes that the computer will be carried and sets the detection level to the maximum for 10 seconds.

TOSHIBA HDD Protection Message

Specify whether to display a message when TOSHIBA HDD Protection is active.

This function does not work when the computer is starting, in Sleep Mode, in Hibernation Mode, in transition to Hibernation Mode, recovering from Hibernation Mode, or powered off. Be sure to not subject the computer to vibration or impact while the function is disabled.

Heat dispersal

To protect against overheating, the processor is equipped an internal temperature sensor which activates a cooling fan or lowers the processing speed if the computer's internal temperature rises to a certain level. You are able to select whether to control this temperature by either turning on the fan first, then if necessary lowering the processor speed, or by lowering the processor speed first, then if necessary turning on the fan - these functions are controlled within the Power Options.

When the processor's temperature falls to a normal range, the fan will be turned off and the processor operation returned to its standard speed.

If the processor's temperature reaches an unacceptably high level with either setting, the computer will automatically shuts down to prevent any damage - in this instance all unsaved data in memory will be lost.

TOSHIBA

Chapter 5

The Keyboard

The computer's keyboard layouts are compatible with a 104/105-key enhanced keyboard - by pressing some keys in combination, all of the 104/105-key enhanced keyboard functions can be performed on the computer.

The number of keys available on your keyboard will depend on which country/region your computer is configured for, with keyboards being available for numerous languages.

In use there are six different types of keys, specifically typewriter keys, function keys, soft keys, Hot keys, Windows special keys and the keypad overlay.

Typewriter keys

The typewriter keys produce the upper-case and lower-case letters, numbers, punctuation marks, and special symbols that appear on the screen. However, there are some differences between using a typewriter and using a computer keyboard:

■ Letters and numbers produced in computer text vary in width. Spaces, which are created by a 'space character' may also vary depending on line justification and other factors.

■ The lowercase l (el) and the number 1 (one), together with the uppercase O (oh) and the 0 (zero), are not interchangeable on computers as they are on a typewriter.

■ The **CAPS LOCK** function key locks only the alphabetic characters into upper-case while the Shift Lock function on a typewriter places all keys in the shifted position.

■ The **SHIFT** keys, the **Tab** key, and the **BACK SPACE** key perform the same function as their typewriter counterparts but also have special computer functions.

Never remove the key caps on your keyboard. Doing so could cause damage to the parts under the key caps.

Function keys: F1 … F12

The function keys (not to be confused with the special **FN** key) are the twelve keys at the top of your keyboard - these keys function differently from other keys.

F1 through **F12** are called function keys because they execute programmed functions when pressed and, when used in combination with the **FN** key, those keys marked with icons also execute specific functions on the computer. Please refer to the section, *Soft keys: FN key combinations*, in this chapter for further information, taking care to note that the function executed by individual keys will depend on the software you are using.

Soft keys: FN key combinations

The **FN** (function) is unique to TOSHIBA computers and is used in combination with other keys to form soft keys. Soft keys are key combinations that enable, disable or configure specific features.

> *Please note that some software may disable or interfere with soft-key operations, and that the soft-key settings are not restored when the computer returns from Sleep Mode.*
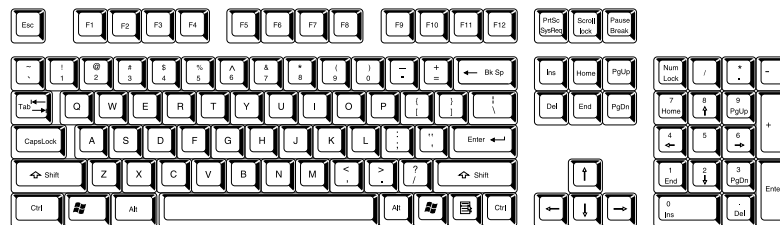
Emulating keys on an enhanced keyboard

Figure 5-1 A 104-key enhanced keyboard layout

This computer's keyboard is designed to provide all the features of the 104-key enhanced keyboard.

Since the keyboard is smaller and has fewer keys, some of the enhanced keyboard functions must be simulated using two keys instead of one on the larger keyboard.

The **FN** key can be combined with the following keys to simulate functions similar to those of keys on the 104/105 key enhanced keyboard which are not on this computer's keyboard.
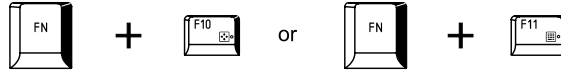
Press **FN** + **F10** or **FN** + **F11** to access the computer's integrated keypad. When activated, the keys with grey markings on their bottom edge become either numeric keypad keys (**FN** + **F11**) or cursor control keys (**FN** + **F10**). Please refer to the *Keypad overlay* section in this chapter for more information on how to operate these keys, taking care to note that the power on default for both settings is off.

Press **FN** + **F12** (**ScrLock**) to lock the cursor on a specific line. The power on default is off.
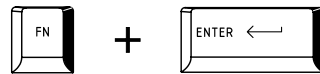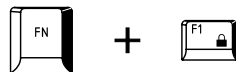
Press **FN** + **ENTER** to simulate **ENTER** on the enhanced keyboard's numeric keypad.

Hot keys

Hot keys (pressing **FN** + a function or **ESC** key) let you enable or disable certain features of the computer.

Mute: Pressing **FN** + **ESC** turns the volume on and off.

Lock: Pressing **FN** + **F1** enters "Lock computer mode". To restore your desktop, you need to log on again.

Power Plan: Pressing **FN** + **F2** changes the power settings.

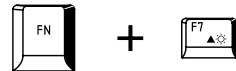**Sleep**: Pressing **FN** + **F3** switches the system to Sleep Mode.

Hibernate: Pressing **FN** + **F4** switches the system to Hibernation Mode.

Output: Pressing **FN** + **F5** changes the active display device.

Brightness Down: Pressing **FN** + **F6** decreases the computer's display panel brightness in individual steps.

Brightness Up: Pressing **FN** + **F7** increases the computer's display panel brightness in individual steps.
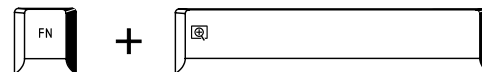
Wireless: Pressing **FN** + **F8** switches the active wireless devices if the wireless communication switch is switched on.
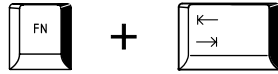
If no wireless communication device is installed, no dialog box will appear.

Touch Pad: Pressing **FN** + **F9** enables or disables the Touch Pad function.

Zoom: Pressing **FN** + **Space** changes the display resolution.

ODD: Pressing **FN** + **Tab** turns the power of the optical disc drive on/off or ejects the disc tray.

TOSHIBA Zooming Utility (reduce): Pressing **FN** + **1** reduces the icon size on the desktop or the font sizes within one of the supported application windows.

TOSHIBA Zooming Utility (enlarge): Pressing **FN** + **2** enlarges the icon size on the desktop or the font sizes within one of the supported application windows.

FN Sticky key

You can use the TOSHIBA Accessibility Utility to make the **FN** key sticky, that is, you can press it once, release it, and then press an "**F Number**" key. To start the TOSHIBA Accessibility utility, click **Start** -> **All Programs** -> **TOSHIBA** -> **Utilities** -> **Accessibility**.

Windows special keys

The keyboard provides two keys that have special functions in Windows, the Windows Start Button key activates the **Start** menu while the application key has the same function as the secondary (right) mouse button.

This key activates the Windows **Start** menu.

This key has the same function as the secondary (right) mouse button.

Keypad overlay

Your computer's keyboard does not have a separate numeric keypad but includes a numeric keypad overlay which functions like one - this is located in the center of the keyboard with the relevant keys having grey letters at their front edge. The overlay provides the same functions as the numeric keypad on a standard 104/105-key enhanced keyboard.

Turning on the overlays

The numeric keypad overlay can be used for numeric data input or cursor and page control.

Arrow Mode

To turn on Arrow Mode, press **FN** + **F10** - the Arrow Mode indicator lights and you are able to access cursor and page control functions by using the keys. You are able to press **FN** + **F10** again to turn off this overlay function.

Numeric Mode

To turn on Numeric Mode, press **FN** + **F11** - the Numeric Mode indicator lights and you are able to access numeric characters by using the keys. You are able to press **FN** + **F11** again to turn off this overlay function.
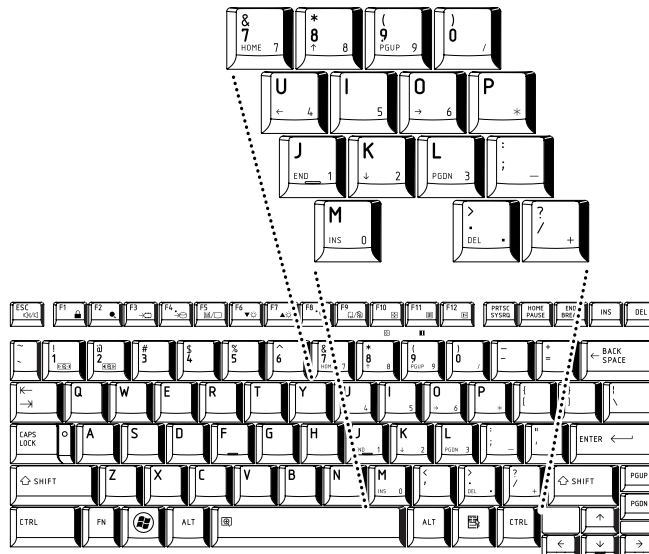

Figure 5-2 The numeric keypad overlay

Temporarily using normal keyboard (overlay on)

While using the overlay, you can temporarily access the normal keyboard functions without having to turn the overlay off:

1. Hold down **FN** key and press any other key - this key will operate as if the overlay were off.

2. Type upper-case characters by holding down **FN** + **SHIFT** and pressing a character key.

3. Release **FN** key to continue using the selected overlay function.

Temporarily using overlay (overlay off)

While using the normal keyboard function, you can temporarily use the keypad overlay without having to turn it on:

1. Hold down **FN** key.

2. Check the keyboard indicators as pressing the **FN** key will turn on the most recently used overlay function - if the Numeric Mode indicator lights you can use the overlay for numeric entry, while if the Arrow Mode indicator lights, you can use the overlay for cursor and page control function.

3. Release **FN** key to return to normal keyboard operation.

Temporarily changing modes

If the computer is in **Numeric Mode**, you can switch temporarily to **Arrow Mode** by pressing a **SHIFT** key, while if it is in **Arrow Mode**, you can switch temporarily to **Numeric Mode** by also pressing a **SHIFT** key.

Generating ASCII characters

Not all ASCII characters can be generated using normal keyboard operation, but you are able to generate these characters using their specific ASCII codes.

With the overlay on:

1. Hold down **ALT** key.

2. Using the overlay keys, type the ASCII code of the character you require.

3. Release **ALT** - the ASCII character will appear on the display screen.

With the overlay off:

1. Hold down **ALT** + **FN**.

2. Using the overlay keys, type the ASCII code of the character you require.

3. Release **ALT** + **FN** - the ASCII character will appear on the display screen.

Chapter 6

Power and Power-Up Modes

The computer's power resources include the AC adaptor, battery pack and any internal batteries. This chapter provides details on making the most effective use of these resources, and includes information on charging and changing batteries, tips for saving battery power, and information on the different power-up modes.

Power conditions

The computer's operating capability and battery charge status are affected by different power conditions, including whether an AC adaptor is connected, whether a battery pack is installed and what the charge level is for that battery.

Table 6-1 Power conditions

		Power on	**Power off** (no operation)
AC adaptor connected	Main Battery fully charged	• Operates • No charge • LED: **Battery** green 　　**DC IN** green	• No charge • LED: **Battery** green 　　**DC IN** green
	Main Battery partially charged or no charge	• Operates • Charge*1 • LED: **Battery** orange 　　**DC IN** green	• Quick charge*1 • LED: **Battery** orange 　　**DC IN** green
	No Main battery installed	• Operates • No charge • LED: **Battery** off 　　**DC IN** green	• No charge • LED: **Battery** off 　　**DC IN** green

Table 6-1 Power conditions continued

		Power on	**Power off (no operation)**
AC adaptor connected	2nd battery fully charged	• Operates • No charge • LED: **2nd battery** green 　　　　 **DC IN** green	• No charge • LED: **2nd battery** green 　　　　 **DC IN** green
	2nd battery partially charged or no charge	• Operates • Charge*2 • LED: **2nd battery** orange 　　　　 **DC IN** green	• Quick charge*2 • LED: **2nd battery** orange 　　　　 **DC IN** green
	No 2nd battery installed	• Operates • No charge • LED: **2nd battery** off 　　　　 **DC IN** green	• No charge • LED: **2nd battery** off 　　　　 **DC IN** green
AC adaptor not connected	Main battery charge is above low battery trigger point	• Operates • LED: **Battery** off 　　　　 **DC IN** off	
	Main battery charge is below low battery trigger point	• Operates • LED: **Battery** flashes orange 　　　　 **DC IN** off	
	Main battery charge is exhausted	Computer shuts down *3	
	No main battery installed	• No operation *4 • LED: **Battery** off 　　　　 **DC IN** off	

Table 6-1 Power conditions continued

		Power on	**Power off (no operation)**
AC adaptor not connected	2nd battery charge is above low battery trigger point	• Operates • LED: **2nd battery** off **DC IN** off	
	2nd battery charge is below low battery trigger point	• Operates • LED: **2nd battery** flashes orange **DC IN** off	
	2nd battery charge is exhausted	Computer shuts down *3	
	No 2nd battery is installed	• No operation *5 • LED: **2nd battery** off **DC IN** off	

1 When the Slice Expansion Battery is not charging.

*2 When the main battery is not charging.

*3 For the computer to shut down in Hibernation Mode, the Hibernation feature must be enabled in Power Options. If a main battery and a Slice Expansion Battery are installed, the computer does not shut down until the charge in both batteries is exhausted.

*4 When no Slice Expansion Battery is installed.

*5 When no main battery is installed.

When batteries are charged, the main battery is charged first. When it is fully charged, the Slice Expansion Battery is charged.

Monitoring of power condition

As shown in the below table, the **Battery, 2nd battery, DC IN** and **Power** indicators on the system indicator alert you to the computer's operating capability and battery charge status.

Battery indicator

Check the **Battery** indicator to determine the status of the main battery and the **2nd battery** indicator to determine the status of the Slice Expansion Battery. The following indicator lights indicate the battery status:

Flashing orange	The battery charge is low, the AC adaptor must be connected in order to recharge the battery.
Orange	Indicates the AC adaptor is connected and the battery is charging.
Green	Indicates the AC adaptor is connected and the battery is fully charged.
No light	Under any other conditions, the indicator does not light.

If the battery pack becomes too hot while it is being charged, the charge will stop and the **Battery** *indicator will go out. When the battery pack's temperature falls to a normal range, charging will resume - this process will occur regardless of whether the computer's power is on or off.*

DC IN indicator

Check the **DC IN** indicator to determine the power status with the AC adaptor connected - the following indicator conditions should be noted:

Green	Indicates the AC adaptor is connected and is correctly supplying power to the computer.
Flashing orange	Indicates a problem with the power supply. You should initially try plugging the AC adaptor into another power outlet - if it still does not operate properly, you should contact your reseller or dealer.
No light	Under any other conditions, the indicator does not light.

Power indicator

Check the **Power** indicator to determine the power status of the computer - the following indicator conditions should be noted:

Green	Indicates power is being supplied to the computer and the computer is turned on.
Blinking orange	Indicates that the computer is in Sleep Mode and that there is sufficient power available (AC adaptor or battery) to maintain this condition. In Sleep Mode, this indicator will turn on for one second and off for two seconds.
No light	Under any other conditions, the indicator does not light.

Battery

This section explains battery types, use, recharging methods and handling.

Battery types

The computer has three different types of batteries.

Battery pack

When the AC adaptor is not connected, the computer's main power source is a removable lithium ion battery pack, also referred to in this manual as the main battery. You can purchase additional battery packs for extended use of the computer away from an AC power source although you should not change the battery pack while the AC adaptor is connected.

Before you remove the battery pack, save your data and shut down the computer, or place the computer into Hibernation Mode. Please be aware that, when placing the computer into Hibernation Mode, the contents of memory will be saved to the hard disk drive, although for safety sake, it is best to also save your data manually.

Slice Expansion Battery (Is included some models)

The Slice Expansion Battery is included with some models, or can be purchased separately as an optional accessory.

For detailed information on this battery, refer to *Connecting and disconnecting the Slice Expansion Battery*.

Real Time Clock (RTC) battery

The Real Time Clock (RTC) battery provides power for the internal real time clock and calendar function and also maintains the system configuration while the computer is turned off. If the RTC battery becomes completely discharged, the system will lose this information and the real time clock and calendar will stop working - in this instance the following message will be displayed when you turn on the power:

```
**** RTC battery is low or CMOS checksum is
inconsistent ****
Press [F1] key to set Date/Time.
```

You can change the Real Time Clock settings by turning the computer on while pressing the **ESC** key and then the **F1** key when prompted. Please refer to Chapter 8 *Troubleshooting* for further information.

The RTC battery does not charge while the computer is turned off even if the AC adaptor is attached.

Care and use of the battery pack

This section provides the important safety precautions in order to handle your battery pack properly.

Refer to the enclosed *Instruction Manual for Safety and Comfort* for detailed precautions and handling instructions.

■ *Make sure the battery is securely installed in the computer before attempting to charge the battery pack. Improper installation could generate smoke or fire, or cause the battery pack to rupture.*

■ *Keep the battery pack out of reach of infants and children. It can cause injury.*

■ *The battery pack and Slice Expansion Battery are lithium ion battery, which can explode if not replaced, used, handled or disposed of properly. Dispose of the battery as required by local ordinances or regulations. Use only batteries recommended by TOSHIBA as replacements.*

■ *The computer's RTC battery is a Ni-MH battery and should be replaced only by your dealer or by a TOSHIBA service representative. The battery can explode if not properly replaced, used, handled or disposed. Dispose of the battery as required by local ordinances or regulations.*

■ *Charge the battery pack only in an ambient temperature between 5 and 35 degrees Celsius. Otherwise, the electrolyte solution might leak, battery pack performance might deteriorate and the battery life might be shortened.*

■ *Never install or remove the battery pack without first turning off the power and disconnecting the AC adaptor. Never remove the battery pack while the computer is in Sleep Mode. Data could be lost.*

■ *Never remove the battery pack while the Wake-up on LAN function is enabled. Data will be lost. Before you remove a battery pack, disable the Wake-up on LAN function.*

■ *Never remove the battery pack while the Wake-up on Wireless LAN function is enabled. Data will be lost. Before you remove a battery pack, disable the Wake-up on Wireless LAN function.*

Charging the batteries

When the power in the battery pack becomes low, the **Battery** indicator will flash orange to indicate that only a few minutes of battery power remain. If you continue to use the computer while the **Battery** indicator flashes, the computer will enable Hibernation Mode so that you do not lose any data, and automatically turn itself off.

You must recharge a battery pack when it becomes discharged.

Procedures

To recharge a battery pack while it is installed in the computer, connect the AC adaptor to the DC IN 15V jack and plug the other end into a working outlet - the **Battery** indicator will glow orange while the battery is being charged.

Use only the computer connected to an AC power source or optional TOSHIBA Battery charger to charge the battery pack. Never attempt to charge the battery pack with any other charger.

Time

The following table shows the approximate time required to fully charge a discharged battery.

Charging time (hours)

Battery type	Power on	Power off
Battery pack (4700mAh)	about 3.0 to 13.0	about 3.0
Slice Expansion Battery (4000mAh)	about 3.0 to 9.5	about 2.5
RTC battery	24	Doesn't charge

Please be aware that the charging time when the computer is on is affected by ambient temperature, the temperature of the computer and how you are using the computer - if you make heavy use of external devices for example, the battery might scarcely charge at all during operation. Please refer to the section Maximizing battery operating time, *for further information.*

Battery charging notice

The battery may not begin charging immediately under the following conditions:

■ The battery is extremely hot or cold (if the battery is extremely hot, it might not charge at all). To ensure the battery charges to its full capacity, you should charge it at room temperature of between 5° to 35°C (41° to 95°F).

■ The battery is nearly completely discharged. In this instance you should leave the AC adaptor connected for a few minutes and the battery should begin charging.

The **Battery** indicator may show a rapid decrease in battery operating time when you try to charge a battery under the following conditions:

■ The battery has not been used for a long time.

■ The battery has completely discharged and been left in the computer for a long time.

■ A cool battery is installed in a warm computer.

In such cases you should follow the steps as detailed below:

1. Fully discharge the battery by leaving it in the computer with the power on until the system automatically turns itself off.

2. Connect the AC adaptor to the DC IN 15V jack of the computer, and to a wall outlet that is supplying power.

3. Charge the battery until the **Battery** indicator glows green.

Repeat these steps two or three times until the battery recovers normal capacity.

Monitoring battery capacity

Remaining battery power can be monitored using the following methods.

■ Clicking the battery icon on the Taskbar

■ Via the Battery Status in the Windows Mobility Center window

■ *You should wait at least 16 seconds after turning on the computer before trying to monitor the remaining operating time. This is because the computer needs this time to check the battery's remaining capacity and then calculate the remaining operating time, based on this together with the current power consumption.*

■ *Please be aware that the actual remaining operating time may differ slightly from the calculated time.*

■ *With repeated discharges and recharges, the battery's capacity will gradually decrease. In view of this it will be noted that an often used, older battery will not operate for as long as a new battery even when both are fully charged.*

Maximizing battery operating time

A battery's usefulness depends on how long it can supply power on a single charge, while how long the charge lasts in a battery depends on:

- Processor speed
- Screen brightness
- System Sleep Mode
- System Hibernation Mode
- Display power off period
- Hard disk drive power off period

- How often and for how long you use the hard disk drive and external disk(c) drives, for example, optical disc and floppy diskette drive.
- How much charge the battery contained to begin with.
- How you use optional devices, such as a PC Cards, to which the battery supplies power.
- Whether you enable Sleep Mode, which can conserve battery power if you are frequently turning the computer off and on.
- Where you store your programs and data.
- Whether you close the display panel when you are not using the keyboard - closing the display saves power.
- The environmental temperature - operating time decreases at low temperatures.
- The condition of the battery terminals - you should always ensure the terminals stay clean by wiping them with a clean dry cloth before installing the battery pack.

Retaining data with power off

When you turn off your computer with fully charged batteries, the batteries retain data for the following approximate time periods:

Retention time

Battery type	State and Retention Time
Battery pack (4700mAh)	about 2 days (Sleep Mode)
	about 75 days (Boot Mode)
Slice Expansion Battery (4000mAh)	about 2 days (Sleep Mode)
	about 65 days (Boot Mode)
RTC battery	30 days

Extending battery life

To maximize the life of your battery packs:

■ At least once a month, disconnect the computer from a power source and operate it on battery power until the battery pack fully discharges. Before doing so, follow the steps as detailed below.

1. Turn off the computer's power.

2. Disconnect the AC adaptor and turn on the computer's power - if it does not turn on then go to Step 4.

3. Operate the computer on battery power for five minutes. If you find that the battery pack has at least five minutes of operating time, continue operating until the battery pack is fully discharged, however, if the **Battery** indicator flashes or there is some other warning to indicate a low battery condition, go to Step 4.

4. Connect the AC adaptor to the DC IN 15V jack of the computer, and to a wall outlet that is supplying power. The **DC IN** indicator should glow green, and the **Battery** indicator should glow orange to indicate that the battery pack is being charged, however, in the event that **DC IN** indicator does not glow this indicates that power is not being supplied - check the connections for the AC adaptor and the power cord.

5. Charge the battery pack until the **Battery** indicator glows green.

■ If you have extra battery packs, rotate their use.

■ If you will not be using the system for an extended period, for example for more than one month, remove the battery pack from the computer.

■ Store spare battery packs in a cool dry place out of direct sunlight.

Replacing the battery pack

Please be aware that the battery pack is classified as a consumable item.

The operating life of the battery pack will gradually reduce through repeated charging and discharging, and will need to be replaced when it reaches the end of its operating life. In addition to this, you might also replace a discharged battery pack with a charged spare when you are operating your computer away from an AC power source for an extended period of time.

This section explains how to remove and install the battery pack, and begins with the removal process which is detailed through the following steps.

■ *Do not remove the battery pack while the computer is in Sleep Mode. Data is stored in RAM, so if the computer loses power it could be lost.*

■ *In Hibernation Mode, data will be lost if you remove the battery pack or disconnect the AC adaptor before the save is completed. Wait for the* **Hard Disk Drive** *indicator to go out.*

■ *Do not touch the battery release latch while holding the computer or the battery pack might fall out due to the unintentional release of the battery release latch and cause injuries.*

Removing the battery pack

To remove a discharged battery, follow the steps as detailed below:

1. Save your work.
2. Turn the computer's power off - ensure that the **Power** indicator is off.
3. Remove all cables and peripherals that are connected to the computer.
4. Close the display panel and turn the computer upside down.

Always make sure the display panel is closed in Laptop mode before turning the computer upside down.

5. Slide the battery lock towards the release (⌒▄) position to make the battery release latch movable.

Battery pack

Battery lock

Figure 6-1 Releasing the battery pack (1)

6. Slide and hold the battery release latch (1) to disengage the battery pack and then remove it from the computer (2).

Battery release latch

1

2

Battery pack

Figure 6-2 Releasing the battery pack (2)

Installing the battery pack

To install a battery pack, follow the steps as detailed below:

> ⚠️ *Do not touch the battery release latch while holding the computer or the battery pack might fall out due to the unintentional release of the battery release latch and cause injuries.*
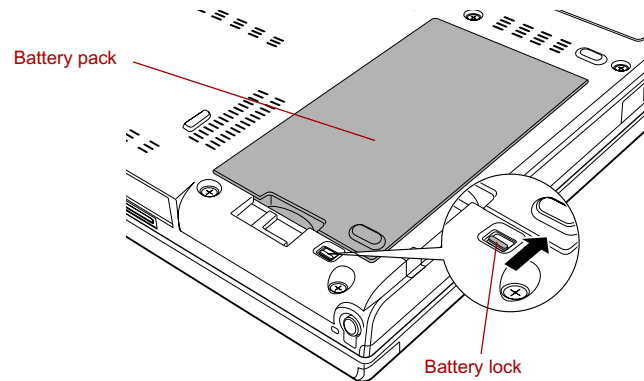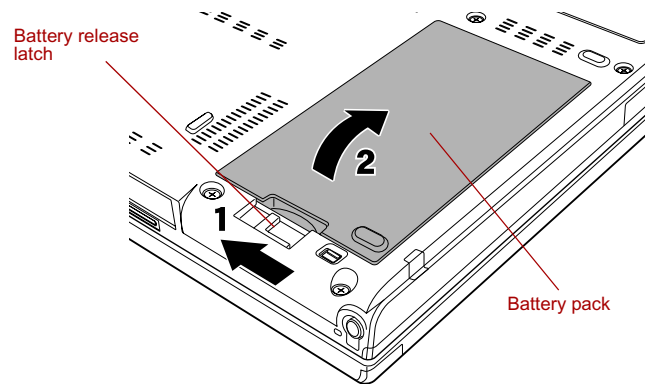
1. Insert the battery pack as far as it will go into the computer (1).
2. Ensure that the battery pack is securely in place and the battery lock (2) is in its (🔒) position.
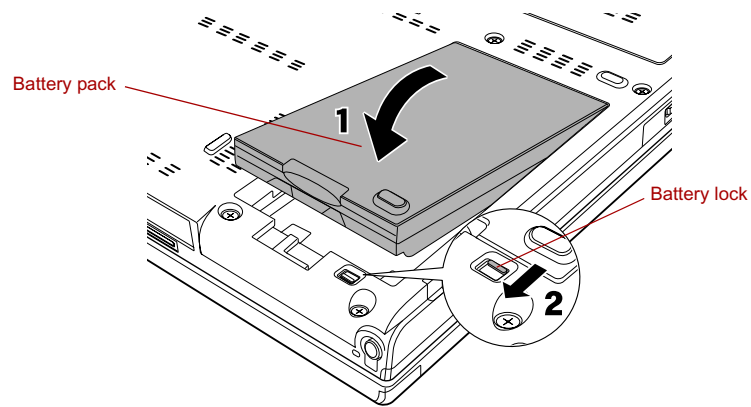
Figure 6-3 Securing the battery pack

3. Turn your computer over.

Connecting and disconnecting the Slice Expansion Battery

This battery pack increases your computer's operating time when a main battery pack is also installed.

This section explains how to connect and disconnect the Slice Expansion Battery, and begins with the removal process which is detailed through the following steps.

Connecting the Slice Expansion Battery

To connect the Slice Expansion Battery to the computer, follow the steps as detailed below:

> ⚠️ *When handling Slice Expansion Battery, be careful not to short circuit the terminals. Also do not drop, hit or otherwise apply impact; do not scratch or break the casing and do not twist or bend the latches of it.*

1. Be sure the computer's power is off and all cables are disconnected.
2. Close the display panel and turn the computer upside down.

> ℹ️ *Always make sure the display panel is closed in Laptop mode before turning the computer upside down.*

3. Remove the protective cap from the Slice Expansion Battery.

4. Open latches on the Slice Expansion Battery and fit a tab on the battery into the docking port on the underside of the computer.
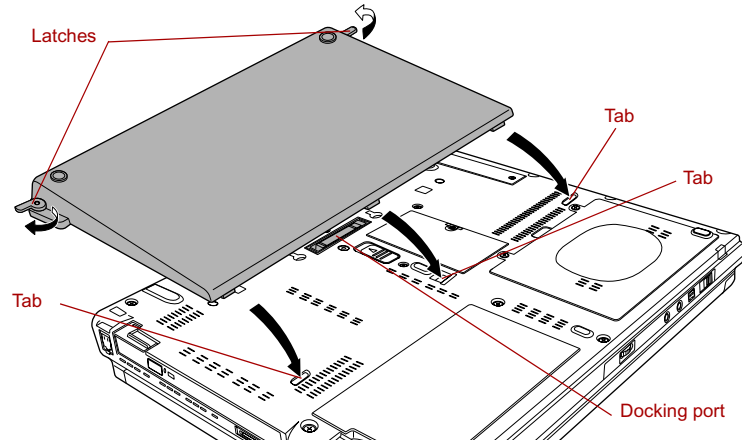
Figure 6-4 Seating the Slice Expansion Battery

5. Close the latches to secure the Slice Expansion Battery to the computer.
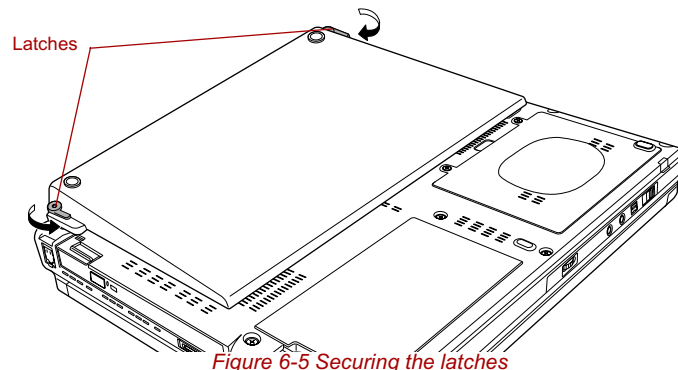
Figure 6-5 Securing the latches

Disconnecting the Slice Expansion Battery

To disconnect the Slice Expansion Battery from the computer, follow the steps as detailed below:

1. Save your work.

2. Turn the computer's power off. Make sure the **Power** indicator is off.

3. Remove all cables connected to the computer.

4. Close the display panel and turn the computer upside down.

Always make sure the display panel is closed in Laptop mode before turning the computer upside down.

5. Open the release latches in the direction of the arrows.
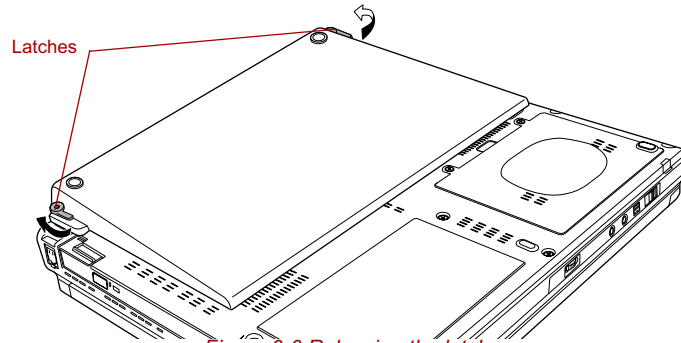
Latches

Figure 6-6 Releasing the latches

6. Lift off the Slice Expansion Battery.
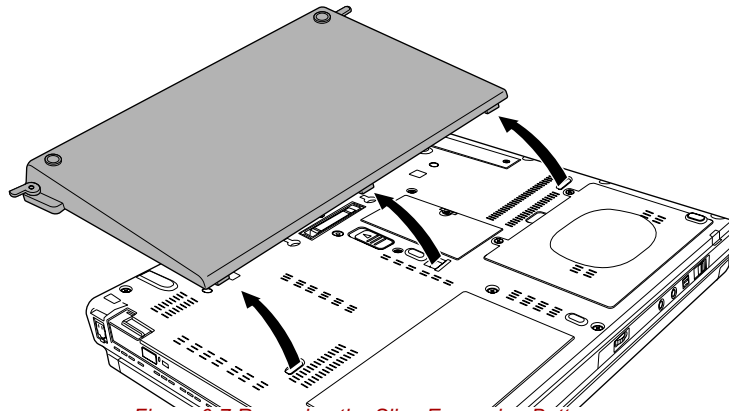
Figure 6-7 Removing the Slice Expansion Battery

7. Be sure to replace the protective cap before storing the Slice Expansion Battery.

TOSHIBA Password Utility

The TOSHIBA Password Utility provides two levels of password security: User and Supervisor.

Passwords set by the TOSHIBA Password Utility function are different from the Windows password.

User Password

To start the utility, point to or click the following items:

Start -> All Programs -> TOSHIBA -> Utilities ->Password Utility

The User Password dialog box contains two main fields: `User Password and User Token`.

User authentication may be required to validate user rights when using "TOSHIBA Password Utility" to delete or change passwords, or create tokens, etc.

User Password field

■ **Set** (button)
Click this button to register a password of up to 50 characters. After a password is set, you will be prompted to enter it when you start the computer. Check "Set the same string simultaneously as the HDD User Password" when setting the HDD User Password.

■ *After you set the password, a dialog box will be displayed asking whether you want to save it to a floppy diskette or other media. If you forget the password, you can open the password file on another computer. Be sure to keep the media in a safe place.*

■ *When entering the character string to register the password, enter from the keyboard character by character and do not enter as ASCII code or copy-and-paste the character string. In addition, ensure that the registered password is correct by outputting the character string to the password file.*

■ *When entering a password, do not enter any characters (for example "!" or "#") produced by pressing the* **SHIFT** *or* **ALT** *keys and so on.*

■ **Delete** (button)
Click this button to delete a registered password. Before you can delete a password, you must first enter the current password correctly or insert a proper token. Please use BIOS Setup to change or delete the HDD Passwords or to set the HDD Master Password.

■ **Change** (button)
Click this button to change a registered password. Before you can change a password, you must first enter the current password correctly or insert a proper token. Please use BIOS Setup to change or delete the HDD Passwords or to set the HDD Master Password.

■ **Owner String** (text box)
You can use this box to associate text with the password. After you enter text, click **Apply** or **OK**. When the computer is started, this text will be displayed together with the prompt asking you to enter a password.

■ *If you forget your HDD User Password, TOSHIBA will NOT be able to assist you, and your HDD will be rendered COMPLETELY and PERMANENTLY INOPERABLE. TOSHIBA will NOT be held responsible for any loss of any data, any loss of use or access to your HDD, or for any other losses to you or any other person or organization that result from the loss of access to your HDD. If you can't accept this risk, don't register the HDD User Password.*

■ *If you want to register the HDD master Password or the password for the Ultra Slim Bay HDD, you can set them by the BIOS SETUP Program.*

■ *When saving the HDD User Password shut down or restart the computer. If the computer is not shut down or restarted, the saved data may not be correctly reflected. For more information on shutting down or restarting the computer, refer to* Turning on the power *in Chapter 1.*

Refer to Starting and Ending the BIOS Setup Program *section in Chapter 7 for more information.*

User Token field

■ **Create** (button)
You can use an SD Card token, instead of entering the password. After you have registered a password, insert an SD Card in SD Card slot and click **Create**. You can use an SD Card of any capacity, but it must be formatted correctly.

If an unformatted card or one with an incompatible format is inserted, you will be prompted to format it with a tool named TOSHIBA SD Memory Card Format. To start the format tool, point to or click the following items:

> **Start -> All Programs -> TOSHIBA -> Utilities -> SD Memory Card Format**

When you format an SD memory card, all data will be deleted. Be sure to save data on the card to other media before you format the card.

■ **Disable** (button)
Click this button to invalidate the token. You cannot re-validate old tokens, but you can use the same SD Cards to create new tokens.

After using the token created for authentication, do not leave it inserted in the SD Card slot, ensure that the token is removed from the slot and stored in a safe location. If the token is left in the slot, there is a danger of theft or a third party using it for authentication and operating the user's computer (resulting in extraction, modification or deletion of data) when the user is not at their desk.

Supervisor Password

If you set a Supervisor Password, some functions might be restricted when a user logs on with the User Password. To set a Supervisor Password, execute the file TOSPU.EXE. The file is located at:

`C:\Program Files\Toshiba\PasswordUtility\TOSPU.exe`

This utility lets you do the following:

■ Register, delete or change the Supervisor Password.

■ Create or invalidate a Supervisor Password token.

This function in the TOSHIBA Password Utility lets you invalidate only supervisor tokens or all tokens, including user and supervisor tokens.

■ Specify restrictions for general users.

Starting the computer by password

If you have already registered a password, there are four ways to start the computer:

■ Insert an SD Card token before you turn on the computer. The computer will start normally, without displaying a password prompt.

■ Swipe your fingerprint on the sensor if you have already registered the fingerprint with the Fingerprint utility and enabled Fingerprint System Boot Authentication. If you would not like to swipe your finger or cannot authenticate the fingerprint for some reasons, push the **BACK SPACE** key to skip the fingerprint authentication screen. You can try to swipe the fingerprint up to five times. If you failed fingerprint authentication five times, you must enter the password manually to start the computer.

■ Log on with the Tablet PC Pen when in Tablet mode. Refer to *Tablet mode* section in this chapter.

■ Enter the password manually.

The password is necessary only if the computer was Shutdown and Hibernation in Boot Mode.

It is not needed in Sleep Mode and Restart.

To enter a password manually, follow the steps as detailed below:

1. Turn on the power as described in Chapter 1, *Getting Started*. The following message will appear in the screen:

> `Password=`

2. Enter the Password.

3. Press **ENTER**.

If you enter the password incorrectly three times in a row, the computer shuts off. In this case, you must turn the computer back on to retry password entry.

Tablet mode

Enter your password by tapping the on-screen keyboard using the Tablet PC Pen or your finger.

On-screen keyboard can not be used in Display screen model.
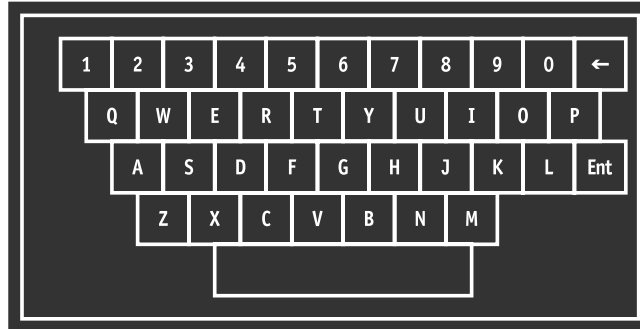
Figure 6-8 On-screen keyboard

■ The beep sounds when tapping the on-screen keyboard with the Tablet PC Pen or your finger. An * (asterisk) is displayed after "`Password =`" and one character is input for every tapping.

⚠ *Register your password to the computer in the Laptop mode using the standard keyboard. Refer to* TOSHIBA Password Utility*, in this chapter for the detail.*

Power-up modes

The computer has three different power-up modes as follows:

■ Boot Mode : The computer will shut down without saving data - in view of this you must always save your work before you turn the computer off.

■ Hibernation Mode : Data in memory will be saved to the hard disk drive.

■ Sleep Mode : Data will be maintained in the computer's memory.

ℹ *Please refer to the sections* Turning on the power *and* Turning off the power *in Chapter 1, Getting Started for further information.*

Windows utilities

You can configure various settings associated with both Sleep Mode and Hibernation Mode within the Power Options (to access it, **Start** -> **Control Panel** -> **System and Maintenance** -> **Power Options**).

Hot keys

You can use the **FN** + **F3** hot key to enter Sleep Mode or **FN** + **F4** to enter Hibernation Mode - please refer to Chapter 5, *The Keyboard* for further details.

Panel power on/off

You can set up your computer so that power is turned off automatically when you close the display panel, and turned on again when you open it. Please note that this function is only available for Sleep Mode or Hibernation Mode, not for Boot Mode.

If the panel power off function is enabled, and you manually shut down Windows, do not close the display panel until the shut down process has been completed.

System Auto Off

This feature turns the system off automatically if it is not used for a set period of time, and can be configured for both Sleep Mode or Hibernation Mode.

Chapter 7

HW Setup & BIOS Setup

This chapter explains how to use the TOSHIBA HW Setup program to configure your computer, and provides information on settings for various functions.

Accessing HW Setup

To run the HW Setup program, click **Start** -> **All Programs** -> **TOSHIBA** -> **Utilities** -> **HWSetup**.

HW Setup window

The HW Setup window contains a number of tabs (General, Display, Boot Priority, Keyboard, CPU, LAN, Device Config and USB) to allow specific functions of the computer to be configured.

In addition there are also three buttons : **OK**, **Cancel** and **Apply**.

OK	Accepts your changes and closes the HW Setup window.
Cancel	Closes the window without accepting your changes.
Apply	Accepts all your changes without closing the HW Setup window.

General

This window displays the BIOS version and contains two buttons : **Default** and **About**.

`Default`	Return all HW Setup values to the factory settings.
`About`	Display the HW Setup version.

Setup

This field displays the installed `BIOS version` and date.

Display

This tab lets you customize your computer's display settings for either the internal display or an external monitor.

Power On Display

This tab allows you to select the display to be used when the computer is started. Please note that this setting is only available on standard VGA mode and is not available as part of the Windows Desktop properties.

`Auto-Selected`	Selects an external monitor if one is connected, otherwise, it selects the internal display (default).
`LCD + Analog RGB`	Selects both the internal display and an external monitor for simultaneous display.
`System LCD Only`	Selects the internal display even if the external monitor is connected.

If the connected external monitor does not support the computer's current video mode, selecting the LCD + Analog RGB mode will not display any image on the external monitor.

Boot Priority

Boot Priority Options

This tab allows you to select the priority for booting the computer - the following settings are available:

`FDD` $\rightarrow$ `HDD` $\rightarrow$ `CD-ROM` $\rightarrow$ `LAN`	The computer looks for bootable files on devices in the following order: 1. floppy diskette drive[*1], 2. hard disk drive, 3. CD-ROM[*2], 4. LAN.
`HDD` $\rightarrow$ `FDD` $\rightarrow$ `CD-ROM` $\rightarrow$ `LAN`	The computer looks for bootable files on devices in the following order: 1. hard disk drive, 2. floppy diskette drive[*1], 3. CD-ROM[*2], 4. LAN.
`FDD` $\rightarrow$ `CD-ROM` $\rightarrow$ `LAN` $\rightarrow$ `HDD`	The computer looks for bootable files on devices in the following order: 1. floppy diskette drive[*1], 2. CD-ROM[*2], 3. LAN, 4. hard disk drive.
`HDD` $\rightarrow$ `CD-ROM` $\rightarrow$ `LAN` $\rightarrow$ `FDD`	The computer looks for bootable files on devices in the following order: 1. hard disk drive, 2. CD-ROM[*2], 3. LAN, 4. floppy diskette drive[*1].
`CD-ROM` $\rightarrow$ `LAN` $\rightarrow$ `FDD` $\rightarrow$ `HDD`	The computer looks for bootable files on devices in the following order: 1. CD-ROM[*2], 2. LAN, 3. floppy diskette drive[*1], 4. hard disk drive.
`CD-ROM` $\rightarrow$ `LAN` $\rightarrow$ `HDD` $\rightarrow$ `FDD`	The computer looks for bootable files on devices in the following order: 1. CD-ROM[*2], 2. LAN, 3. hard disk drive, 4. floppy diskette drive[*1].

You can override the settings and manually select a boot device by pressing one of the following keys while the computer is booting:

U	Selects the USB floppy diskette drive.
N	Selects the network.
1	Selects the built-in hard disk drive.
2	Selects the secondary hard disk drive.
C	Selects the CD-ROM[*2].
M	Selects the USB memory drive.

[*1] The floppy diskette drive will be used to start the computer when there is a bootable disk contained in the external drive. If SD memory card is installed as well, the external floppy diskette drive will be checked first, followed by the SD memory device itself.

[*2] The optical disc drive will be used to start the computer when there is a bootable disk contained in the drive.

To change the boot drive, follow the steps below.

1. Hold down **F12** and boot the computer.

2. The following menu will be displayed with the following icons: Built-in hard disk drive, Ultra Slim Bay hard disk drive, CD-ROM, FDD (or SD memory card), Network (LAN), USB Memory boot.

> *i* *Please note that a highlighted bar will only appear under the selected device.*

3. Use the left/right cursor keys to highlight the boot device you want and press **ENTER**.

> *i* *If a Supervisor Password has been set, manual boot device selection functions may be restricted.*
>
> *The boot device selection methods described above will not change the boot priority settings that have been configured in HW Setup. In addition, if you press a key other than one of those listed, or if the selected device is not installed, the system will continue to boot according to the current and available settings in HW Setup.*

HDD Priority Options

If more than one hard disk drive is installed in the computer, this option allows you to set the priority associated with hard disk drive detection - the first hard disk drive detected that has a valid boot command on it will be the device from which the computer will start.

`Built-in HDD -> 2nd HDD -> USB (Default)`	The priority is set as built-in HDD -> 2nd HDD -> USB.
`2nd HDD -> Built-in HDD -> USB`	The priority is set as 2nd HDD -> built-in HDD -> USB.
`Built-in HDD -> USB -> 2nd HDD`	The priority is set as built-in HDD -> USB -> 2nd HDD.
`2nd HDD -> USB -> Built-in HDD`	The priority is set as 2nd HDD -> USB -> built-in HDD.
`USB -> Built-in HDD -> 2nd HDD`	The priority is set as USB -> built-in HDD -> 2nd HDD.
`USB -> 2nd HDD -> Built-in HDD`	The priority is set as USB -> 2nd HDD -> built-in HDD.

■ *If a boot command is not found on the first detected hard disk drive, the system will not boot from next hard disk drive in the list, instead it will search for the next device in the Boot Priority list and startup from this as appropriate.*

■ *Please be aware that some modules may not be displayed.*

USB Memory BIOS Support Type

This option allows you to set the type of the USB memory to be used as a startup device.

HDD	Sets the USB memory to be the equivalent of a hard disk drive (default). With this setting, the USB memory device can be used to start the computer as though it were a hard disk drive based on the hard disk drive settings within both the Boot Priority and HDD Priority options detailed previously.
FDD	Sets the USB memory to be the equivalent of a floppy diskette drive. With this setting, the USB memory device can be used to start the computer as though it were a floppy diskette based on the floppy diskette drive settings within the Boot Priority option detailed previously.

Keyboard

Wake-up on Keyboard

When this feature is enabled, and the computer is in Sleep Mode, you can turn on the system by pressing any key. However, please be aware that this option will only work with the internal keyboard and only when the computer is in Sleep Mode.

Enabled	Enables the Wake-up on Keyboard function.
Disabled	Disables the Wake-up on Keyboard function (Default).

CPU

This function allows you to set the processor's operating mode.

Dynamic CPU Frequency Mode

This option allows you to configure the power saving modes associated with the processor - the following settings are available:

Dynamically Switchable	The processor's power consumption and automatic clock speed switching functions are enabled - in use the processor's operation is automatically switched when necessary (default).
Always High	The processor's power consumption and automatic clock speed switching functions are disabled - in use the processor will always run at its highest level of power consumption and its highest speed.
Always Low	The processor's power consumption and automatic clock speed switching functions are disabled - in use the processor will always run at a lower level of power consumption and a low speed.

LAN

Wake-up on LAN

This feature lets the computer's power be turned on when it receives a wake-up signal from the LAN.

Do not install or remove a memory module while Wake-up on LAN is enabled.

■ *The Wake-up on LAN function consumes power even when the system is off. Leave the AC adaptor connected while using this feature.*

■ *To enable it, you must check both the "Allow the device to wake the computer" and "Only allow management stations to wake the computer" check box within the "Intel Network Connection".*

Power will be automatically turned on when a signal is received from an administrator's computer which is connected via a network.

The following settings can be changed when the Built-in LAN is **Enabled**.

Connect the AC adaptor when using the Wake-up on LAN function. The battery retention time will be shorter than the times listed in this manual when this function is enabled. Refer to the section in chapter 6, *Retaining data with power off*.

Enabled	Enables Wake-up on LAN (Default).
Disabled	Disables Wake-up on LAN.

Built-in LAN

This feature enables or disables the Built-in LAN.

Enabled	Enables Built-in LAN functions (Default).
Disabled	Disables Built-in LAN functions.

Device Config

Device Configuration

This option allows you to set how the computer's hardware devices will be configured.

All Devices	The computer's BIOS will setup and configure all devices.
Setup by OS	The operating system will setup and configure all of the devices that it can control (default).

USB

USB KB/Mouse Legacy Emulation

You can use this option to enable or disable USB keyboard/mouse legacy emulation so that, even if your operating system does not support USB devices, you can still use a standard USB mouse and keyboard - to achieve this you should set the appropriate option(s) to Enabled.

Enabled	Enables the USB KB/Mouse Legacy Emulation function (Default).
Disabled	Disables the USB KB/Mouse Legacy Emulation function.

USB-FDD Legacy Emulation

Use this option to enable or disable USB floppy diskette drive legacy emulation. If your operating system does not support USB, you can still use a USB floppy diskette drive by setting the **USB-FDD Legacy Emulation** item to **Enabled**.

Enabled	Enables the USB floppy diskette drive legacy emulation function (Default).
Disabled	Disables the USB floppy diskette drive legacy emulation function.

BIOS Setup Program

Settings for some features are carried out in the BIOS setup program.

Notes Before Using the BIOS Setup Application

■ *In most cases, changes to the system's configuration should be made within Windows by using applications such as* **TOSHIBA HW Setup***,* **TOSHIBA Password Utility***,* **Windows Device Manager** *and so forth. If you make changes to the configuration through the BIOS setup program, please be aware that the configuration set through the Windows applications will take priority.*

■ *Changes to the settings within the BIOS setup program will not be erased even if the power supply is turned off and the main battery removed. However, if the built-in Real Time Clock (RTC) battery runs out of power, most of the settings will revert back to their default values. However, please note that the following items will not be affected in this instance:*
• Password
• Hard Disk Drive Password
• Security Controller
• Fingerprint patterns

Starting and Ending the BIOS Setup Program

Starting the BIOS Setup Program

1. Turn on the computer while pressing the **ESC** key - if the `Password =` prompt is displayed, enter either the Supervisor Password, if one is set, or the User Password and press the **ENTER** key. Please refer to Chapter 6, the *TOSHIBA Password Utility* for further details about the User Password.

2. At the `Check system. Then press [F1] key.` prompt, press the **F1** key - the BIOS setup application will start up.

Please refer to the operating instructions displayed in the settings screen.

Ending the BIOS Setup Program

In order to save the changes you have made and end the BIOS setup application, follow the steps as detailed below:

1. Press the **END** key - this will cause the `Are you sure? (Y/N). The changes you made will cause the system to reboot.` prompt to be displayed at the bottom of the screen.

2. Press the **Y** key - this will save the configuration changes and end the BIOS setup application, automatically restarting the computer.

Ending the BIOS Setup Program Halfway

The configuration settings can be terminated halfway without saving any of the changes made by following the steps detailed below:

1. Press the **ESC** key - the `Exit without saving? (Y/N)` prompt to be displayed at the bottom of the screen.
2. Press the **Y** key - the BIOS setup application will exit and the computer will automatically restart.

Supervisor Password

This setting, which is displayed on the first page of the setup screen, Allows you to register a Supervisor Password of the computer.

`Not Registered`	Supervisor Password has not been registered (Default).
`Registered`	Supervisor Password has been registered.

The User Password and Supervisor Password configured in BIOS SETUP can also be changed or deleted using the TOSHIBA Password Utility.

When unable to perform the following operations, use the TOSHIBA Password Utility to change the configuration or delete the Supervisor Password.

■ *Configuration changes in the BIOS Setup Program*

■ *Configuration changes in the HW Setup utility*

■ *Selection of the startup device during computer recovery*

Core Multi - Processing

The Core Multi-Processing sets the CPU operating mode.

Enabled is Dual Core mode.

Disabled is Single Core mode.

`Enabled`	Enables Core Multi - Processing functions (Default).
`Disabled`	Disables Core Multi - Processing functions.

Virtualization Technology

Virtualization Technology sets enable or disable of the Intel® Virtualization Technology installed in the CPU.

Intel® Virtualization Technology is the technique that allows one machine to operate as multiple virtual machines.

The Virtualization Technology is supported with some models.

The Disabled command does not allow use of the Intel® Virtualization Technology.

The Enabled command allows use of the Intel® Virtualization Technology.

Enabled	Enables Virtualization Technology.
Disabled	Disables Virtualization Technology (Default).

Enhanced C-States

This feature enables or disables the Enhanced C-States.

Enabled	This lowers the power consumption (Default).
Disabled	This does not lower the power consumption.

Execute-Disable Bit Capability

This setting, which is displayed on the first page of the setup screen, configures the Execute-Disable Bit function of the computer's processor. This function is specific to Intel® processors and, when activated, helps to reduce security threats to the computer by preventing certain classes of malicious 'buffer overflow' attacks when combined with a supporting operating system such as Windows Vista®.

Available	Makes the processor's Execute-Disable Bit Capability available for use (Default).
Not Available	Disables the processor's Execute-Disable Bit Capability so that it is not available for use.

Auto Power On

This is a function for automatically turning on the computer. This item shows the current Auto Power On setting. When Alarm Time, Wake-up on LAN, or Critical Battery Wake-up are Enabled, Auto Power On is also Enabled.

Alarm Time, Wake-up on LAN, on Battery and Critical Battery Wake-up can be configured under OPTIONS.

Enabled	Either Alarm Time, Wake-up on LAN, or Critical Battery Wake-up is set to Enabled (Default).
Disabled	Alarm Time, Wake-up on LAN, and Critical Battery Wake-up are Disabled.

on Battery

The setting is available when the Wake-up on LAN is Enabled.

Enabled	Enables Wake-up on LAN function when operating from the battery.
Disabled	Disables Wake-up on LAN function when operating from the battery (Default).

Critical Battery Wake-up

Configures what action is taken when the remaining battery power is close to running out while the system is in Sleep Mode.

This setting is only available when the Critical battery action in Windows is set to Hibernate (Default).

To access it, **Start** -> **Control Panel** -> **System and Maintenance** -> **Power Options** -> **Edit Plan Settings** -> **Change advanced power settings** -> **Battery**.

The operation of this function is dependent upon battery status.

Enabled	When the remaining battery power is about to run out while the system is in Sleep Mode, the system is automatically woken up and then switched to Hibernation Mode (Default).
Disabled	No action is taken even if the remaining battery power is about to run out while the system is in Sleep Mode.

Security controller

Please note that the security controller settings are available on the second page of the BIOS setup application.

TPM

This setting enables or disables the computer's Trusted Platform Module (TPM) security controller.

The Trusted Platform Module security controller is supported with some models.

Enabled	Enable Trusted Platform Module security.
Disabled	Disable Trusted Platform Module security (default).

Clear TPM Owner

This setting is used to erase the data stored as part of the Trusted Platform Module, as would be required, for example, when disposing of the computer or when the owner of the computer changes. Once this operation is carried out, the Trusted Platform Module configuration settings are erased such that any encrypted data can no longer be decrypted and the files can no longer be read. In view of this you must ensure that you backup or delete the data as necessary before carrying out this operation.

The procedure to follow is as detailed below:

1. Move the cursor to the **Clear TPM Owner** setting and press either the **Space** key or **BACK SPACE** key.
2. A message is displayed at which you should press the **Y**, **E**, **S**, and **ENTER** keys in sequence - the Trusted Platform Module information will then be erased.
3. The Trusted Platform Module setting will then change from being **Enable** to **Disabled** and the setting no longer displayed.

When using TPM, please refer to the **Infineon TPM Installation Guide** *from the* **C:\TOSAPINS\Infineon TPM Installation Guide** *and ensure that the user reads as it contains usage information and notes on using TPM security.*

Diagnostic Mode

Allows you to set whether the BIOS diagnostic test is enabled or disabled.

Disabled	The diagnostic test is disabled (Default).
Enabled	The diagnostic test is enabled.

SATA Controller Mode

This feature sets the SATA Controller Mode.

The SATA Controller Mode is supported with some models.

AHCI	Sets AHCI which is the mode for Windows Vista® (Default).
Compatibility	Sets the mode for legacy OS. Use this mode when the driver corresponding to AHCI is not used.

USB Sleep and Charge function

This section describes the settings for "USB Sleep and Charge function". For more information, please refer to the *USB Sleep and Charge function* section in Chapter 3, Hardware, Utilities and Options.

The default setting in BIOS Setup is [Disabled]. Changing the setting to [Enabled] enables the use of this function.

There are two modes, Mode-1 and Mode-2 in [Enabled]. For normal use, set the setting to Mode-1.

If the function does not work with Mode-1 setting, change it to Mode-2.

Some external devices may not be able to use this function in either mode. When this happens, change the setting to [Disabled].

Enabled (Mode-1)	Enables USB Sleep and Charge function.
Enabled (Mode-2)	Enables USB Sleep and Charge function.
Disabled	Disables USB Sleep and Charge function (Default).

Chapter 8

Troubleshooting

TOSHIBA have designed this computer for durability, however, should problems occur you are able to use the procedures detailed in this chapter to help determine the cause.

All users should become familiar with this chapter as knowing what might go wrong can help prevent problems from occurring in the first place.

Problem solving process

Resolving problems will be much easier if you observe the following guidelines:

■ Stop immediately when you recognize a problem exists as taking further action may result in data loss or damage, or you may destroy valuable problem related information that can help solve the problem.

■ Observe what is happening - write down what the system is doing and what actions you performed immediately before the problem occurred. If you have a printer attached, print a copy of the screen using the computer's **PRTSC** key.

Please also be aware that the questions and procedures described in this chapter are meant only as a guide, they are not definitive problem solving techniques. In reality many problems can be solved simply, but a few may require help from your reseller, dealer or service provider - if you find you need to consult others, be prepared to describe the problem in as much detail as possible.

Preliminary checklist

You should always consider the simplest solution first - the items detailed in this checklist are easy to fix and yet can cause what appears to be a serious problem:

■ Make sure you turn on all peripheral devices before you turn on the computer - this includes your printer and any other external device you are using.

■ Before you attach an external device you should first turn the computer off, then when you turn the computer back on again it will recognize the new device.

■ Make sure all optional accessories are configured properly in the computer's setup program and that all required driver software has been loaded (please refer to the documentation included with the optional accessories for further information on its installation and configuration).

■ Check all cables to ensure they are correctly and firmly attached to the computer - loose cables can cause signal errors.

■ Inspect all connecting cables for loose wires and all connectors for loose pins.

■ Check that your floppy diskette, CD or DVD media is correctly loaded and, in the case of a floppy diskette, that its write protect tab is correctly set.

Always try to make detailed notes of your observations and keep them in a permanent error log - this will help you to describe your problems to your reseller, dealer or service provider. In addition, if a problem recurs, the log you have made will help to identify the problem faster.

Analyzing the problem

Sometimes the computer will give you clues that can help you identify why it is malfunctioning. In view of this you should keep the following questions in mind:

■ Which part of the computer is not operating properly - keyboard, hard disk drive, display panel, touch pad, touch pad control buttons - as each device will produce different symptoms.

■ Check the options within the operating system to ensure that its configuration is set properly.

■ What appears on the display? Does it display any messages or random characters? If you have a printer attached, print a copy of the screen using the **PRTSC** key and, if possible, look up the messages in the documentation included with the computer, software or operating system.

■ Check that all connecting cables are correctly and firmly attached as loose cables can cause erroneous or intermittent signals.

■ Do any indicators light, if so, which ones, what color are they and do they stay on or blink? Write down what you see.

■ Do you hear any beeps, if so how many, are they long or short and are they high pitched or low pitched? In addition, is the computer making any unusual noises? Write down what you hear.

Record your observations so you can describe them in detail to your reseller, dealer or service provider.

Software	The problems may be caused by your software or disk. If you cannot load a software package, the media may be damaged or the program might be corrupted - in these instances try loading another copy of the software if possible.
	If an error message appears while you are using a software package you should refer to the documentation supplied with it as this will usually include a problem solving section or a summary of error messages.
	Next, you should check any error messages against the operating system documentation.
Hardware	If you cannot find a software problem, you should then check the setup and configuration of your hardware. First run through the items in the preliminary checklist as described previously then, if you still cannot correct the problem, try to identify the source - the next section provides checklists for individual components and peripherals.

Before using a peripheral device or application software that is not an authorized Toshiba part or product, make sure the device or software can be used with your computer. Use of incompatible devices may cause injury or may damage your computer.

Hardware and system checklist

This section discusses problems caused by your computer's hardware or attached peripherals. Basic problems may occur in the following areas:

■ System start-up
■ Self test
■ Power
■ Password
■ Keyboard
■ Internal display panel
■ Hard disk drive
■ DVD Super Multi drive
■ USB floppy diskette drive
■ PC Card
■ Smart Card
■ SD/SDHC Card
■ Memory Stick
■ xD picture card

■ MultiMediaCard
■ Pointing Device
■ Fingerprint Sensor
■ USB device
■ Additional memory module
■ Sound system
■ External monitor
■ i.LINK (IEEE1394) device
■ Modem
■ LAN
■ Wireless LAN
■ Bluetooth
■ Recovery Discs

System start-up

When the computer does not start properly, check the following items:

- Self Test
- Power Sources
- Power-on Password

Self test

While booting up the computer, self test is executed automatically and the `TOSHIBA` logo is displayed on the screen.

This message remains on the screen for a few seconds.

If the self test is successful, the computer tries to load the operating system according to how the **Boot Priority** option is set within the TOSHIBA HW Setup program.

If any of the following conditions are present, the self test has failed:

- The computer stops and does not proceed to display information or messages except for the TOSHIBA logo.
- Random characters appear on the screen and the system does not function normally.
- The screen displays an error message.

In these instances, turn off the computer, check all cable connections and then restart it - if the self test fails again, contact your reseller, dealer or service provider.

Power

When the computer is not plugged into an AC power outlet, the battery pack is the primary power source. However, your computer also has a number of other power resources, including an intelligent power supply and a Real Time Clock (RTC) battery, all of which are interrelated with any one having the ability to produce apparent power problems.

This section provides checklists for AC power and the battery. If you cannot resolve a problem after following them, the cause may lie with another power related resource - in such an instance you should contact your reseller, dealer or service provider.

Overheating power down

In the event that the computer's internal operating temperature becomes too high, the system will automatically enter either Hibernation Mode or Sleep Mode and shut itself down.

Problem	Procedure
Computer shuts down and **DC IN** indicator blinks orange	Leave the computer off until the **DC IN** indicator stops blinking.

⚠️ *It is recommended to leave the computer off until the interior reaches room temperature even though the* **DC IN** *indicator stops blinking.*

	If the computer has reached room temperature and it still does not start, or if it starts but shuts down quickly, contact your reseller, dealer or service provider.
Computer shuts down and its **DC IN** indicator is flashing green	This indicates a problem with the heat dispersal system - you should contact your reseller, dealer or service provider.

AC power

If you have trouble turning on the computer with the AC adaptor connected you should check the status of the **DC IN** indicator. Please refer to Chapter 6, *Power and Power-Up Modes* for further information.

Problem	Procedure
AC adaptor doesn't power the computer (**DC IN** indicator does not glow green)	Check the connections to make sure that the power cord/adaptor is firmly connected to the computer and a working power outlet.
	Check the condition of the cord and terminals. If the cord is frayed or damaged it should be replaced, while if the terminals are soiled, they should be cleaned with a clean cotton cloth.
	If the AC adaptor still does not power the computer, you should contact your reseller, dealer or service provider.

Battery

If you suspect a problem with the battery, you should check the status of the **DC IN** indicator as well as the **Battery** indicator. Please refer to Chapter 6, *Power and Power-Up Modes* for more information on these indicators, together with general battery operation.

Problem	Procedure
Battery doesn't power the computer	The battery may be discharged - connect the AC adaptor to recharge the battery.

Problem	Procedure
Battery doesn't charge when the AC adaptor is attached (**Battery** indicator does not glow orange).	If the battery is completely discharged, it will not begin charging immediately, in these instances you should wait a few minutes before trying again. If the battery still does not charge, you should check that the power outlet the AC adaptor is connected to is supplying power - this can be tested by plugging another appliance into it.
	Check whether the battery is hot or cold to the touch - if so, it will not charge properly and should be allowed to reach room temperature before you try again.
	Unplug the AC adaptor and remove the battery to make sure its connecting terminals are clean - if necessary wipe them with a soft dry cloth lightly dipped in alcohol.
	Connect the AC adaptor and replace the battery, taking care to ensure that it is securely seated in the computer.
	Check the **Battery** indicator - if it does not glow, allow the computer to charge the battery for at least twenty minutes. If the **Battery** indicator starts to glow after this period, allow the battery to continue to charge for at least another twenty minutes before turning on the computer. However, if the indicator still does not glow, the battery may be at the end of its operating life and should be replaced. However, if you do not believe the battery is at the end of its operating life, you should speak to your reseller, dealer or service provider.
Battery doesn't power the computer as long as expected	If you frequently recharge a partially charged battery, the battery might not charge to its full potential - in these instances you should fully discharge the battery and then attempt to charge it again.
	Check the **Power saver** option under **Select a power plan** in the **Power Options**.

Real Time Clock

Problem	Procedure
The following message is Displayed on the screen: **RTC battery is low or CMOS checksum is inconsistent. Press [F1] key to set Date/Time.**	The charge in the Real Time Clock (RTC) battery has run out - you will need to set the date and time in the BIOS setup application by using the following steps: 1. Press the **F1** key - the BIOS setup application will load. 2. Set the date in the **System Date** field. 3. Set the time in the **System Time** field. 4. Press the **END** key - a confirmation message will be displayed. 5. Press the **Y** key - the BIOS setup application will end and the computer will restart.

Password

Problem	Procedure
Cannot enter password	Please refer to the *TOSHIBA Password Utility* section in Chapter 6, Power and Power-Up Modes for further information.

Keyboard

Keyboard problems can be caused by the setup and configuration of the computer - please refer to Chapter 5, *The Keyboard* for further information.

Problem	Procedure
Some letter keys produce numbers	Check that the numeric keypad overlay is not activated - press the **FN** + **F11** hot key and try typing again.
Output to screen is garbled	Please refer to your software's documentation to ensure that its is not remapping the keyboard in any way (remapping involves changing or reassigning the function of each key). If you are still unable to use the keyboard, you should contact your reseller, dealer or service provider.

Internal display panel

Apparent computer's display panel problems may be related to the computer's setup and configuration - please refer to Chapter 7, *HW Setup & BIOS Setup*, for further information.

Problem	Procedure
No display	Press the **FN** + **F5** hot keys to adjust the display priority, and to make sure it is not set for output to an external monitor.
Markings appear on the computer's display panel.	These marks may have come from contact with the keyboard and Touch Pad while the display panel has been closed. You should try to remove the marks by gently wiping the display panel with a clean dry cloth or, if this fails, with a good quality LCD screen cleaner. In this latter instance you should always follow the instructions with the screen cleaner and always ensure you let the display panel dry properly before closing it.
Problems above remain unresolved or other problems occur	You should initially refer to the documentation supplied with you software to determine if it is this that is causing the problems. Alternatively you may wish to run the TOSHIBA PC Diagnostic Tool to check the general operation of the computer. If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Hard disk drive

Problem	Procedure
Computer does not boot from hard disk drive	Check to see whether that is a floppy diskette in the floppy diskette drive or a CD-ROM/DVD-ROM in the optical disc drive - if so remove it and try to start the computer again. If this has no effect, check the **Boot Priority** setting within the TOSHIBA HW Setup utility - please refer to the *Boot Priority* section in Chapter 7, *HW Setup & BIOS Setup* for further information.
	Please refer to your operating system documentation in order to determine whether there is a problem with any of the operating system files or settings.

Problem	Procedure
Slow performance	The files on the hard disk drive may be fragmented - in this instance you should run the disk Defragmentation utility to check the condition of your files and the hard disk drive. Please refer to the operating system's documentation or online Help File for further information on operating and using the Defragmentation utility.
	As a last resort you should reformat the hard disk drive and then reload the operating system and all other files and data. If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

DVD Super Multi drive

For more information, refer to Chapter 4, *Operating Basics.*

Problem	Procedure
You cannot access a CD/DVD in the drive	Make sure the drive's disc tray is securely closed. Press gently until it clicks into place.
	Check whether the drive power is on. If the power is off, press the **FN** + **Tab** hot key and turn on the power.
	Open the disc tray and make sure the CD/DVD is properly seated. It should lie flat with the label facing up.
	A foreign object in the disc tray could block laser light from reading the CD/DVD. Make sure there is no obstruction. Remove any foreign object.
	Check whether the CD/DVD is dirty. If it is, wipe it with a clean cloth dipped in water or a neutral cleaner. Refer to the *Media care* section in Chapter 4 for details on cleaning.
Some CD/DVDs run correctly, but others do not	The software or hardware configuration may be causing a problem. Make sure the hardware configuration matches your software's needs. Check the CD/DVD's documentation.

Check the type of CD/DVD you are using. The drive supports:

DVD-ROM: DVD-ROM, DVD-Video

CD-ROM: CD-DA, CD-Text, Photo CD™ (single/multi-session), CD-ROM Mode 1, Mode 2, CD-ROM XA Mode 2 (Form1, Form2), Enhanced CD (CD-EXTRA), Addressing Method 2

Recordable DVD: DVD-R/-R DL, DVD+R/+R DL, DVD-RW, DVD+RW, DVD-RAM

Check the region code on the DVD. It must match that on the DVD Super Multi drive. Region codes are listed in the *Optical disc drives* section in Chapter 2, The Grand Tour.

USB floppy diskette drive

For further information, please refer to Chapter 3, *Hardware, Utilities and Options.*

Problem	Procedure
Drive does not operate	Check the connection between the computer and the drive to ensure that it is properly attached.
Some programs run correctly but others do not	The computer's software or hardware configuration may be causing a problem - ensure that these configurations match your requirements (refer to any relevant documentation, for example that supplied with any software in use, for further information).
You cannot access the external floppy diskette drive	Try another floppy diskette in the drive - if you are able to access this disk then it indicates the original disk and not the drive is probably causing the problem.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

PC Card

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
PC Card error occurs	Remove the PC Card from the computer and then reinsert it in order to ensure it is firmly connected.
	In the event that the PC Card is attached to an external peripheral device, ensure that this connection is properly made.
	If the problem persists, then you should refer to the documentation supplied with your PC Card for further information.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Smart Card

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
Smart Card error occurs	Remove the Smart Card from the computer, make sure to confirm that the card oriented correctly and reinsert it in order to ensure it is firmly connected.
	If the problem persists, then you should refer to the documentation supplied with your Smart Card for further information.

SD/SDHC Card

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
SD/SDHC Card error occurs	Remove the SD/SDHC Card from the computer and then reinsert it in order to ensure it is firmly connected.
	If the problem persists, then you should refer to the documentation supplied with your SD/SDHC Card for further information.
You cannot write to an SD/SDHC Card	Remove the SD/SDHC Card from the computer and check to ensure that it is not write protected.

Problem	Procedure
You cannot read a file	Check to ensure the required file is actually on the SD/SDHC Card that is inserted into the computer.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Memory Stick

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
Memory Stick/Memory Stick PRO/Memory Stick PRO Duo error occurs	Remove the Memory Stick/Memory Stick PRO/Memory Stick PRO Duo from the computer and then reinsert it in order to ensure it is firmly connected.
	If the problem persists, then you should refer to the documentation supplied with your Memory Stick/Memory Stick PRO/Memory Stick PRO Duo for further information.
You cannot write to an Memory Stick/Memory Stick PRO/Memory Stick PRO Duo	Remove the Memory Stick/Memory Stick PRO/Memory Stick PRO Duo from the computer and check to ensure that it is not write protected.
You cannot read a file	Check to ensure the required file is actually on the Memory Stick/Memory Stick PRO/Memory Stick PRO Duo that is inserted into the computer.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

xD picture card

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
xD picture card error occurs	Remove the xD picture card from the computer and then reinsert it in order to ensure it is firmly connected.
	If the problem persists, then you should refer to the documentation supplied with your xD picture card for further information.

Problem	Procedure
You cannot read a file	Check to ensure the required file is actually on the xD picture card that is inserted into the computer.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

MultiMediaCard

For further information, please refer to Chapter 3, *Hardware, Utilities and Options*.

Problem	Procedure
MultiMediaCard error occurs	Remove the MultiMediaCard from the computer and then reinsert it in order to ensure it is firmly connected.
	If the problem persists, then you should refer to the documentation supplied with your MultiMediaCard for further information.
You cannot write to a MultiMediaCard	Remove the MultiMediaCard from the computer and check to ensure that it is not write protected.
You cannot read a file	Check to ensure the required file is actually on the MultiMediaCard that is inserted into the computer.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Pointing device

If you are using a USB mouse, you should also refer to both the *USB device* section in this chapter, and the documentation supplied with your mouse.

Touch Pad

Problem	Procedure
On-screen pointer does not respond to pointing device operation	In this instance the system might be busy - Try moving the mouse again after waiting a short while.

Problem	Procedure
Double-tapping does not work	In this instance, you should initially try changing the double-click speed setting within the Mouse Control utility.
	1. To access this utility, click **Start** -> **Control Panel** -> **Hardware and Sound** -> **Mouse** icon.
	2. Within the Mouse Properties window, click the **Buttons** tab.
	3. Set the double-click speed as required and click **OK**.
The mouse pointer moves too fast or too slow	In this instance, you should initially try changing the speed setting within the Mouse Control utility.
	1. To access this utility, click **Start** -> **Control Panel** -> **Hardware and Sound** -> **Mouse** icon.
	2. Within the Mouse Properties window, click the **Pointer Options** tab.
	3. Set the pointer speed as required and click **OK**.
The reaction of Touch pad is either too sensitive or not sensitive enough.	Adjust the touch Sensitivity.
	1. Click **Start** -> **Control Panel** -> **Hardware and Sound** -> **Mouse** icon.
	2. Within the Mouse Properties window, click the **Advanced** tab.
	3. Click the **Advanced feature settings...** button.
	4. **Advanced feature settings** is displayed.
	5. Within the Pointer speed and tapping settings, click **Settings...** button.
	6. Detailed Touch Pad settings window is displayed.
	7. Move the slider bar to adjust the sensitivity in the Touch Sensitivity.
	8. Click **OK** button.
	9. Click the **OK** button on **Advanced feature setting** screen.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

USB mouse

Problem	Procedure
On-screen pointer does not respond to mouse operation	In this instance the system might be busy - Try moving the mouse again after waiting a short while.
	Remove the mouse from the computer and then reconnect it to a free USB port it in order to ensure it is firmly attached.
Double-clicking does not work	In this instance, you should initially try changing the double-click speed setting within the Mouse Control utility. 1. To access this utility, click **Start** -> **Control Panel** -> **Hardware and Sound** -> **Mouse** icon. 2. Within the Mouse Properties window, click the **Buttons** tab. 3. Set the double-click speed as required and click **OK**.
The mouse pointer moves too fast or too slow	In this instance, you should initially try changing the speed setting within the Mouse Control utility. 1. To access this utility, click **Start** -> **Control Panel** -> **Hardware and Sound** -> **Mouse** icon. 2. Within the Mouse Properties window, click the **Pointer Options** tab. 3. Set the pointer speed as required and click **OK**.
The mouse pointer moves erratically	The elements of the mouse responsible for detecting movement might be dirty - please refer to the documentation supplied with the mouse for instructions on how to clean it. If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Fingerprint Sensor

Problem	Procedure
Reading of the fingerprint was not successful.	In this instance you should try the fingerprint reading operation again using the correct finger position - please refer to *Using the Fingerprint Sensor* in Chapter 4, Operating Basics for further information.
	Alternatively, you should try the recognition process again using another enrolled finger.
	The fingerprint sensor compares and analyzes the unique characteristics in a fingerprint. However, there may be instances where certain users are unable to register their fingerprints due to insufficient unique characteristics in their fingerprints.
	The recognition success rate may differ from user to user.
The fingerprint cannot be read due to injuries to the finger.	In this instance you should try the recognition process again using another enrolled finger. However, if fingerprints from all the enrolled fingers cannot be read, you should instead log into the computer by using the keyboard to input the password.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

USB device

In addition to the information in this section, please also refer to the documentation supplied with your USB device.

Problem	Procedure
USB device does not work	Remove the USB device from the computer and then reconnect it to a free port it in order to ensure it is firmly attached.
	Ensure that any required USB device drivers are properly installed - to achieve this you should refer to both the device documentation and the operating system documentation.
	If you are using an operating system that does not support USB, you are still able to use a USB mouse and/or USB keyboard by setting the **USB KB/Mouse Emulation** option within the TOSHIBA HW Setup utility to Enabled.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

USB Sleep and Charge function

Problem	Procedure
I cannot use the "USB Sleep and Charge function".	The setting of "USB Sleep and Charge function" may be [Disabled]. Change the setting to [Enabled] in the BIOS Setup.
	When there is a current overflow of the external device connected to the compatible port, USB bus power (DC5V) supply may be stopped for safety reasons. When this happens, disconnect an external device if some external devices are connected. After that, turn the power of the computer ON/OFF to restore the function. If this function can not be still used even if only one external device is connected, stop using the external device because its current is over the acceptable value of this computer.

Problem	Procedure
	Some external devices may not be able to use the "USB Sleep and Charge function". In this case, please try one or more of the following methods.
	■ Change a mode setting of [Enabled] by the BIOS Setup.
	■ Turn OFF the computer while external devices are connected.
	■ Connect external devices after turning OFF of the computer.
	If this function can not be still used, change the setting to [Disabled] in the BIOS Setup and stop using this function.
The battery depletes quickly even when I turned OFF the power of the computer.	When "USB Sleep and Charge function" is set to [Enabled] in the BIOS Setup, USB bus power (DC5V) will be supplied to the external device connected to the compatible port. If external device is connected to the compatible port when the AC adaptor is not connected to the computer, the battery of the computer will be depleted even when the power of the computer is turned OFF.
	Connect the AC adaptor to the computer or change the "USB Sleep and Charge function" setting to [Disabled] in the BIOS Setup.
	Instead use an USB port that does not have the USB Sleep and Charge function-compatible icon (⚡).
External devices connected to the compatible ports do not work when connected to a compatible port.	Some external devices may not work when connected to a compatible port when the "USB Sleep and Charge function" is [Enabled] in the BIOS Setup.
	Reconnect the external device after turning ON the computer.
	If the external device still does not work, connect device to an USB port that does not have the USB Sleep and Charge function-compatible icon (⚡) or change the "USB Sleep and Charge function" setting to [Disabled] in the BIOS Setup.

Problem	Procedure
The "USB WakeUp function" does not work.	When "USB Sleep and Charge function" is set to [Enabled] in the BIOS Setup, the "USB WakeUp function" does not work for ports that support the USB Sleep and Charge function.
	In that case, use an USB port that does not have the USB Sleep and Charge function-compatible icon (⚡) or change the "USB Sleep and Charge function" setting to [Disabled] in the BIOS Setup.

Additional memory module

Please also refer to Chapter 3, *Hardware, Utilities and Options*, for further information on installing and removing memory modules.

Problem	Procedure
If there is a memory malfunction, the **Power** indicator will repeatedly flash (on for 0.5 seconds, off for 0.5 seconds) in the following patterns; If there is an error in only slot A or no memory module is inserted in Slot A: orange twice, then green once. If there is an error in Slot B: orange once, then green twice. If there are errors in both Slot A and Slot B: orange twice, then green twice.	In the event the **Power** indicator flashes when the computer is turned on, you should first check that the installed memory module(s) are compatible with the computer. If there is an error with a compatible memory module, there is a possibility the memory module is damaged.
	If you determine that an incompatible module has been installed, you should follow the steps as detailed below:
	1. Turn off the computer.
	2. Disconnect the AC adaptor and all peripheral devices.
	3. Remove the battery pack.
	4. Remove the incompatible memory module.
	5. Install the battery and/or connect the AC adaptor.
	6. Turn on the computer.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.
An error will occur if a memory module is inserted into Slot B while no memory module is inserted in Slot A.	Remove the memory module from Slot B and insert it into Slot A.

Sound system

In addition to the information in this section, please also refer to the documentation supplied with your audio device.

Problem	Procedure
No sound is heard	Adjust the volume control dial.
	Check the software volume settings.
	Please check to see if Mute is turned to Off
	Check to make sure the headphone connection is secure.
	Check within the Windows Device Manager application to ensure the sound device is enabled and that the device is properly working.
	For further information, please refer to "Troubleshooting in Windows" section of Windows Help and Support.
Annoying sound is heard	In this instance you may be experiencing feedback from either the internal microphone or an external microphone connected to the computer - please refer to *Sound System* in Chapter 4, Operating Basics for further information.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

External monitor

Please also refer to Chapter 3, *Hardware, Utilities and Options*, and to the documentation supplied with your monitor for further information.

Problem	Procedure
Monitor does not turn on	After confirming that the monitor's power switch is on, you should check the connections to make sure that the power cord/adaptor is firmly connected to the monitor and to a working power outlet.
No display	Try adjusting the contrast and brightness controls on the external monitor.
	Press the **FN** + **F5** hot key in order to change the display priority and ensure that it is not set for the internal display only.
	Check to see if the external monitor is connected.
	When the external monitor is set as the primary display device in extended desktop mode, it will not display when the computer wakes up from Sleep Mode if the external monitor has been disconnected while in Sleep Mode.
	To keep this from happening, do not disconnect the external monitor while the computer is in Sleep or Hibernation Mode.
	Remember to turn off the computer before disconnecting the external monitor.
	When the display panel and an external monitor are set to clone mode and they are turned off by the timer, the display panel or the external monitor may not display when turned on again.
	If this occurs, press **FN** + **F5** to re-set the display panel and external monitor to clone mode.
Display error occurs	Check that the cable connecting the external monitor to the computer is firmly attached.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

i.LINK (IEEE1394) device

Problem	Procedure
i.LINK device does not function	Make sure the cable is securely connected to the computer and to the device.
	Make sure the device's power is turned on.
	Reinstall the drivers. Open the Windows Control Panel and double-click the **Add Hardware** icon. Follow the on-screen directions.
	Restart Windows.
	If problems persist, contact your dealer.

Modem

For additional information, please also refer to Appendix C, *AT Commands* and Appendix D, *S-registers*.

This information is applicable to the models equipped with a built-in modem.

Problem	Procedure
Communication software can't initialize modem	Make sure the computer's internal modem settings are correct - please refer to the Phone and Modem Options link within the Windows Control Panel.
You can hear a dial tone but can't make a call	If the call is going through a Private Branch Exchange (PBX), take care to ensure that the communication application's tone dial detection feature is disabled.
	You are also able to use the ATX command - please refer to Appendix C, *AT Commands* for further information.
You place a call, but a connection can't be made	Make sure that the settings are correct within your communication application.
After making a call you can't hear a ring	Ensure that the communication application's tone or pule dialling selection feature is set correctly.
	You are also able to use the ATD command - please refer to Appendix C, *AT Commands* for further information.

Problem	Procedure
Communication is cut off unexpectedly	The computer will automatically cut off communication when connection with the carrier is not successful for a set time interval - try lengthening this time interval within your communication application.
A **CONNECT** display is quickly replaced by **NO CARRIER**	Ensure that the communication application's error control feature is set correctly. You are also able to use the AT\N command - please refer to Appendix C, *AT Commands* for further information.
Character display becomes garbled during a communication	When transmitting data you should ensure that the parity bit and stop bit settings correspond with those of the remote computer - you should check the flow control and communication protocol settings within your communication application.
You cannot receive an incoming call	Ensure that the communication application's rings before auto answer feature is set correctly. You are also able to use the ATS0 command - please refer to Appendix D, *S-registers* for further information. If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

LAN

Problem	Procedure
Cannot access LAN	Check for a firm cable connection between the LAN jack and the LAN hub.
Wake-up on LAN does not work	Make sure the AC adaptor is connected. The Wake-up on LAN function consumes power even when the system is off. If problems persist, consult your LAN administrator.

Wireless LAN

If the following procedures do not restore LAN access, consult your LAN administrator. For more information on wireless communication, refer to Chapter 4, *Operating Basics.*

Problem	Procedure
Cannot access Wireless LAN	Make sure the computer's Wireless communication switch is set to on.
	If problems persist, contact your LAN administrator.

Bluetooth

For further information on Bluetooth wireless communication, please refer to Chapter 4, *Operating Basics*.

Problem	Procedure
Cannot access Bluetooth device	Check to ensure the computer's Wireless Communication Switch is set to on.
	Check to ensure the Bluetooth Manager application is running on the computer and that power to the external Bluetooth device is turned on.
	Check to ensure that no optional Bluetooth Adaptor is installed in the computer - the built-in Bluetooth hardware cannot operate simultaneously with another Bluetooth controller.
	If you are still unable to resolve the problem, contact your reseller, dealer or service provider.

Recovery Discs

Problem	Procedure
The following message appears when executing Recovery Disc Creator. `"The Recovery Disc Creator can not be launched because there is no recovery partition."`	You will see this message if you have previously chosen to remove the partition and are trying to create "Recovery Media". When there is no recovery partition, the Recovery Disc Creator cannot make Recovery Media. However, if you have already created a "Recovery Media", you can use it to restore the recovery partition. Simply follow the instructions in *Restoring the pre-installed software from your created Recovery Discs* section in Chapter1, Getting Started. You will be directed to select "Restore Original Factory Image" from the drop-down menu. If you have not created "Recovery Media", please contact TOSHIBA support for assistance.

Disposing of the computer and the computer's batteries

■ Discard this computer in accordance with applicable laws and regulations. For further information, contact your local government.

■ This computer contains rechargeable batteries. After repeated use, the batteries will finally lose their ability to hold a charge and you will need to replace them. Under certain applicable laws and regulation, it may be illegal to dispose of old batteries by placing them in the trash.

■ Please be kind to our shared environment. Check with your local government authority for details regarding where to recycle old batteries or how to dispose of them properly.

■ If your hard disk drive or other storage media contains sensitive data, you should be aware that standard deletion procedures do not remove data from the media. These standard deletion procedures include:

   ■ Selecting Delete for a target file

   ■ Putting files in the Recycle Bin and emptying the Recycle Bin

   ■ Reformatting the media

   ■ Reinstalling an operating system from the recovery CD-ROM

The procedures above delete only the initial part of the data used for file management. This makes the file invisible to the operating system, but the data can still be read by specialized utilities. If you dispose of the computer, please delete all the data on its hard disk drive. Doing so prevents unauthorized use of such data. To ensure your data is not used for unauthorized purposes, you can:

   ■ Physically destroy the hard disk drive

■ Use a proven specialized utility to overwrite all data
■ Take the hard disk drive to a professional deletion service

All data deletion costs will be borne by you.

TOSHIBA support

If you require any additional help using your computer or if you are having problems operating the computer, you may need to contact TOSHIBA for additional technical assistance.

Before you call

Some problems you experience may be related to software or the operating system so it is important that you investigate other sources of assistance first. Before contacting TOSHIBA, try the following:

■ Review troubleshooting sections in the documentation supplied with your software and/or peripheral devices.
■ If a problem occurs when you are running software applications, consult the software documentation for troubleshooting suggestions and consider calling the software company's technical support department for assistance.
■ Consult the reseller or dealer from where you purchased your computer and/or software - they are your best resource for current information and support.

Where to write

If you are still unable to solve the problem and suspect that it is hardware related, write to TOSHIBA at the nearest location listed below:

Outside of Europe	In Europe
Australia	**Germany & Austria**
TOSHIBA Australia Pty. Ltd. Information Systems Division Building C, 12-24 Talavera Rd, North Ryde, 2113, NSW, Australia.	TOSHIBA Europe (I.E.) GmbH Geschäftsbereich, Deutschland-Österreich Hammfelddamm 8, D-41460 Neuss, Germany
Canada	**France**
TOSHIBA of Canada Ltd. 191 McNabb Street, Markham, Ontario L3R 8H2	TOSHIBA Systèms France S.A. 7, Rue Ampère B.P. 131, 92804 Puteaux Cedex
China	**Netherlands**
TOSHIBA Personal Computer & Network (Shanghai) Co., Ltd. 43F, Hong Kong New World Tower, No. 300 Huaihai Zhong Road, Shanghai, P. R. China 200021	TOSHIBA Information Systems, Benelux B.V. Rivium Boulevard 41 2909 LK Capelle a/d IJssel

Outside of Europe	In Europe
Singapore TOSHIBA Singapore Pte. Ltd. 438B Alexandra Road #06-01 Alexandra Technopark Singapore 119968	**Spain** TOSHIBA Information Systems, ESPAÑA Parque Empresarial San Fernando Edificio Europa, Iª Planta, Escalera A 28830 Madrid
United States of America TOSHIBA America Information Systems, Inc. 9740 Irvine Boulevard Irvine, California 92618 USA	**United Kingdom** TOSHIBA Information Systems (U.K.) Ltd. TOSHIBA Court Weybridge Business Park Addlestone Road Weybridge, Surrey KT15 2UL
	The Rest of Europe TOSHIBA Europe (I.E.) GmbH Geschäftsbereich, Deutschland- Österreich Hammfelddamm 8, D- 41460 Neuss, Germany

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Appendix A

Specifications

This appendix summarizes the computer's technical specifications.

Physical Dimensions

This section summarizes the computer's technical specifications.

Physical Dimensions

Weight (typical)*	2.0 kilograms, configured with: 12.1"WXGA, 1,024 MB RAM, 80GB HDD, DVD Super Multi drive, LAN (1000M bps), Wireless LAN, modem, Tablet PC Pen.
	*Digitizer screen model equipped with UJ-862.
	Weight will vary with other configurations. Above weight is measured at specific criteria. It is not guaranteed as the maximum weight of the actual product.
Size	305 (w) x 239 (d) x 37.4/39.4 (h) millimeters (not including parts that extend beyond the main body).

Environmental Requirements

Conditions	Ambient temperature	Relative humidity
Operating	5°C (41°F) to 35°C (95°F)	20% to 80%
Non-operating	-20°C (-4°F) to 65°C (149°F)	10% to 90%

Wet-bulb temperature	26°C maximum
Conditions	**Altitude (from sea level)**
Operating	-60 to 3,000 meters
Non-operating	-60 to 10,000 meters maximum

Power Requirements

AC adaptor	100-240 volts AC
	50 or 60 hertz (cycles per second)
Computer	15 V DC
	5.0 amperes

Built-in Modem

This information is applicable to the models equipped with a built-in modem.

Network control unit (NCU)		
Type of NCU	AA	
Type of line	Telephone line (analog only)	
Type of dialing	Pulse Tone	
Control command	AT commands EIA-578 commands	
Monitor function	Computer's speaker	
Communication specifications		
Communication system	Data: Full duplex Fax: Half duplex	
Communication protocol	Data	
	ITU-T-Rec (Former CCITT)	V.21/V.22/V.22bis/V.32/V.32 bis/V.34/V.90
	Bell	103/212A
	Fax	
	ITU-T-Rec (Former CCITT)	V.17/V.29/V.27ter/V.21 ch2

Communication speed	Data transmission and reception
	300/1200/2400/4800/7200/9600/12000/14400/16800/19200/21600/24000/26400/28800/31200/33600 bps
	Data reception only with V.90
	28000/29333/30666/32000/33333/34666/36000/37333/38666/40000/41333/42666/44000/45333/46666/48000/49333/50666/52000/53333/54666/56000 bps
	Fax
	2400/4800/7200/9600/12000/14400 bps
Transmitting level	-10 dBm
Receiving level	-10 to -40 dBm
Input/output impedance	600 ohms ±30%
Error correcting	MNP class 4 and ITU-T V.42
Data compression	MNP class 5 and ITU-T V.42bis
Power supply	+3.3V (supplied by computer)

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Appendix B

Display Controller and Video mode

Display controller

The display controller interprets software commands into hardware commands that turn particular parts on the screen on or off.

> **i** *Due to the display panel's increased resolution, lines may appear broken in when displaying images in full-screen text mode.*

The display controller also controls the video mode and uses industry standard rules to govern the screen resolution and the maximum number of colors that can be displayed at any one time. Therefore, software written for a given video mode will run on any computer that supports that mode.

Video mode

Video mode settings are configured via the **Display Properties** dialog.

To open the **Display Properties** dialog, click **Start** -> **Control Panel** -> **Appearance and Personalization** -> **Personalization** -> **Display Settings**.

> **i** *If you are running some applications (for example a 3D application or video playback and so on), you may see some disturbance, flickering or frame dropping on your screen.*
>
> *If that occurs, adjust the resolution of display, lowering it until the screen is displayed properly.*
>
> *You could also disable Windows® Aero™ to help correct this situation.*

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Appendix C

AT Commands

> This information is applicable to the models equipped with a built-in modem.

In most cases, you will not need to type AT commands manually. However, there might be some occasions when you will need to do so.

This chapter describes AT commands for data mode. Fax and voice commands are taken care of by application software.

The format for entering AT commands is:

ATXn

where **X** is the AT command, and **n** is the specific value for that command. After you type in the command press **ENTER**.

Any command issued is acknowledged with a response in either text or numeric values known as result codes.

All commands and command-values accepted by the modem are described in this section; any entry other than those listed results in an error.

+++   Escape sequence

The escape sequence allows the modem to exit data mode and enter on-line command mode. While in on-line command mode, you can communicate directly to your modem using AT commands. Once you finish, you can return to data mode using the ATO command.

A pause, the length of which is set by Escape Guard Time (S12), must be completed after an escape sequence is entered. This pause prevents the modem from interpreting the escape sequence as data.

The value of the escape sequence character may be changed using register S2.

A/   Repeat last command

This command repeats the last command string entered. Do not precede this command with an AT prefix or conclude it by pressing **ENTER**.

A   Answer command

This command instructs the modem to go off-hook and answer an incoming call.

Bn   Communication standard setting

This command determines the communication standard CCITT or Bell.

    B0   Selects CCITT V.22 mode when the modem is at 1200 bps.

    B1   Selects Bell 212A when the modem is at 1200 bps (default).

    B15   Selects V.21 when the modem is at 300 bps.

    B16   Selects Bell 103J when the modem is at 300 bps (default).

Result Codes:

OK   n=0,1,15,16

ERROR Otherwise

Dn   Dial

This command instructs the modem to dial a telephone number. Enter **n** (the telephone number and any modifiers) after the ATD command.

Any digit or symbol (0-9, *, #, A, B, C, D) may be dialed as touch-tone digits. Characters such as spaces, hyphens, and parentheses do not count. They are ignored by the modem, but you may want to include them to make the number and modifiers easier to read.

The following may be used as phone number modifiers:

    P   Pulse dialing.

    T   Touch-tone dialing (default).

    ,   Pause during dialing. Pause for time specified in Register S8 before processing the next character in the dial string.

    W   Wait for dial tone. Modem waits for a second dial tone before processing the dial string.

    @   Wait for quiet answer. Wait for five seconds of silence after dialing the number. If silence is not detected, the modem sends a NO ANSWER result code back to the caller.

    !   Hook flash. Causes the modem to go on-hook for 0.5 seconds and then return to off-hook.

    ;   Return to command mode. Causes the modem to return to command mode after dialing a number, without disconnecting the call.

    S=n   Dial a telephone number previously stored using the **&Zn=X** command (See **&Zn=X** command for more information). The range is 0-3.

En   Echo command

This command controls whether or not the characters entered from your computer keyboard are displayed on your monitor (echoed) while the modem is in command mode.

E0   Disables echo to the computer.

E1   Enables echo to the computer (default).

Result Codes:
OK   n=0,1
ERROR Otherwise

Hn   Hook control

This command instructs the modem to go on-hook to disconnect a call, or off-hook to make the phone line busy.

H0   Modem goes on-hook (default).

H1   Modem goes off-hook.

Result Codes:
OK   n=0,1
ERROR Otherwise

In   Request ID information

This command displays product information about the modem.

I0   Returns modem identity string and driver version number.

I3   Same as **I0**.

I9   Returns region ID in English.

Result Codes:
OK   n=0,3,9
ERROR Otherwise

Ln   Monitor speaker volume

This command sets speaker volume to low, medium, or high.

L0   Low volume.

L1   Low volume. (Same as **L0**)

L2   Medium volume (default).

L3   High volume.

Result Codes:
OK   n=0,1,2,3
ERROR Otherwise

Mn   Monitor speaker mode

This command turns the speaker on or off.

M0   The speaker is off.

M1   The speaker is on until the modem detects the carrier signal (default).

M2 The speaker is always on when modem is off-hook.

M3 Speaker is on until the carrier is detected, except when dialing.

Result Codes:
OK n=0,1,2,3
ERROR Otherwise

Nn   Modulation handshake

This command controls whether or not the local modem performs a negotiated handshake at connection time with the remote modem when the communication speed of the two modems is different.

N0 When originating or answering, this is for handshake only at the communication standard specified by S37 and the ATB command.

N1 When originating or answering, begin the handshake at the communication standard specified by S37 and the ATB command (default).

During handshake, a lower transmission speed may be selected.

Result Codes:
OK n=0,1
ERROR Otherwise

On   Return on-line to data mode

O0 Instructs the modem to exit on-line command mode and return to data mode (see AT escape sequence, +++).

O1 This command issues a retrain before returning to on-line data mode.

O3 This command issues a rate renegotiation before returning to on-line data mode.

Result Codes:
OK n=0,1,3
ERROR Otherwise

P   Select pulse dialing

This command configures the modem for pulse (non touch-tone) dialing. Dialed digits are pulsed until a T command or dial modifier is received. Tone dial is the default setting.

Qn   Result code control

Result codes are informational messages sent from the modem and displayed on your monitor. Basic result codes are **OK**, **CONNECT**, **RING**, **NO CARRIER**, and **ERROR**. The ATQ command allows the user to turn result codes on or off.

Q0 Enables modem to send result codes to the computer (default).

Q1   Disables modem from sending result codes to the computer.

Result Codes:
OK   n=0,1
ERROR Otherwise

T   Select tone dialing

This command instructs the modem to send DTMF tones while dialing. Dialed digits are tone dialed until a P command or dial modifier is received. This is the default setting.

Vn   DCE response format

This command controls whether result codes (including call progress and negotiation progress messages) are displayed as words or their numeric equivalents.

V0   Displays result codes as digits.

V1   Displays result codes as text (default).

Result Codes:
OK   n=0,1
ERROR Otherwise

Xn   Result code selection, call progress monitoring

This command selects which result codes will be used by the modem.

Command	Dial tone detect	Busy signal detect	Supported Result Code
X0	Disable	Disable	OK, CONNECT, RING, NO CARRIER, ERROR
X1	Disable	Disable	OK, RING, NO CARRIER, ERROR, CONNECT <RATE>
X2	Enable	Disable	OK, RING, NO CARRIER, ERROR, NODIALTONE, CONNECT <RATE>
X3	Disable	Enable	OK, RING, NO CARRIER, ERROR, BUSY, CONNECT <RATE>, BLACKLISTED
X4 (default)	Enable	Enable	OK, RING, NO CARRIER, ERROR, NODIALTONE, BUSY, CONNECT <RATE>, DELAYED, BLACKLISTED, REORDER, WARBLE, CALL WAITING DETECTED
X5	Enable	Enable	OK, RING, NO CARRIER, ERROR, NODIALTONE, BUSY, CONNECT <RATE>, RRING, NO BONGTONE, DELAYED, BLACKLISTED, REORDER, WARBLE, CALL WAITING DETECTED

Dial tone detect

Disabled: The modem dials a call regardless of whether it detects a dial tone.

Enabled: The modem dials only upon detection of a dial tone, and disconnects the call if the dial tone is not detected within 10 seconds.

Busy tone detect

Disabled: The modem ignores any busy tones it receives.

Enabled: The modem monitors for busy tones.

Result Codes:
OK n=0,1,2,3,4,5
ERROR Otherwise

Zn   Recall stored profile

The modem performs a soft reset and restores (recalls) the configuration profile according to the parameter supplied. If no parameter is specified, zero is assumed. Either Z0 or Z1 restores the profile.

Result Codes:
OK n=0,1
ERROR Otherwise

&Cn   Data Carrier Detect (DCD) control

Data Carrier Detect is a signal from the modem to the computer indicating that a carrier signal is being received from a remote modem. DCD normally turns off when the modem no longer detects the carrier signal.

&C0 The state of the carrier from the remote modem is ignored. DCD circuit is always on.

&C1 DCD turns on when the remote modem's carrier signal is detected, and off when the carrier signal is not detected (default).

Result Codes:
OK n=0,1
ERROR Otherwise

&Dn   DTR control

This command interprets how the modem responds to the state of the DTR signal and changes to the DTR signal.

&D0 Ignore. The modem ignores the true status of DTR and treats it as always on. This should only be used if your communication software does not provide DTR to the modem

&D1 If the DTR signal is not detected while in on-line data mode, the modem enters command mode, issues an **OK** result code, and remains connected.

&D2 If the DTR signal is not detected while in on-line data mode, the modem disconnects (default).

&D3 Reset on the on-to-off DTR transition.

Result Codes:
OK n=0,1,2,3
ERROR Otherwise

&F   Load factory settings

This command loads the configuration stored and programmed at the factory. This operation replaces all of the command options and the S-register settings in the active configuration with factory values.

&F Recall factory setting as active configuration.

&Gn   V.22bis guard tone control

This command determines which guard tone, if any, to transmit while transmitting in the high band (answer mode). This command is only used in V.22 and V.22bis mode. This option is not used in North America and is for international use only.

&G0 Guard tone disabled (default).

&G1 Sets guard tone to 550 Hz.

&G2 Sets guard tone to 1800 Hz.

Result Codes:
OK n=0,1,2
ERROR Otherwise

&Kn   Local flow control selection

&K0 Disable flow control.

&K3 Enable CTS/RTS flow control (default).

&K4 Enable XON/XOFF flow control.

Result Codes:
OK n=0,3,4
ERROR Otherwise

&Pn   Select Pulse Dial Make/Break Ratio (WW)

&P0 Selects 39% - 61% make/break ratio at 10 pulses per second.

&P1 Selects 33% - 67% make/break ratio at 10 pulses per second.

&P2 Selects 33% - 67% make/break ratio at 20 pulses per second.

Result Codes:
OK n=0,1,2
ERROR Otherwise

&Tn   Self-test commands

These tests can help to isolate problems if you experience periodic data loss or random errors.

&T0   Abort. Stops any test in progress.

&T1   Local analog loop. This test verifies modem operation, as well as the connection between the modem and computer. Any data entered at the local DTE is modulated, then demodulated, and returned to the local DTE. To work properly, the modem must be off-line.

Result Codes:
OK   n=0
CONNECT n=1
ERROR   Otherwise

&V   Display Current Configuration

This command displays the current configuration of the modem. If nonvolatile memory is supported the stored profiles are displayed as well.

&V   View profiles.

&W   Store current configuration

Saves the current (active) configuration (profile), including S-Registers.

The current configuration comprises a list of storable parameters illustrated in the **&V** command. These settings are restored to the active configuration upon receiving a **Zn** command or at power up. Refer to the **&V** command.

&W   Stores the current configuration.

&Zn=x   Store telephone number

This command is used to store up to four dialing strings in the modem's nonvolatile memory for later dialing. The format for the command is **&Zn**="stored number" where n is the location 0-3 to which the number should be written. The dial string may contain up to 34 characters. The ATDS=n command dials using the string stored in location **n**.

Result Codes:
OK   n=0, 1, 2, 3
ERROR Otherwise

\Nn   Error control mode selection

This command determines the type of error control used by the modem when sending or receiving data.

\N0   Buffer mode. No error control.

\N1   Direct mode.

\N2   MNP or disconnect mode. The modem attempts to connect using MNP2-4 error control procedures. If this fails, the modem disconnects.

This is also known as MNP reliable mode.

\N3   V.42, MNP, or buffered (default).

The modem attempts to connect in V.42 error control mode. If this fails, it attempts to connect in MNP mode. If this fails, it connects in buffer mode and continues operation. This is also known as V.42/MNP auto reliable mode (same as **&Q5**).

\N4   V.42 or disconnect. The modem attempts to connect in V.42 error control mode. If this fails, the modem disconnects.

\N5   V.42. MNP or buffered (same as **\N3**).

\N7   V.42. MNP or buffered (same as **\N3**).

Result Codes:

OK   n=0,1,2,3,4,5,7

ERROR Otherwise

\Qn   Local flow control selection

\Q0   Disable flow control.

\Q1   XON/XOFF software flow control.

\Q3   CTS/RTS to DTE (default).

Result Codes:

OK   n=0,1,3

ERROR Otherwise

\Vn   Protocol result code

\V0   Disable protocol result code appended to DCE speed.

\V1   Enable protocol result code appended to DCE speed (default).

Result Codes:

OK   n=0,1

ERROR Otherwise

%B   View numbers in blacklist

If blacklisting is in effect, this command displays the numbers for which the last call attempted in the past two hours failed. The ERROR result code appears in regions that do not require blacklisting.

%Cn   Data compression control

This command determines the operation of V.42bis and MNP class 5 data compression. On-line changes do not take effect until a disconnect occurs first.

%C0   V.42bis/MNP 5 disabled. No data compression.

%C3   V.42bis/MNP 5 enabled. Data compression enabled (default).

Result Codes:

OK   n=0,3

ERROR Otherwise

Appendix D

S-registers

This information is applicable to the models equipped with a built-in modem.

S-registers contain the settings that determine how a number of functions of the internal modem operate. For example, how many times to let the telephone ring before the modem answers and how long to wait before it hangs up if a connection fails. You can also customize certain AT commands such as the escape sequence and command line termination.

The contents of the registers are changed automatically when you modify corresponding settings in your communication software. If you choose, however, you can display and edit the contents of the registers manually when the modem is in command mode. If the value is out of the acceptable range, then an error is generated.

This chapter describes the settings for each S-register.

S-register values

The format for displaying the value of an S-register is:

> **ATSn?**

where **n** is the register number. After you type in the register press **ENTER**.

The format for modifying the value of an S-register is:

> **ATSn=r**

where **n** is the register number, and **r** is the new register value. After you type in the register and its new value press **ENTER**.

Some registers vary from one country/region to another.

S0   Auto answer ring number

This register determines the number of rings the modem will count before automatically answering a call. Enter 0 (zero) if you do not want the modem to automatically answer at all. When disabled, the modem can only answer with an ATA command.

Range:0-255

Default:0

Units:rings

S1   Ring counter

This register is read only. The value of S1 is incremented with each ring. If no ring occurs over a six-second interval, this register is cleared.

Range:0-225

Default:0

Units:rings

S2   AT escape character (user defined)

This register determines the ASCII values used for an escape sequence. The default is the + character. The escape sequence allows the modem to exit data mode and enter command mode when on-line. Values greater than 127 disable the escape sequence.

Range:0-255, ASCII decimal

Default:43

Units:ASCII

S3   Command line termination character (user defined)

This register determines the ASCII values as the carriage return character. This character is used to end command lines and result codes.

Range:0-127, ASCII decimal

Default:13 (carriage return)

Units:ASCII

S4   Response formatting character (user defined)

This register determines the ASCII value used as the line feed character. The modem uses a line feed character in command mode when it responds to the computer.

Range:0-127, ASCII decimal

Default:10 (line feed)

Units:ASCII

S5 Command line editing character (user defined)

This register sets the character recognized as a backspace and pertains to asynchronous only. The modem will not recognize the backspace character if it is set to a value that is greater than 32 ASCII. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the backspace character, an ASCII space character, and a second backspace character. This means a total of three characters are transmitted each time the modem processes the backspace character.

Range:0-127, ASCII decimal

Default:8 (backspace)

Units:ASCII

S6 Wait before dialing

This register sets the length of time, in seconds, that the modem must wait (pause) after going off-hook before dialing the first digit of the telephone number. The modem always pauses for a minimum of two seconds, even if the value of S6 is less that two seconds. The wait for dial tone call progress feature (W dial modifier in the dial string) will override the value in register S6. This operation, however, may be affected by some ATX options according to country/region restrictions. In some countries/regions, S6 will set dial tone detect time.

Range:3-255

Default:3

Units:seconds

S7 Connection completion time-out

This register sets the time, in seconds, that the modem must wait before hanging up because carrier is not detected. The timer is started when the modem finishes dialing (originate), or goes off-hook (answer). In originate mode, the timer is reset upon detection of an answer tone if allowed by county restriction. The timer also specifies the wait for silence time for the @ dial modifier in seconds. S7 is not associated with the W dial modifier.

Range:1-255

Default:50

Units:seconds

S8   Comma pause time

This register sets the time, in seconds, that the modem must pause when it encounters a comma (,) in the dial command string. In some countries/regions, S8 will set both wait before dialing and comma pause time.

Range:0-255

Default:2

Units:seconds

S11   DTMF dialing speed

This register determines the dialing speed which is prefixed for each country/region.

Range:50-255

Default:95

Units:.001 seconds

S12   Escape guard time

This register sets the value (in 20 millisecond increments) for the required pause after the escape sequence.

Range:0-255

Default:50

Units:.02 seconds

S37   Dial line rate

S37 = 0 (default)	maximum modem speed
S37 = 1	reserved
S37 = 2	1200/75 bps
S37 = 3	300 bps
S37 = 4	reserved
S37 = 5	1200 bps
S37 = 6	2400 bps
S37 = 7	4800 bps
S37 = 8	7200 bps
S37 = 9	9600 bps

S37 = 10	12000 bps
S37 = 11	14400 bps
S37 = 12	16800 bps
S37 = 13	19200 bps
S37 = 14	21600 bps
S37 = 15	24000 bps
S37 = 16	26400 bps
S37 = 17	28800 bps
S37 = 18	31200 bps
S37 = 19	33600 bps

AT command set result codes

The following table shows the result codes.

The result code summary

Result Code	Numeric	Description
OK	0	Command executed
CONNECT	1	Modem connected to line
RING	2	A ring signal has been detected
NO CARRIER	3	Modem lost carrier signal, or does not detect carrier signal, or does not detect answer tone
ERROR	4	Invalid command
CONNECT 1200 EC[*1]	5	Connection at 1200 bps
NO DIAL TONE	6	No dial tone detected
BUSY	7	Busy signal detected
NO ANSWER	8	No quiet answer
CONNECT 2400 EC[*1]	10	Connection at 2400 bps

CONNECT 4800 EC[*1]	11	Connection at 4800 bps
CONNECT 9600 EC[*1]	12	Connection at 9600 bps
CONNECT 14400 EC[*1]	13	Connection at 14400 bps
CONNECT 19200 EC[*1]	14	Connection at 19200 bps
CONNECT 7200 EC[*1]	24	Connection at 7200 bps
CONNECT 12000 EC[*1]	25	Connection at 12000 bps
CONNECT 16800 EC[*1]	86	Connection at 16800 bps
CONNECT 300 EC[*1]	40	Connection at 300 bps
CONNECT 21600 EC[*1]	55	Connection at 21600 bps
CONNECT 24000 EC[*1]	56	Connection at 24000 bps
CONNECT 26400 EC[*1]	57	Connection at 26400 bps
CONNECT 28800 EC[*1]	58	Connection at 28800 bps
CONNECT 31200 EC[*1]	59	Connection at 31200 bps
CONNECT 33600 EC[*1]	60	Connection at 33600 bps
DELAYED[*2]	88	Delay is in effect for the dialed number
BLACKLISTED[*2]	89	Dialed number is blacklisted
BLACKLIST FULL[*2]	90	Blacklist is full

*1: EC only appears when the Extended Result Codes configuration option is enabled. EC is replaced by one of the following symbols, depending upon the error control method used:

V.42bis - V.42 error control and V.42bis data compression.

V.42 - V.42 error control only.

MNP 5 - MNP class 4 error control and MNP class 5 data compression.

MNP 4 - MNP class 4 error control only.

NoEC - No error control protocol.

*2: In some countries/regions, these result codes may not appear.

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Appendix E

V.90

ℹ️ *This information is applicable to the models equipped with a built-in modem.*

The TOSHIBA internal modem uses V.90 technology. The modem is capable of downstream speeds of 56kbps (kilobits per second) when connected to an Internet service provider that supports V.90. As with any modem, the actual throughput (speed of data transfer) depends on analog telephone line conditions, which can vary considerably. Therefore, many users will experience throughput in the range of 28-50kbps under normal telephone line conditions. Upstream data flows at the V.34 rate.

ℹ️ *V.90 rates can be achieved only when one V.90-capable host modem is connected to another. The TOSHIBA Internal modem will select automatically V.34 if the remote modem lacks V.90 capability or if a combination of network and/or phone line conditions prevent V.90 connection.*

V.90 mode

Function	Transmission speed
Data V.90	From 56kbps (maximum) to 28kbps (minimum)
	Reception only

Table E-1 Result codes for a V.90 connection

No.	Result code	Description
70	CONNECT 32000 EC*	Connection at 32000 bps
72	CONNECT 36000 EC*	Connection at 36000 bps
74	CONNECT 40000 EC*	Connection at 40000 bps
76	CONNECT 44000 EC*	Connection at 44000 bps
78	CONNECT 48000 EC*	Connection at 48000 bps
80	CONNECT 52000 EC*	Connection at 52000 bps
82	CONNECT 56000 EC*	Connection at 56000 bps
100	CONNECT 28000 EC*	Connection at 28000 bps
101	CONNECT 29333 EC*	Connection at 29333 bps
102	CONNECT 30666 EC*	Connection at 30666 bps
103	CONNECT 33333 EC*	Connection at 33333 bps
104	CONNECT 34666 EC*	Connection at 34666 bps
105	CONNECT 37333 EC*	Connection at 37333 bps
106	CONNECT 38666 EC*	Connection at 38666 bps
107	CONNECT 41333 EC*	Connection at 41333 bps
108	CONNECT 42666 EC*	Connection at 42666 bps
109	CONNECT 45333 EC*	Connection at 45333 bps
110	CONNECT 46666 EC*	Connection at 46666 bps
111	CONNECT 49333 EC*	Connection at 49333 bps
112	CONNECT 50666 EC*	Connection at 50666 bps
113	CONNECT 53333 EC*	Connection at 53333 bps
114	CONNECT 54666 EC*	Connection at 54666 bps

* EC stands for the Error Control method, which appears only when the extended result codes configuration option is enabled. EC is replaced by one of the following symbols, depending on the error control method used.

V42bis	V.42 error control and V.42bis data compression
V42	V.42 error control only
NoEC	No error control protocol

AT Command

-V90=*	V.90 Dial Line Rate -V90 sets the maximum V.90 downstream that the modem attempts to connect.
-V90=0	V.90 disabled
-V90=1	V.90 enabled: automatic speed selection - maximum modem speed (default)

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Appendix F

Wireless LAN

This appendix is intended to help you get your Wireless LAN network up and running, with a minimum of parameters.

Card Specifications

Form Factor	PCI Express Mini Card
Compatibility	■ IEEE 802.11 Standard for Wireless LANS ■ Wi-Fi (Wireless Fidelity) certified by the Wi-Fi Alliance. The 'Wi-Fi CERTIFIED' logo is a certification mark of the Wi-Fi Alliance.
Network Operating System	■ Microsoft Windows® Networking
Media Access Protocol	■ CSMA/CA (Collision Avoidance) with Acknowledgment (ACK)

Radio Characteristics

Radio Characteristics of Wireless LAN Cards may vary according to:

■ Country/region where the product was purchased

■ Type of product

Wireless communication is often subject to local radio regulations. Although Wireless LAN wireless networking products have been designed for operation in the license-free 2.4GHz and 5GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment.

Refer to the "Information sheet" for regulatory information that may apply in your country/region.

| R-F Frequency | ■ Band 5GHz (5150-5850 MHz) (Revision A, n Draft 2.0) |
| | ■ Band 2.4GHz (2400-2483.5 MHz) (Revision B, G, n Draft 2.0) |

The range of the wireless signal is related to the transmit rate of the wireless communication. Communications at lower transmit range may travel larger distances.

■ The range of your wireless devices can be affected when the antennas are placed near metal surfaces and solid high-density materials.

■ Range is also impacted due to "obstacles" in the signal path of the radio that may either absorb or reflect the radio signal.

Supported Frequency Sub-bands

Subject to the radio regulations that apply in the countries/regions, your Wireless LAN card may support a different set of 5 GHz/2.4 GHz channels. Consult your Authorized Wireless LAN or TOSHIBA Sales office for information about the radio regulations that apply in the countries/regions.

Wireless IEEE 802.11 Channels Sets (Revision B, G and n Draft 2.0)

Frequency Range **Channel ID**	2400-2483.5 MHz
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	**2457*1**
11	2462
12	**2467*2**
13	**2472*2**

*1 Factory-set default channels

*2 Refer to the sheet *Approved Countries/Regions for use* for the countries/regions that in which these channels can be used. When installing Wireless LAN cards, the channel configuration is managed as follows:

■ For wireless clients that operate in a Wireless LAN Infrastructure, the Wireless LAN card will automatically start operation at the channel identified by the Wireless LAN Access Point. When roaming between different access points the station can dynamically switch to another channel if required.

■ For Wireless LAN cards installed in wireless clients that operating in a peer-to-peer mode, the card will use the default channel 10.

■ In a Wireless LAN Access Point, the Wireless LAN card will use the factory-set default channel (printed in bold), unless the LAN Administrator selected a different channel when configuring the Wireless LAN Access Point device.

Wireless IEEE 802.11 Channels Sets (Revision A and n Draft 2.0)

Frequency Range **Channel ID**	5150-5850 MHz
34	**5170**[*2]
36	**5180**[*2]
38	**5190**[*2]
40	**5200**[*2]
42	**5210**[*2]
44	**5220**[*2]
46	**5230**[*2]
48	**5240**[*2]
52	**5260**[*2]
56	**5280**[*2]
60	**5300**[*2]
64	**5320**[*2]
100	**5500**[*2]
104	**5520**[*2]
108	**5540**[*2]
112	**5560**[*2]
116	**5580**[*2]
120	**5600**[*2]
124	**5620**[*2]
128	**5640**[*2]
132	**5660**[*2]
136	**5680**[*2]
140	**5700**[*2]
149	**5745**[*2]
153	**5765**[*2]
157	**5785**[*2]

161	**5805*²**
165	**5825*²**

*1 Factory-set default channels

*2 Refer to the sheet *Approved Countries/Regions for use* for the countries/regions that in which these channels can be used. When installing Wireless LAN cards, the channel configuration is managed as follows:

■ For wireless clients that operate in a Wireless LAN Infrastructure, the Wireless LAN card will automatically start operation at the channel identified by the Wireless LAN Access Point. When roaming between different access points the station can dynamically switch to another channel if required.

■ For Wireless LAN cards installed in wireless clients that operating in a peer-to-peer mode, the card will use the default channel 10.

■ In a Wireless LAN Access Point, the Wireless LAN card will use the factory-set default channel (printed in bold), unless the LAN Administrator selected a different channel when configuring the Wireless LAN Access Point device.

Appendix G

Intel® Matrix Storage Manager

If you are installing the operating system on a computer system which is configured for AHCI mode, you must pre-install the Intel® Matrix Storage Manager driver using the F6 installation method described in the *Manually Setting up Windows (Windows Vista®)* or *Manually Setting up Windows Manually (Windows XP)* sections.

This model does not support RAID functionality.

If you have already installed the operating system on a system configured for AHCI mode, double-click iata_cd.exe and respond to each of the prompts in order to install the Intel® Matrix Storage Manager.

All installed files (readme.txt, help, etc.) are copied to the following path by default:

```
<bootdrive>\Program Files\Intel\Intel Matrix Storage
Manager
```

Manually Setting up Windows (Windows Vista®)

Use the following procedures to manually set up your Windows operating system.

Before Setting up Windows

Before setting up Windows, create an Intel® Matrix Storage Manager Disk.

Creating an Intel® Matrix Storage Manager Disk

1. Connect the USB floppy diskette drive and insert a floppy diskette.
2. Copy all of the files located in the "**C:\TOSAPINS\Intel Matrix Storage Manager\Inf setup**" folder to the floppy diskette.

Windows Setup Procedure

1. Connect the USB floppy diskette drive and insert the above disk.

2. Insert the Windows Setup DVD into the optical disc drive and boot the computer from the DVD. The Windows Setup program will start.

3. Carry out the setup process by following the instructions displayed on the setup screen. When the message "`Which type of installation do you want?`" appears, select **Custom (advanced)**.

4. When the message "`Where do you want to install Windows?`" appears, click **Load Driver**.

5. Click the **Browse** button and then select **Floppy Disk Drive(A:)**.

6. Select "`Intel(R) 82801GBM SATA AHCI Controller`" from the list that appear, and click **Next**.

7. When the message "`Where do you want to install Windows?`" appears again, select the destination drive and then click **Next**.

8. Continue to follow the onscreen instructions to finish installing windows.

■ *Please use only hard disk drives that the computer supports. The system may not function correctly if unsupported hard disk drives are used.*

■ *Errors may occur in the following situations:*

   ■ *When using applications which directly access the hardware and read from or write to the hard disk drive.*

   ■ *When using another operating system, such as Linux, to run application that read from or right to the hard disk drive.*

Manually Setting up Windows Manually (Windows XP)

Use the following procedures to manually set up your Windows operating system.

Before Setting up Windows

Before setting up Windows, create an Intel® Matrix Storage Manager Disk.

Creating the Intel® Matrix Storage Manager Disk

1. Connect the USB floppy diskette drive and insert a floppy diskette.

2. Copy all of the files located in the "`C:\TOSAPINS\Intel Matrix Storage Manager\Inf setup`" folder to the floppy diskette.

Windows Setup Procedure

1. Connect the USB floppy diskette drive and insert the disk created in the previous step.

2. Insert the Windows Setup CD-ROM into the optical disc drive and boot the computer up from the CD. The Windows Setup program will start.

3. When the message "`Press F6 if you need to install a third party SCSI or RAID driver`" appears on the screen, press the **F6** key.

4. When the message "`Setup will load support for the following mass storage device(s):`" appears on the screen, press the **S** key.

5. Select "`Intel(R) 82801GBM SATA AHCI Controller`" and press the **ENTER** key.

6. Follow the onscreen instructions to continue setting up windows.

■ *Please use only hard disk drives that the computer supports. The system may not function correctly if unsupported hard disk drives are used.*

■ *Errors may occur in the following situations:*

   ■ *When using applications which directly access the hardware and read from or write to the hard disk drive.*

   ■ *When using another operating system, such as Linux, to run application that read from or right to the hard disk drive.*

How to install Intel® Matrix Storage Manager on Windows XP or Windows Vista®:

To install this software on Windows XP or Windows Vista® logon with an account that has administrator user privileges.

1. Double-click the Intel® Matrix Storage Manager setup file ("**iata_cd.exe**") located in the **C:\TOSAPINS\Intel Matrix Storage Manager** folder.

2. Follow the onscreen installation instructions.

3. Restart the system.

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Appendix H

Bluetooth wireless technology Interoperability

Bluetooth™ Adaptor from TOSHIBA are designed to be interoperable with any product with Bluetooth wireless technology that is based on Frequency Hopping Spread Spectrum (FHSS) radio technology, and is compliant to:

■ Bluetooth Specification Ver. 2.0+EDR, as defined and approved by The Bluetooth Special Interest Group.

■ Logo certification with Bluetooth wireless technology as defined by The Bluetooth Special interest Group.

■ *Bluetooth wireless technology is a new innovative technology, and TOSHIBA has not confirmed compatibility of its Bluetooth™ products with all computers and/or equipment using Bluetooth wireless technology other than TOSHIBA portable computers.*
Always use Bluetooth™ Adaptor from TOSHIBA in order to enable wireless networks over two or more (up to a total of seven) TOSHIBA portable computers using these cards. Please contact TOSHIBA PC product support on Web site
http://www.toshiba-europe.com/computers/tnt/bluetooth.htm in Europe or
http://www.pc.support.global.toshiba.com in the United States for more information.

■ *When you use Bluetooth™ Adaptor from TOSHIBA close to 2.4 GHz Wireless LAN devices, Bluetooth transmissions might slow down or cause errors. If you detect certain interference while you use Bluetooth™ Adaptor from TOSHIBA, always change the frequency, move your computer to the area outside of the interference range of 2.4 GHz Wireless LAN devices (40 meters/43.74 yards or more) or stop transmitting from your computer. Please contact TOSHIBA PC product support on Web site*
http://www.toshiba-europe.com/computers/tnt/bluetooth.htm in Europe or
http://www.pc.support.global.toshiba.com in the United States for more information.

■ *Bluetooth™ and Wireless LAN devices operate within the same radio frequency range and may interfere with one another. If you use Bluetooth™ and Wireless LAN devices simultaneously, you may occasionally experience a less than optimal network performance or even lose your network connection.*
If you should experience any such problem, immediately turn off either one of your Bluetooth™ or Wireless LAN.
Please contact TOSHIBA PC product support on web site
http://www.toshiba-europe.com/computers/tnt/bluetooth.htm in Europe or
http://www.pc.support.global.toshiba.com in the United States for more information.

Bluetooth wireless technology and your Health

The products with Bluetooth wireless technology, like other radio devices, emit radio frequency electromagnetic energy. The level of energy emitted by devices with Bluetooth wireless technology however is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Because products with Bluetooth wireless technology operate within the guidelines found in radio frequency safety standards and recommendations, TOSHIBA believes Bluetooth wireless technology is safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situations or environments, the use of Bluetooth wireless technology may be restricted by the proprietor of the building or responsible representatives of the organization. These situations may for example include:

■ Using the equipment with Bluetooth wireless technology on board of airplanes, or

■ In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization or environment (e.g. airports), you are encouraged to ask for authorization to use the device with Bluetooth wireless technology prior to turning on the equipment.

Regulatory statements

General

This product complies with any mandatory product specification in any country/region where the product is sold. In addition, the product complies with the following.

European Union (EU) and EFTA

This equipment complies with the R&TTE directive 1999/5/EC and has been provided with the CE mark accordingly.

Canada - Industry Canada (IC)

This device complies with RSS 210 of Industry Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

L ' utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit étre prét à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

USA-Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna

■ Increase the distance between the equipment and the receiver.

■ Connect the equipment to outlet on a circuit different from that to which the receiver is connected.

■ Consult the dealer or an experienced radio/TV technician for help.

TOSHIBA is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this Bluetooth™ Adaptor from TOSHIBA, or the substitution or attachment of connecting cables and equipment other than specified by TOSHIBA.

The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Caution: Exposure to Radio Frequency Radiation

The radiated output power of the Bluetooth™ Adaptor from TOSHIBA is far below the FCC radio frequency exposure limits. Nevertheless, the Bluetooth™ Adaptor from TOSHIBA shall be used in such a manner that the potential for human contact during normal operation is minimized. The antenna(s) used in this device are located beneath the palm rest, and this device has been tested as a portable device as defined in Section 2.1093 of FCC rules. In addition, Bluetooth has been tested with Wireless LAN transceiver for co-location requirements. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb.

Taiwan

Article 12   Without permission granted by the DGT or NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to an approved low power radio-frequency devices.

Article 14   The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved.

The said legal communications means radio communications is operated in compliance with the Telecommunications Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

Using Bluetooth™ Adaptor from TOSHIBA equipment in Japan

In Japan, the frequency bandwidth of 2,400 - 2,483.5 MHz for second generation low-power data communication systems such as this equipment overlaps that of mobile object identification systems (premises radio station and specified low-power radio station).

1. Sticker

Please put the following sticker on computer incorporating this product.

> The frequency bandwidth of this equipment may operate within the same range as industrial devices, scientific devices, medical devices, microwave ovens, licensed radio stations and non-licensed specified low-power radio stations for mobile object identification systems (RFID) used in factory production lines (Other Radio Stations).
>
> 1. Before using this equipment, ensure that it does not interfere with any of the equipment listed above.
> 2. If this equipment causes RF interference to other radio stations, promptly change the frequency being used, change the location of use, or turn off the source of emissions.
> 3. Contact TOSHIBA Direct PC if you have problems with interference caused by this product to Other Radio Stations.

2. Indication

The indication shown below appears on this equipment.
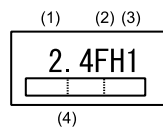
(1) 2.4 : This equipment uses a frequency of 2.4 GHz.

(2) FH : This equipment uses FH-SS modulation.

(3) 1: The interference range of this equipment is less than 10 m.

(4) ▭ This equipment uses a frequency bandwidth from 2,400 MHz to 2,483.5 MHz.

It is impossible to avoid the band of mobile object identification systems.

3. TOSHIBA Direct PC

Monday - Friday	:	10:00-17:00
Toll Free Tel	:	0120-15-1048
Direct Dial	:	03-3457-4850
FAX	:	03-3457-4868

Device Authorization

This device obtains the Technical Conditions Compliance Approval, and it belongs to the device class of radio equipment of low-power data communication system radio station stipulated in the Telecommunications Business Law.

The Name of the radio equipment: EYTFXCS

JAPAN APPROVALS INSTITUTE FOR TELECOMMUNICATIONS EQUIPMENT

Approval Number: D07-0040001

The following restrictions apply:

Do not disassemble or modify the device.

Do not install the embedded wireless module into other device.

TOSHIBA

Appendix I

AC Power Cord and Connectors

The power cord's AC input plug must be compatible with the various international AC power outlets and the cord must meet the standards for the country/region in which it is used. All cords must meet the following specifications:

Length:	Minimum 1.7 meters
Wire size:	Minimum 0.75 mm^2
Current rating:	Minimum 2.5 amperes
Voltage rating:	125 or 250 VAC (depending on country/region's power standards)

Certification agencies

U.S. and Canada:	UL listed and CSA certified No. 18 AWG, Type SVT or SPT-2		
Australia:	AS		
Japan:	DENANHO		
Europe:			
Austria:	OVE	**Italy:**	IMQ
Belgium:	CEBEC	**The Netherlands:**	KEMA
Denmark:	DEMKO	**Norway:**	NEMKO

Finland:	FIMKO	Sweden:	SEMKO
France:	LCIE	Switzerland:	SEV
Germany:	VDE	United Kingdom:	BSI

In Europe, two conductors power cord must be VDE type, H05VVH2-F or H03VVH2-F and for three conductors power cord must be VDE type, H05VV-F.

For the United States and Canada, two pin plug configuration must be a 2-15P (250V) or 1-15P (125V) and three pin plug configuration must be 6-15P (250V) or 5-15P (125V) as designated in the U.S. National Electrical code handbook and the Canadian Electrical Code Part II.

The following illustrations show the plug shapes for the U.S.A. and Canada, the United Kingdom, Australia and Europe.

USA   **United Kingdom**
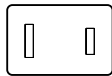
UL approved   BS approved

Australia   **Europe**
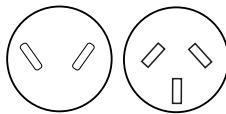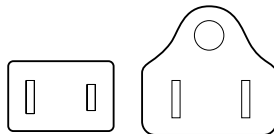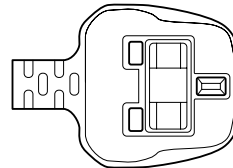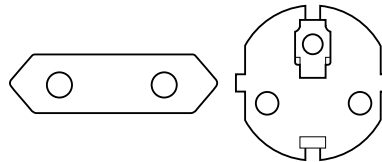
AS approved   Approved by the
                           appropriate agency

Canada

CSA approved

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Appendix J

TOSHIBA Anti-theft Protection Timer

This feature allows you to set up a timer-activated BIOS password that will prevent unauthorised system access in the event of theft.

When the time limit is exceeded, you are required to provide the Password or fingerprint authentication for the BIOS and Hard Disk Drive to gain access to the system.

To set permissions and limits for the TOSHIBA Anti-theft Protection Timer please use the TOSHIBA Password Utility.

The settings can only be activated or modified by a user with supervisor authority. If the supervisor password is not set, click on the **Set** button in **Supervisor Password** from the supervisor tab in TOSHIBA Password Utility and set the password on the dialog screen that appears.

Then, click on the **Set** button in TOSHIBA Anti-theft Protection Timer.

Take the following action if the set limit is exceeded.

■ If the Supervisor Password is registered but the User Password is not, enter the Supervisor Password to boot up the computer.

■ If both the Supervisor Password and the User Password are registered, enter either the Supervisor Password, the User Password or the fingerprint authentication to boot up the computer.

> ■ *The limit counts the number of days from the last time Windows is logged on till the next time the computer is booted up. The range can be set from 1 to 28 days.*
>
> ■ *Authentication is required if the computer's clock is significantly modified.*
>
> ■ *If the Supervisor Password is deleted, this function becomes disabled.*

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Appendix K

Legal Footnotes

This chapter states the Legal Footnotes information applicable to TOSHIBA computers. In the text in this manual, *XX is used to show which Legal Footnotes description is related to TOSHIBA computers.

Description(s) related to this computer are marked with a blue *XX in this manual. Clicking on *XX will display the related description.

Non-applicable Icons*1

Certain computer chassis are designed to accommodate all possible configurations for an entire product series. Therefore, please be aware that your selected model may not have all the features and specifications corresponding to all of the icons or switches shown on the computer chassis.

CPU*2

Central Processing Unit ("CPU") Performance Legal Footnotes.

CPU performance in your computer product may vary from specifications under the following conditions:

■ use of certain external peripheral products

■ use if battery power instead of AC power

■ use of certain multimedia, computer generated graphics or video applications

■ use of standard telephone lines or low speed network connections

■ use of complex modeling software, such as high end computer aided design applications

■ use of several applications or functionalities simultaneously

■ use of computer in areas with low air pressure (high altitude >1,000 meters or >3,280 feet above sea level)

■ use of computer at temperatures outside the range of 5°C to 30°C (41°F to 86°F) or >25°C (77°F) at high altitude (all temperature references are approximate and may vary depending on the specific computer model - please refer to your computer documentation or visit the Toshiba website at www.pcsupport.toshiba.com for details).

CPU performance may also vary from specifications due to design configuration.

Under some conditions, your computer product may automatically shut-down. This is a normal protective feature designed to reduce the risk of lost data or damage to the product when used outside recommended conditions. To avoid risk of lost data, always make back-up copies of data by periodically storing it on an external storage medium. For optimum performance, use your computer product only under recommended conditions. Read additional restrictions under "Environmental Conditions" in your computer documentation.

Contact Toshiba Technical Service and Support for more information.

64-Bit Computing

64-bit processors are designed to take advantage of 32 and 64 bit computing.

64-bit computing requires that the following hardware and software requirements are met:

■ 64-bit Operating System

■ 64-bit CPU, Chipset and BIOS (Basic Input/Output System)

■ 64-bit Device drivers

■ 64-bit applications

Certain device drivers and/or applications may not be compatible with a 64-bit CPU and therefore may not function properly. A 32-bit version of the operating system is preinstalled on your computer unless explicitly stated that the operating system is 64-bit.

Memory (Main System)*3

Part of the main system memory may be used by the graphics system for graphics performance and therefore reduce the amount of main system memory available for other computing activities. The amount of main system memory allocated to support graphics may vary depending on the graphics system, applications utilized, system memory size and other factors. For computer's configured with 4 GB of system memory, the full system memory space for computing activities will be considerably less and will vary by model and system configuration.

Battery Life*4

Battery life may vary considerably depending on product model, configuration, applications, power management settings and features utilized, as well as the natural performance variations produced by the design of individual components. Published battery life numbers are achieved on select models and configurations tested by Toshiba at the time of publication. Recharge time varies depending on usage. Battery may not charge while computer is consuming full power.

After going through many charge and discharge cycles, the battery will lose its ability to perform at maximum capacity and will need to be replaced. This is a normal phenomenon for all batteries. To purchase a new battery pack, see the accessories information that is shipped with your computer.

Hard Disk Drive (HDD) Capacity*5

1 Gigabyte (GB) means 10^9 = 1,000,000,000 bytes using powers of 10. The computer operating system, however, reports storage capacity using powers of 2 for the definition of 1 GB = 2^{30} = 1,073,741,824 bytes, and therefore shows less storage capacity. Available storage capacity will also be less if the product includes one or more pre-installed operating systems, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

LCD*6

Over a period of time, and depending on the usage of the computer, the brightness of the LCD screen will deteriorate. This is an intrinsic characteristic of LCD technology.

Maximum brightness is only available when operating in AC power mode. Screen will dim when the computer is operated on battery power and you may not be able to increase the brightness of the screen.

Graphics Processor Unit ("GPU")*7

Graphics processor unit ("GPU") performance may vary depending on product model, design configuration, applications, power management settings and features utilized. GPU performance is only optimized when operating in AC power mode and may decrease considerably when operating in battery power mode.

Total Available Graphics Memory is the total of, as applicable, Dedicated Video Memory, System Video Memory and Shared System Memory. Shared System Memory will vary depending on system memory size and other factors.

Wireless LAN*8

The transmission speed over the wireless LAN and the distance over which wireless LAN can reach may vary depending on surrounding electromagnetic environment, obstacles, access point design and configuration, and client design and software/hardware configurations.

The actual transmission speed will be lower than the theoretical maximum speed.

The wireless AGN (802.11a/g/n) adapter is based on a draft release version of the IEEE 802.11n specification and; may not be compatible with, or support all features (e.g., security) of, certain Wi-Fi® equipment.

Copy Protection*9

Applicable copy protection standards included in certain media may prevent or limit recording or viewing of the media.

Images*10

All images are simulated for purposes of illustration.

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Glossary

The terms in this glossary cover topics related to this manual. Alternate naming is included for reference.

Abbreviations

AC: alternating current

ANSI: American National Standards Institute

ASCII: American Standard Code for Information Interchange

BIOS: basic input output system

bps: bits per second

CD: compact disc

CD-ROM: Compact Disc-Read Only Memory

CD-RW: Compact Disc-ReWritable

CMOS: complementary metal-oxide semiconductor

CPU: central processing unit

CRT: cathode ray tube

DC: direct current

DDC: display data channel

DDR: double data rate

DIMM: dual inline memory module

DMA: direct memory access

DOS: disk operating system

DVD: digital versatile disc

DVD-R: Digital Versatile Disc-Recordable

DVD-RAM: Digital Versatile Disc-Random Access Memory

DVD-R (Dual Layer): Digital Versatile Disc Recordable Dual Layer

DVD-ROM: Digital Versatile Disc-Read Only Memory

DVD-RW: Digital Versatile Disc-ReWritable

DVD+R (Double Layer): Digital Versatile Disc Recordable Double Layer

ECP: extended capabilities port

FDD: floppy diskette drive

FIR: fast infrared

GB: gigabyte

HDD: hard disk drive

IDE: integrated drive electronics

IEEE: Institute of Electrical and Electronics Engineers

I/O: input/output

IRQ: interrupt request

KB: kilobyte

LCD: liquid crystal display

LED: light emitting diode

LSI: large scale integration

MB: megabyte

PC: personal computer

PCI: peripheral component interconnect

RAM: random access memory

RGB: red, green, and blue

ROM: read only memory

RTC: real time clock

SCSI: small computer system interface

SIO: serial input/output

SDRAM: synchronous dynamic random access memory

TFT: thin-film transistor

UART: universal asynchronous receiver/transmitter

USB: Universal Serial Bus

UXGA: ultra extended graphics array

VGA: video graphics array

VRT: voltage reduction technology

WXGA: wide extended graphics array

XGA: extended graphics array

A

adaptor: A device that provides an interface between two dissimilar electronic devices. For example, the AC adaptor modifies the power from a wall outlet for use by the computer. This term also refers to the add-in circuit cards that control external devices, such as video monitors and magnetic tape devices.

allocate: To assign a space or function for a specific task.

alphanumeric: Keyboard characters including letters, numbers and other symbols, such as punctuation marks or mathematical symbols.

alternating current (AC): Electric current that reverses its direction of flow at regular intervals.

analog signal: A signal whose characteristics such as amplitude and frequency vary in proportion to (are an analog of) the value to be transmitted. Voice communications are analog signals.

ANSI: American National Standards Institute. An organization established to adopt and define standards for a variety of technical disciplines. For example, ANSI defined the ASCII standard and other information processing requirements.

antistatic: A material used to prevent the buildup of static electricity.

application: A group of programs that together are used for a specific task such as accounting, financial planning, spreadsheets, word processing and games.

ASCII: American Standard Code for Information Interchange. ASCII code is a set of 256 binary codes that represent the most commonly used letters, numbers, and symbols.

async: Short for asynchronous.

asynchronous: Lacking regular time relationship. As applied to computer communications, asynchronous refers to the method of transmitting data that does not require a steady stream of bits to be transmitted at regular time intervals.

B

backup: A duplicate copy of files kept as a spare in case the original is destroyed.

batch file: A file that can be executed from the system prompt containing a sequence of operating system commands or executable files.

binary: The base two number system composed of zeros and ones (off or on), used by most digital computers. The right-most digit of a binary number has a value of 1, the next a value of 2, then 4, 8, 16, and so on. For example, the binary number 101 has a value of 5. *See also* ASCII.

BIOS: Basic Input Output System. The firmware that controls data flow within the computer. *See also* firmware.

bit: Derived from "binary digit," the basic unit of information used by the computer. It is either zero or one. Eight bits is one byte. *See also* byte.

board: A circuit board. An internal card containing electronic components, called chips, which perform a specific function or increase the capabilities of the system.

boot: Short for bootstrap. A program that starts or restarts the computer. The program reads instructions from a storage device into the computer's memory.

bps: Bits per second. Typically used to describe the data transmission speed of a modem.

buffer: The portion of the computer's memory where data is temporarily stored. Buffers often compensate for differences in the rate of flow from one device to another.

bus: An interface for transmission of signals, data or electric power.

byte: The representation of a single character. A sequence of eight bits treated as a single unit; also the smallest addressable unit within the system.

C

cache memory: High speed memory which stores data that increases processor speed and data transfer rate. When the CPU reads data from main memory, it stores a copy of this data in cache memory. The next time the CPU needs that same data, it looks for it in the cache memory rather than the main memory, which saves time. The computer has two cache levels. Level one is incorporated into the processor and level two resides in external memory.

capacity: The amount of data that can be stored on a magnetic storage device such as a floppy diskette or hard disk drive. It is usually described in terms of kilobytes (KB), where one KB = 1024 bytes, megabytes (MB), where one MB = 1024 KB and gigabytes (GB), where one GB = 1024 MB.

card: Synonym for board. *See* board.

CardBus: An industry standard bus for 32-bit PC Cards.

CD-ROM: A Compact Disc-Read Only Memory is a high capacity disc that can be read from but not written to. The CD-ROM drive uses a laser, rather than magnetic heads, to read data from the disc.

CD-R: A Compact Disc-Recordable disc can be written once and read many times. See also CD-ROM.

CD-RW: A Compact Disc-ReWritable disc can be rewritten many times. *See* also CD-ROM.

character: Any letter, number, punctuation mark, or symbol used by the computer. Also synonymous with byte.

chassis: The frame containing the computer.

chip: A small semiconductor containing computer logic and circuitry for processing, memory, input/output functions and controlling other chips.

CMOS: Complementary Metal-Oxide Semiconductor. An electronic circuit fabricated on a silicon wafer that requires very little power. Integrated circuits implemented in CMOS technology can be tightly packaged and are highly reliable.

cold start: Starting a computer that is currently off (turning on the power).

COM1, COM2, COM3 and COM4: The names assigned to the serial and communication ports.

commands: Instructions you enter at the terminal keyboard that direct the actions of the computer or its peripheral devices.

communications: The means by which a computer transmits and receives data to and from another computer or device. *See* serial interface.

compatibility: 1) The ability of one computer to accept and process data in the same manner as another computer without modifying the data or the media upon which it is being transferred.
2) the ability of one device to connect to or communicate with another system or component.

components: Elements or parts (of a system) which make up the whole (system).

computer program: A set of instructions written for a computer that enable it to achieve a desired result.

computer system: A combination of hardware, software, firmware, and peripheral components assembled to process data into useful information.

configuration: The specific components in your system (such as the terminal, printer, and disk drives) and the settings that define how your system works. You use the HW Setup program to control your system configuration.

control keys: A key or sequence of keys you enter from the keyboard to initiate a particular function within a program.

controller: Built-in hardware and software that controls the functions of a specific internal or peripheral device (e.g. keyboard controller).

co-processor: A circuit built into the processor that is dedicated to intensive math calculations.

CPS: Characters Per Second. Typically used to indicate the transmission speed of a printer.

CPU: Central Processing Unit. The portion of the computer that interprets and executes instructions.

CRT: Cathode Ray Tube. A vacuum tube in which beams projected on a fluorescent screen-producing luminous spots. An example is the television set.

cursor: A small, blinking rectangle or line that indicates the current position on the display screen.

D

data: Information that is factual, measurable or statistical that a computer can process, store, or retrieve.

data bits: A data communications parameter controlling the number of bits (binary digits) used to make up a byte. If data bits = 7 the computer can generate 128 unique characters. If data bits = 8 the computer can generate 256 unique characters.

DC: Direct Current. Electric current that flows in one direction. This type of power is usually supplied by batteries.

default: The parameter value automatically selected by the system when you or the program do not provide instructions. Also called a preset value.

delete: To remove data from a disk or other data storage device. Synonymous with erase.

device driver: A program that controls communication between a specific peripheral device and the computer.

dialog box: A window that accepts user input to make system settings or record other information.

disk drive: The device that randomly accesses information on a disk and copies it to the computer's memory. It also writes data from memory to the disk. To accomplish these tasks, the unit physically rotates the disk at high speed past a read-write head.

disk storage: Storing data on magnetic disk. Data is arranged on concentric tracks much like a phonograph record.

display: A CRT, LCD, or other image producing device used to view computer output.

documentation: The set of manuals and/or other instructions written for the users of a computer system or application. Computer system documentation typically includes procedural and tutorial information as well as system functions.

DOS: Disk Operating System. *See* operating system.

driver: A software program, generally part of the operating system, that controls a specific piece of hardware (frequently a peripheral device such as a printer or mouse).

DVD-R (+R, -R): A Digital Versatile Disc-Recordable disk can be written once and read many times. The DVD-R drive uses a laser to read data from the disc.

DVD-RAM: A Digital Versatile Disc-Random Access Memory is a high-capacity, high performance disc that lets you store large volumes of data. The DVD-ROM drive uses a laser to read data from the disc.

DVD-R (Dual Layer): A disc having two layers on one side with the DVD-R storage capacity about 1.8 times larger than before. The DVD-RW drive uses a laser to read data from the disc.

DVD-ROM: A Digital Versatile Disc-Read Only Memory is a high capacity, high performance disc suitable for play back of video and other high-density files. The DVD-ROM drive uses a laser to read data from the disc.

DVD-RW (+RW, -RW): A Digital Versatile Disc-ReWritable disc can be rewritten many times.

DVD+R (Double Layer): A disc having two layers on one side with the DVD+R storage capacity about 1.8 times larger than before. The DVD-RW drive uses a laser to read data from the disc.

E

echo: To send back a reflection of the transmitted data to the sending device. You can display the information on the screen, or output it to the printer, or both. When a computer receives back data it transmitted to a CRT (or other peripheral device) and then retransmits the data to printer, the printer is said to echo the CRT.

erase: *See* delete.

escape: 1) A code (ASCII code 27), signaling the computer that what follows are commands; used with peripheral devices such as printers and modems.
2) A means of aborting the task currently in progress.

escape guard time: A time before and after an escape code is sent to the modem which distinguishes between escapes that are part of the transmitted data, and escapes that are intended as a command to the modem.

execute: To interpret and execute an instruction.

Extended Capability Port: An industry standard that provides a data buffer, switchable forward and reverse data transmission, and run length encoding (RLE) support.

F

fast infrared: An industry standard that enables cableless infrared serial data transfer at speeds of up to 4 Mbps.

file: A collection of related information; a file can contain data, programs, or both.

fingerprint sensor: The fingerprint sensor compares and analyzes the unique characteristics in a fingerprint.

firmware: A set of instructions built into the hardware which controls and directs a microprocessor's activities.

floppy diskette: A removable disk that stores magnetically encoded data.

floppy diskette drive (FDD): An electromechanical device that reads and writes to floppy diskettes.

Fn-esse: A TOSHIBA utility that lets you assign functions to hot keys.

folder: An icon in Windows used to store documents or other folders.

format: The process of readying a blank disk for its first use. Formatting establishes the structure of the disk that the operating system expects before it writes files or programs onto the disk.

function keys: The keys labeled **F1** through **F12** that tell the computer to perform certain functions.

G

gigabyte (GB): A unit of data storage equal to 1024 megabytes. *See also* megabyte.

graphics: Drawings, pictures, or other images, such as charts or graphs, to present information.

H

hard disk: A non-removable disk usually referred to as drive C. The factory installs this disk and only a trained engineer can remove it for servicing. Also called fixed disk.

hard disk drive (HDD): An electromechanical device that reads and writes a hard disk. *See also* hard disk.

hardware: The physical electronic and mechanical components of a computer system: typically, the computer itself, external disk drives, etc. *See also* software and firmware.

hertz: A unit of wave frequency that equals one cycle per second.

hexadecimal: The base 16 numbering system composed of the digits 0 through 9 and the letters A, B, C, D, E, and F.

host computer: The computer that controls, regulates, and transmits information to a device or another computer.

hot key: The computer's feature in which certain keys in combination with the extended function key, **FN**, can be used to set system parameters, such as speaker volume.

HW Setup: A TOSHIBA utility that lets you set the parameters for various hardware components.

I

icon: A small graphic image displayed on the screen or in the indicator panel. In Windows, an icon represents an object that the user can manipulate.

i.LINK (IEEE1394): This port enables high-speed data transfer directly from external devices such as digital video cameras.

input: The data or instructions you provide to a computer, communication device or other peripheral device from the keyboard or external or internal storage devices. The data sent (or output) by the sending computer is input for the receiving computer.

instruction: Statements or commands that specify how to perform a particular task.

interface: 1) Hardware and/or software components of a system used specifically to connect one system or device to another.
2) To physically connect one system or device to another to exchange information.
3) The point of contact between user, the computer, and the program, for example, the keyboard or a menu.

interrupt request: A signal that gives a component access to the processor.

I/O: Input/output. Refers to acceptance and transfer of data to and from a computer.

I/O devices: Equipment used to communicate with the computer and transfer data to and from it.

J

jumper: A small clip or wire that allows you to change the hardware characteristics by electrically connecting two points of a circuit.

K

K: Taken from the Greek word kilo, meaning 1000; often used as equivalent to 1024, or 2 raised to the 10th power. *See also* byte and kilobyte.

KB: *See* kilobyte.

keyboard: An input device containing switches that are activated by manually pressing marked keys. Each keystroke activates a switch that transmits a specific code to the computer. For each key, the transmitted code is, in turn, representative of the (ASCII) character marked on the key.

kilobyte (KB): A unit of data storage equal to 1024 bytes. *See also* byte and megabyte.

L

level 2 cache: *See* cache memory.

Light Emitting Diode (LED): A semiconductor device that emits light when a current is applied.

Liquid Crystal Display (LCD): Liquid crystal sealed between two sheets of glass coated with transparent conducting material. The viewing-side coating is etched into character forming segments with leads that extend to the edge of the glass. Applying a voltage between the glass sheets alters the brightness of the liquid crystal.

LSI: Large Scale Integration.
1) A technology that allows the inclusion of up to 100,000 simple logic gates on a single chip.
2) An integrated circuit that uses large scale integration.

M

main board: *See* motherboard.

megabyte (MB): A unit of data storage equal to 1024 kilobytes. *See also* kilobyte.

megahertz: A unit of wave frequency that equals 1 million cycles per second. *See also* hertz.

menu: A software interface that displays a list of options on the screen. Also called a screen.

microprocessor: A hardware component contained in a single integrated circuit that carries out instructions. Also called the central processing unit (CPU), one of the main parts of the computer.

mode: A method of operation, for example, the Boot Mode, Sleep Mode or the Hibernation Mode.

modem: Derived from modulator/demodulator, a device that converts (modulates) digital data for transmission over telephone lines and then converts modulated data (demodulates) to digital format where received.

monitor: A device that uses rows and columns of pixels to display alphanumeric characters or graphic images. *See also* CRT.

motherboard: A name sometimes used to refer to the main printed circuit board in processing equipment. It usually contains integrated circuits that perform the processor's basic functions and provides connectors for adding other boards that perform special functions. Sometimes called a main board.

MP3: An audio compression standard that enables high-quality transmission and real-time playback of sound files.

N

non-system disk: A formatted floppy diskette you can use to store programs and data but you cannot use to start the computer. *See* system disk.

nonvolatile memory: Memory, usually read-only (ROM), that is capable of permanently storing information. Turning the computer's power off does not alter data stored in nonvolatile memory.

numeric keypad overlay: A feature that allows you to use certain keys on the keyboard to perform numeric entry, or to control cursor and page movement.

O

OCR: Optical Character Recognition (reader). A technique or device that uses laser or visible light to identify characters and input them into a storage device.

online state: A functional state of a peripheral device when it is ready to receive or transmit data.

operating system: A group of programs that controls the basic operation of a computer. Operating system functions include interpreting programs, creating data files, and controlling the transmission and receipt (input/output) of data to and from memory and peripheral devices.

output: The results of a computer operation. Output commonly indicates data.
1) printed on paper, 2) displayed at a terminal, 3) sent through the serial port of internal modem, or 4) stored on some magnetic media.

P

parity: 1) The symmetrical relationship between two parameter values (integers) both of which are either on or off; odd or even; 0 or 1. 2) In serial communications, an error detection bit that is added to a group of data bits making the sum of the bits even or odd. Parity can be set to none, odd, or even.

password: A unique string of characters used to identify a specific user. The computer provides various levels of password protection such as user and supervisor.

pel: The smallest area of the display that can be addressed by software. Equal in size to a pixel or group of pixels. *See* pixel.

peripheral component interconnect: An industry standard 32-bit bus.

peripheral device: An I/O device that is external to the central processor and/or main memory such as a printer or a mouse.

pixel: A picture element. The smallest dot that can be made on a display or printer. Also called a pel.

plug and play: A capability with Windows that enables the system to automatically recognize connections of external devices and make the necessary configurations in the computer.

port: The electrical connection through which the computer sends and receives data to and from devices or other computers.

Power Saver: A TOSHIBA utility that lets you set the parameters for various power-saving functions.

printed circuit board (PCB): A hardware component of a processor to which integrated circuits and other components are attached. The board itself is typically flat and rectangular, and constructed of fiberglass, to form the attachment surface.

program: A set of instructions a computer can execute that enables it to achieve a desired result. *See also* application.

prompt: A message the computer provides indicating it is ready for or requires information or an action from you.

R

Radio frequency interference (RFI) shield: A metal shield enclosing the printed circuit boards of the printer or computer to prevent radio and TV interference. All computer equipment generates radio frequency signals. The FCC regulates the amount of signals a computing device can allow past its shielding. A Class A device is sufficient for office use. Class B provides a more stringent classification for home equipment use. TOSHIBA portable computers comply with Class B computing device regulations.

Random Access Memory (RAM): High speed memory within the computer circuitry that can be read or written to.

restart: Resetting a computer without turning it off (also called "warm boot" or "soft reset"). *See also* boot.

RGB: Red, green, and blue. A device that uses three input signals, each activating an electron gun for a primary additive color (red, green, and blue) or port for using such a device. *See also* CRT.

RJ45: A modular LAN jack.

ROM: Read Only Memory: A nonvolatile memory chip manufactured to contain information that controls the computer's basic operation. You cannot access or change information stored in ROM.

S

SCSI: Small Computer System Interface is an industry standard interface for connection of a variety of peripheral devices.

SD/SDHC Card: Secure Digital cards are flash memory widely used in a variety of digital devices such as digital cameras and Personal Digital Assistants.

serial communications: A communications technique that uses as few as two interconnecting wires to send bits one after another.

serial interface: Refer to a type of information exchange that transmits information sequentially, one bit at a time.

SIO: Serial Input/Output. The electronic methodology used in serial data transmission.

soft key: Key combinations that emulate keys on the IBM keyboard, change some configuration options, stop program execution, and access the numeric keypad overlay.

software: The set of programs, procedures and related documentation associated with a computer system. Specifically refers to computer programs that direct and control the computer system's activities. *See also* hardware.

stop bit: One or more bits of a byte that follow the transmitted character or group codes in asynchronous serial communications.

subpixel: Three elements, one red, one green and blue (RGB), that make up a pixel on the color LCD. The computer sets subpixels independently, each may emit a different degree of brightness. *See also* pixel.

synchronous: Having a constant time interval between successive bits, characters or events.

system disk: A disk that has been formatted with an operating system. You can boot a computer using a system disk. Also called an operating system disk or bootable disk.

T

terminal: A typewriter-like keyboard and CRT display screen connected to the computer for data input/output.

TFT display: A liquid crystal display (LCD) made from an array of liquid crystal cells using active-matrix technology with thin film transistor (TFT) to drive each cell.

Touch Pad: A pointing device integrated into the TOSHIBA computer palm rest.

TTL: Transistor-transistor logic. A logic circuit design that uses switching transistors for gates and storage.

U

Universal Serial Bus: This serial interface lets you communicate with several devices connected in a chain to a single port on the computer.

V

VGA: Video Graphics Array is an industry standard video adaptor that lets you run any popular software.

volatile memory: Random access memory (RAM) that stores information as long as power is supplied to the computer.

W

warm start: Restarting or resetting a computer without turning it off.

window: A portion of the screen that can display its own application, document or dialog box. Often used to mean a Microsoft Windows window.

Wireless LAN: Local Area Network (LAN) through wireless communication.

Wireless WAN: Wide Area Network (WAN) through wireless communication.

write protection: A method for protecting a floppy diskette from accidental erasure.

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