



# **Hardware Reference Guide**

HP Compaq t5720 Thin Client

Document Part Number: 405356-001

**November 2005**

This book provides basic hardware information for this series of thin clients.

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**WARNING:** Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

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**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

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## **Hardware Reference Guide**

HP Compaq t5720 Thin Client  
First Edition (November 2005)

Document Part Number: 405356-001

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## Product features

### Standard t5720 features

HP Compaq t5720 thin clients are terminals that connect to a Microsoft server with Citrix MetaFrame software running atop the server operating system.

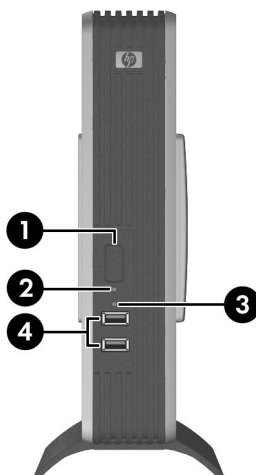
HP has partnered with Altiris to manage HP Compaq thin clients. Altiris Deployment Solution is a leading-edge tool to help with quick deployment and for on-going management of the thin clients in your organization. Each HP Compaq thin client is recognized by the Altiris Deployment Solution as a supported device. As a result, you need not track license compliancy for each device. For additional information about the Altiris Deployment Solution tool, refer to the *Altiris Deployment Solution* insert that shipped with the thin client and the *Deployment Solution User Guide* that is available at: [www.altiris.com/documentation](http://www.altiris.com/documentation).

The next sections describe the features of the t5720. For a complete list of the hardware and software installed on a specific model, visit <http://h18004.www1.hp.com/products/thinclients/index.html>.

The t5720 includes the following features:

- no moving parts.
- no hard drives or diskette drives (optional MultiBay hard drive and diskette drive available).
- 15-minute setup time.
- while software support is limited to 90 days from date of purchase, free periodic firmware upgrades during the product's warranty period help to protect your IT investment.
- central deployment and management using the Altiris Deployment Solution.

## Front panel components



*Front panel components*

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❶ Power button

❸ Flash activity LED

❷ Power LED

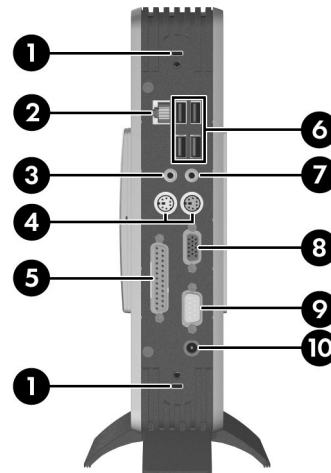
❹ USB ports (2)

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\* For more information, refer to the model-specific QuickSpecs at [http://h18004.www1.hp.com/products/quickspecs/QuickSpecs\\_Archives/QuickSpecs\\_Archives.html](http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html).

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## Rear panel components

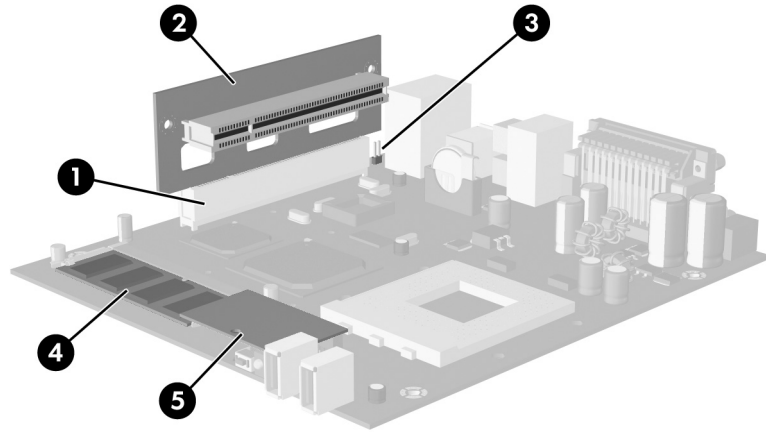


*Rear panel components*

❶ Cable lock slots	❹ Universal Serial Bus (USB) connectors (4)
❷ Ethernet RJ-45 connector	❺ Line-in audio connector (microphone)
❸ Line-out audio (headphone) connector	❽ Monitor connector
❹ PS/2 connectors (2)	❾ Serial connector
❺ Parallel connector	❿ Power connector

\* For more information, refer to the model-specific QuickSpecs at [http://h18004.www1.hp.com/products/quickspecs/QuickSpecs\\_Archives/QuickSpecs\\_Archives.html](http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html).

## System board components

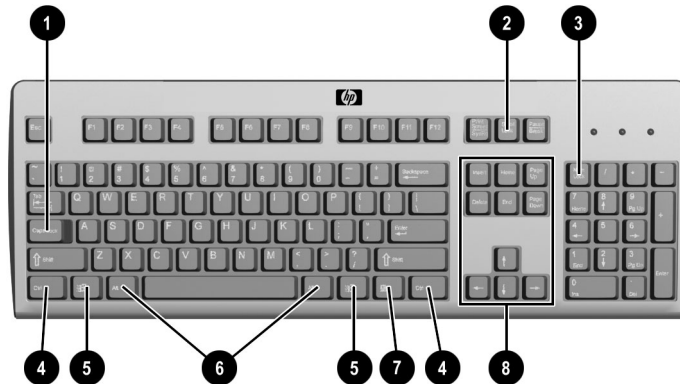


*System board components*

❶	PCI riser slot	❹	SODIMM memory
❷	PCI riser card (optional)	❺	Flash memory
❸	Speaker connector		

\* For more information, refer to the model-specific QuickSpecs at [http://h18004.www1.hp.com/products/quickspecs/QuickSpecs\\_Archives/QuickSpecs\\_Archives.html](http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html).

# Using the keyboard



Keyboard features

## Enhanced keyboard components

<b>❶ Caps Lock</b> key	Activates/deactivates the Caps Lock feature.
<b>❷ Scroll Lock</b> key	Activates/deactivates the Scroll Lock feature.
<b>❸ Num Lock</b> key	Activates/deactivates the Num Lock feature.
<b>❹ Ctrl</b> key	Use in combination with another key; its function depends on the application software you are using.
<b>❺ Windows Logo Key</b> <sup>1</sup>	Opens the <b>Start</b> menu in Microsoft Windows. Use in combination with other keys to perform other functions. For more information, see <a href="#">“Windows Logo Key” on page 6</a> .
<sup>1</sup> Available in select geographic regions.	

**Enhanced keyboard components** *(Continued)*

⑥ <b>Alt</b> key	Use in combination with another key; its function depends on the application software you are using.
⑦ Application key <sup>1</sup>	Opens (like the right mouse button) pop-up menus in a Microsoft Office application. May perform other functions in other software applications.
⑧ Editing keys	Includes the following: <b>Insert</b> , <b>Home</b> , <b>Page Up</b> , <b>Delete</b> , <b>End</b> , and <b>Page Down</b> . Hold down <b>Ctrl</b> and <b>Alt</b> while pressing <b>Delete</b> to restart the thin client.

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<sup>1</sup> Available in select geographic regions.

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## Windows Logo Key

Use the Windows Logo Key in combination with other keys to perform certain functions available in Windows operating systems.

Windows Logo Key + <b>Tab</b>	Switch between open items.
Windows Logo Key + <b>e</b>	Open My Computer.
Windows Logo Key + <b>f</b>	Search for a file or folder.
Windows Logo Key + <b>Ctrl</b> + <b>f</b>	Search for computers.
Windows Logo Key + <b>m</b>	Minimize all windows.
Windows Logo Key + <b>Shift</b> + <b>m</b>	Undo minimize all.
Windows Logo Key + <b>Break</b>	Display the System Properties dialog box.
Windows Logo Key + <b>r</b>	Open the Run dialog box.

## Additional function keys

The following key combinations also work on the HP Compaq t5720 thin client:

<b>Alt + Esc</b>	Cycles through minimized applications.
<b>Alt + Tab</b>	Cycles through open applications.
<b>Alt + Shift + Tab</b>	Switches to the previous session.

## Special mouse functions

Most software applications support the use of a mouse. The functions assigned to each mouse button depend on the software applications you are using.

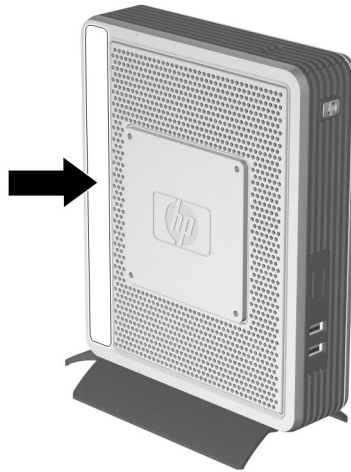


All HP Compaq t5720 thin client models ship with a PS/2 scroll mouse.

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## Serial number location

Every thin client has a unique serial number that is located as shown in the following illustration. Have this number available when contacting HP customer service for assistance.



*Serial number location*

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## Hardware upgrades

### General hardware installation sequence

To ensure the proper installation of any thin client hardware option:

1. Back up any data, if necessary.
2. If the thin client is powered on:
  - a. Shut the unit down.
  - b. Turn the unit and any other attached devices off.
  - c. Disconnect the power cord from the wall outlet.
  - d. Disconnect any external devices or cables.



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**WARNING:** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

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**WARNING:** To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications or telephone connectors into the network interface controller (NIC) receptacles.

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**CAUTION:** Static electricity can damage the electronic components of the thin client or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. See [Appendix D, "Electrostatic discharge"](#) for more information.

---

3. Remove the chassis cover. For more information, see “[Removing and replacing the chassis cover](#)” on page 2-3.
4. If necessary, remove any hardware that you will replace.
5. Install or replace equipment. For removal and replacement procedures, see the following sections:
  - ❑ [Flash memory upgrade on page 2-4](#)
  - ❑ [SODIMM upgrade on page 2-6](#)
  - ❑ [PCI Expansion Module on page 2-7](#)
  - ❑ [Internal battery on page 2-10](#)



Option kits include more detailed installation instructions.

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6. Replace the chassis cover.
7. Reconnect any external devices and power cords.
8. Turn on the monitor, the thin client, and any devices you want to test.
9. Load any necessary drivers.



You can download select hardware drivers from HP at <http://www.hp.com/country/us/eng/support.html>.

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10. Reconfigure the thin client, if necessary.

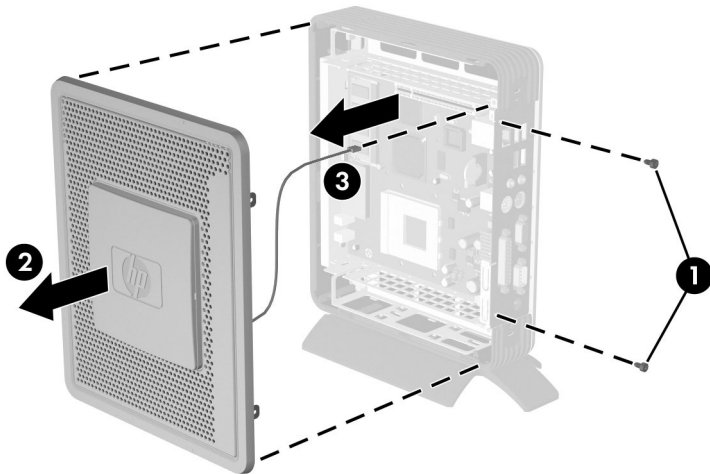
## Removing and replacing the chassis cover

To install internal hardware, you must remove the chassis cover as shown in the following procedures.



**WARNING:** Before removing the chassis cover, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

1. Remove the two screws that secure the cover to the chassis ❶.
2. Pull the chassis cover off the chassis ❷.
3. Disconnect the speaker cable ❸ from the system board.



*Removing the chassis cover and disconnecting the speaker*

To replace the chassis cover, reverse the previous procedure.

## Installing thin client options

The t5720 thin client offers several options, including flash memory, SODIMMs, and security hardware. For more information about security hardware, see [Appendix B, “Security provisions”](#). To view and order available options, visit the HP Web site at <http://h18004.www1.hp.com/products/thinclients/options/index.html>.

The following sections contain general installation instructions for some of the available options. In all cases, see the specific installation instructions that came with the thin client option.

Before beginning the installation process, review [“General hardware installation sequence” on page 2-1](#) for procedures you should follow before and after installing or replacing hardware.

### Flash memory upgrade

Use the following procedure to upgrade or replace flash memory.



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**CAUTION:** If necessary, back up any data before continuing the installation.

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In addition to following these instructions, follow the detailed instructions that accompany the flash memory.

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1. Complete steps 1 through 4 of the [“General hardware installation sequence” on page 2-1](#).
  2. Remove the existing flash memory.
- 

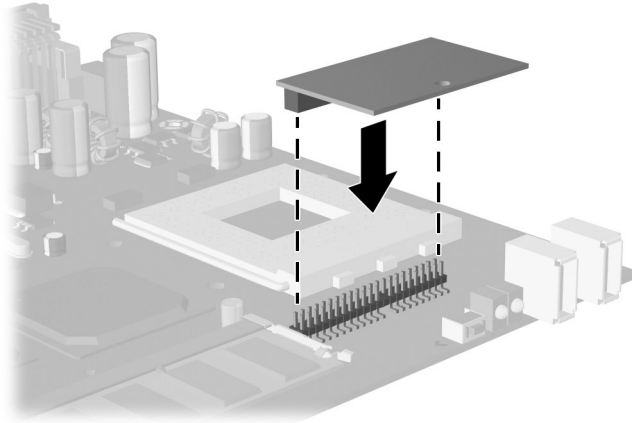


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You may need needle-nose pliers to remove the flash memory module.

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3. Verify the location of the round opening on the flash memory card and align the opening with the plastic stem on the system board.
4. Insert the new flash memory with the connectors facing down as shown in the following illustration.



#### *Installing flash memory*

5. Complete steps 6 through 8 of the [“General hardware installation sequence”](#) on page 2-1.
6. Install the thin client software. For installation instructions, refer to the *Troubleshooting Guide* or the *HP Compaq Thin Client Imaging Tool* white paper available on the HP Web site at [www.hp.com/products/thinclientsoftware](http://www.hp.com/products/thinclientsoftware).

## SODIMM upgrade

Use the following procedure to upgrade or replace the SODIMM module.

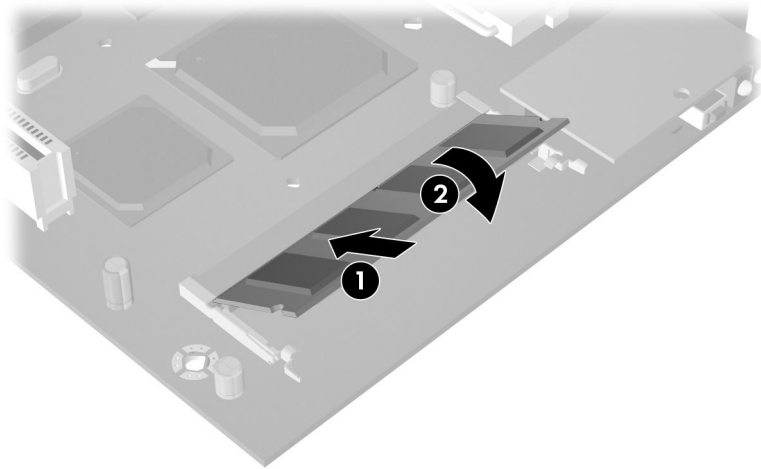


**CAUTION:** If necessary, back up any data before continuing the installation.



In addition to following these instructions, follow the detailed instructions that accompany the module.

1. Complete steps 1 through 4 of the [“General hardware installation sequence” on page 2-1](#).
2. Remove the existing SODIMM module.
3. Install the module into the socket at a 45° angle ❶ and then lower the module ❷ until it clicks into place.



*Installing an optional SODIMM*

4. Complete steps 6 through 10 of the [“General hardware installation sequence” on page 2-1](#).

## PCI Expansion Module



You can order the PCI Expansion Module kit at <http://h18004.www1.hp.com/products/thinclients/options/index.html>.

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Installation of a PCI Expansion Module requires that you replace the chassis cover with a PCI Expansion Module chassis cover. To install a PCI Expansion Module, follow the instructions included in the option kit. The PCI Expansion Module option kit includes the following components:

- PCI riser card
  - PCI Expansion Module chassis cover (with speaker)
  - 50W power supply
- 



To ensure proper operation, you must use the power supply included with the PCI expansion card.

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Use the following instructions as an overview of this procedure.

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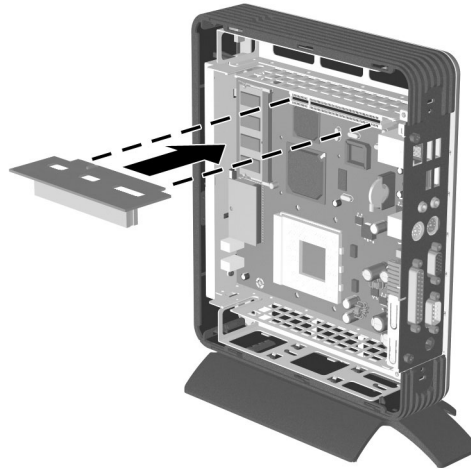


In addition to following these instructions, follow the detailed instructions that accompany the PCI card.

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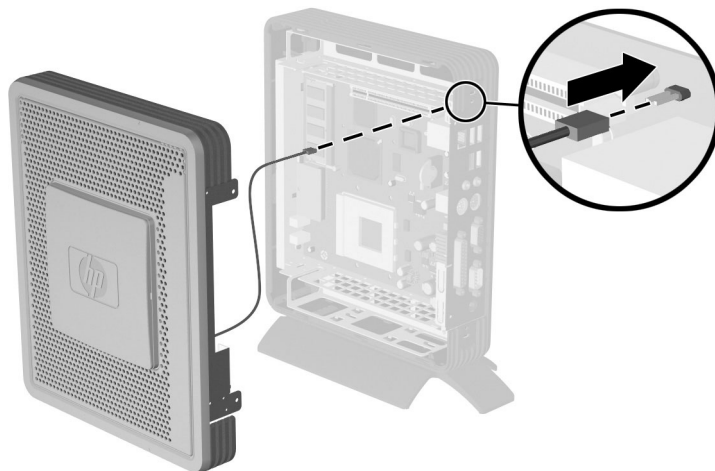
1. Complete steps 1 through 4 of the “[General hardware installation sequence](#)” on page 2-1.

2. Install the PCI riser card in the PCI expansion slot on the system board, as shown in the following illustration.



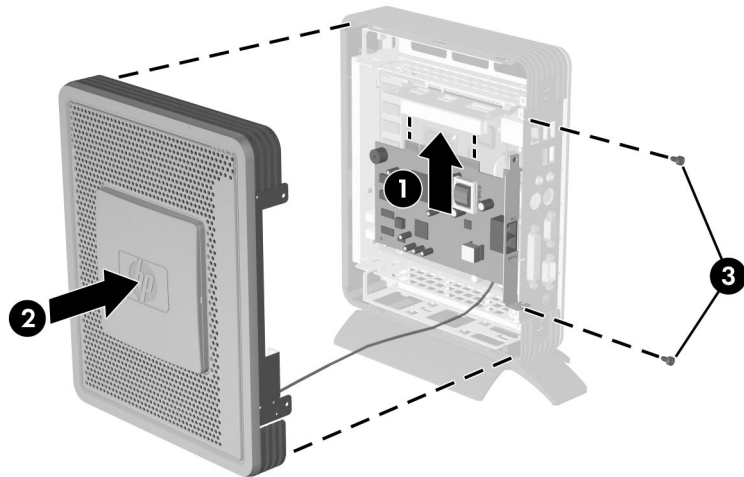
#### *Installing PCI riser card*

3. Connect the speaker cable from the PCI Expansion Module chassis cover to the system board. The speaker is installed in the PCI Expansion Module chassis cover.



#### *Connecting the speaker*

4. Install a PCI card **❶** into the PCI riser card as shown in the following illustration.
5. Install the optional PCI Expansion Module chassis cover **❷**.
6. Secure the optional PCI Expansion Module chassis cover with the two chassis screws **❸**.



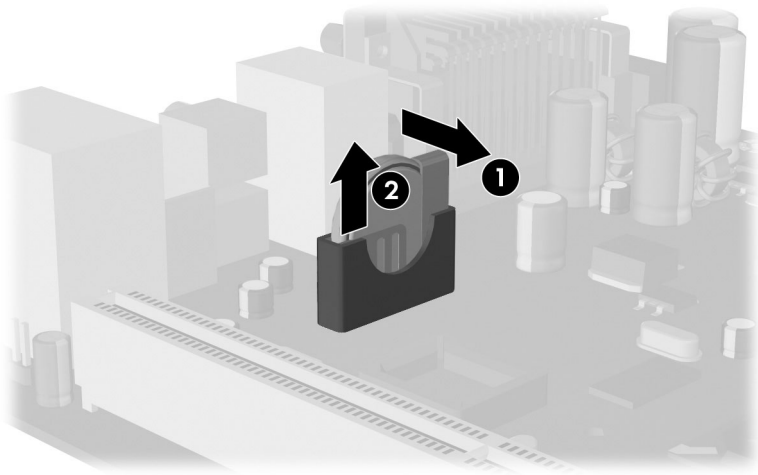
*Installing a PCI card and PCI Expansion Module chassis cover*

7. Complete steps 6 through 10 of the [“General hardware installation sequence”](#) on page 2-1.

To remove the PCI Expansion Module, reverse the previous procedure.

## Internal battery

1. Complete steps 1 through 4 of the “[General hardware installation sequence](#)” on page 2-1.
2. Locate the battery on the system board.
3. Pull back on the clip ❶ that is holding the battery in place, and then remove the battery ❷.
4. Insert the new battery and position the clip back into place.



*Removing and replacing the internal battery*

5. Complete steps 6 through 10 of the “[General hardware installation sequence](#)” on page 2-1.

## MultiBay hard drive and diskette drive

A MultiBay hard drive and diskette drive are available as options for the t5720. These are external USB-compatible drives. For more installation information about these drives, visit [www.hp.com/products/thinclientsoftware](http://www.hp.com/products/thinclientsoftware), or refer to the instructions that accompany the option.

## Specifications

### HP Compaq t5720 Thin Client

#### Dimensions

Height	9.85 in	250.18 mm
Width	2.59 in	65.71 mm
Depth	8.09 in	205.55 mm

#### Approximate Weight

3.7 lb	1.7 kg
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#### Temperature Range (fanless design)\*

<u>Operating</u> ** (max. rate of change is 10° C per hour or 18° F per hour)	50° to 104° F	10° to 40° C
<u>Nonoperating</u> (max. rate of change is 20° C per hour or 36° F per hour)	-22° to 140° F	-30° to 60° C

\*Specifications are at sea level with altitude derating of 1° C/300m (1.8° F/1000ft) to a maximum of 3Km (10,000ft), with no direct, sustained sunlight. Upper limit may be limited by the type and number of options installed.

\*\* The operating temperature range when the thin client is attached to a flat panel using the HP Quick Release is 50° - 95°F (10°-35°C).

<b>HP Compaq t5720 Thin Client</b> (cont)		
<b>Relative Humidity</b> (non-condensing)		
<u>Operating</u> (max. wet bulb temperature is 28° C or 84.2° F)	10–90%	10–90%
<u>Nonoperating</u> (max. wet bulb temperature is 38.7° C or 101.6° F)	5–95%	5–95%
<b>Maximum Altitude</b> (unpressurized)		
<u>Operating</u> (max. allowed rate of change is 457m per minute or 1500 ft per minute)	10,000 ft	3048 m
<u>Nonoperating</u> (max. allowed rate of change is 457m per minute or 1500 ft per minute)	30,000 ft	9144 m
<b>Power Supply</b>		
Operating Voltage Range	100–240 VAC	100–240 VAC
Rated Line Frequency	50–60 Hz	50–60 Hz
<b>Power Output</b> (maximum)	40 W	40 W
<b>Rated Output Current</b> (maximum)	3.3 A	3.3 A
<b>Heat Dissipation</b>		
On	136.4 BTU/hr	34.4 kg-cal/hr
Off	2.94 BTU/hr	0.74 kg-cal/hr

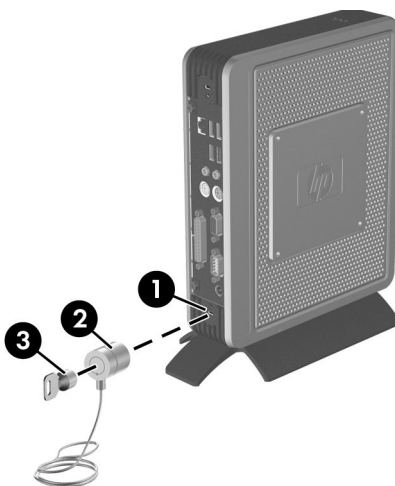
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## Security provisions

### Securing the thin client

The HP Compaq t5720 thin client is designed to accept a security cable lock. This cable lock prevents unauthorized removal of the thin client. To order this option, visit the HP web site at <http://h18004.www1.hp.com/products/thinclients/options/index.html>.

1. Locate the cable lock slot **❶** on the back panel. There are two slots available.
2. Insert the cable lock **❷** and use the key **❸** to lock it.



*Securing the thin client*



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## Mounting the thin client

### HP Quick Release

The HP Compaq t5720 thin client incorporates four mounting points on each side of the unit. These mounting points follow the VESA (Video Electronics Standards Association) standard, which provides industry-standard mounting interfaces for Flat Displays (FDs), such as flat panel monitors, flat displays, and flat TVs. The HP Quick Release connects to the VESA-standard mounting points, allowing you to mount the thin client in a variety of orientations.

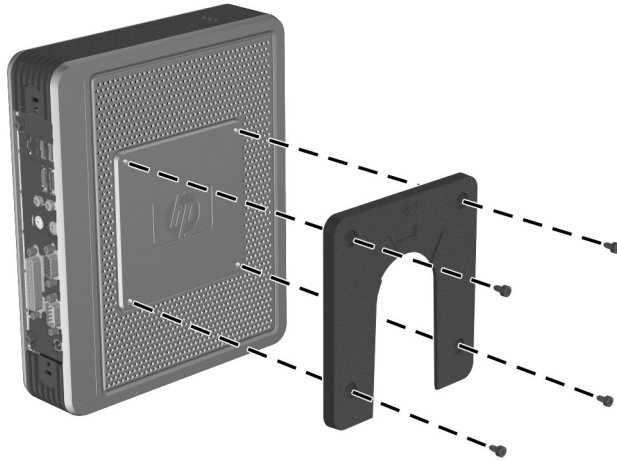


#### *HP Quick Release*

To order this option, visit the HP Web site at <http://h18004.www1.hp.com/products/thinclients/options/index.html>.

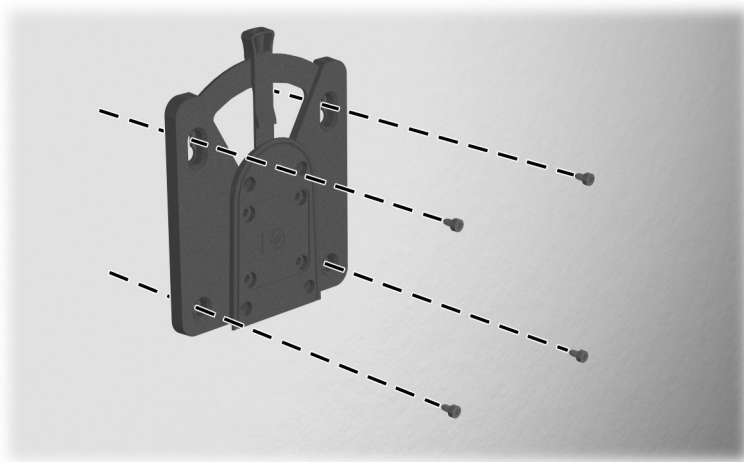
To use the HP Quick Release with a VESA-configured thin client:

1. Using four screws included in the mounting device kit, attach one side of the HP Quick Release to the thin client as shown in the following illustration.



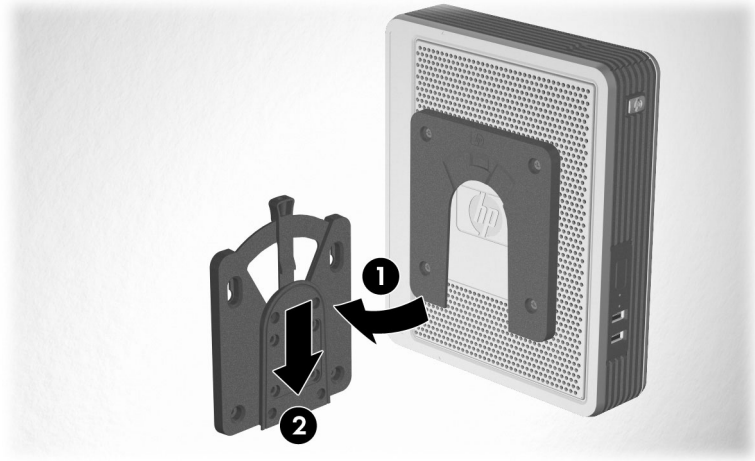
*Connecting the HP Quick Release to the thin client*

2. Using four screws included in the mounting device kit, attach the other side of the HP Quick Release to the device to which you will mount the thin client. Make sure the release lever points upward.



*Connecting the HP Quick Release to another device*

3. Slide the side of the mounting device attached to the thin client **1** over the other side of the mounting device **2** on the device on which you want to mount the thin client. An audible 'click' indicates a secure connection.



#### Connecting the thin client

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When attached, the HP Quick Release automatically locks in position. You only need to slide the lever to one side to remove the thin client.

---



**CAUTION:** To ensure proper function of the HP Quick Release and a secure connection of all components, make sure both the release lever on one side of the mounting device and the rounded opening on the other side face upward.

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## Supported mounting options

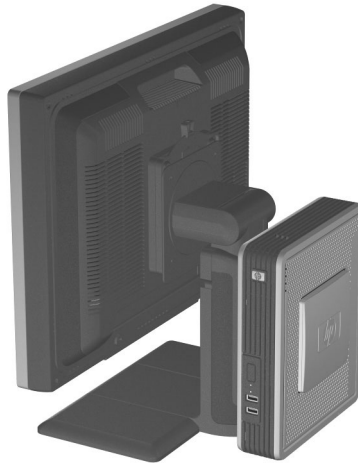
The following illustrations demonstrate some of the supported and not supported mounting options for the mounting bracket.

- You can mount a thin client between a flat panel monitor and the wall.



*Thin client mounted with flat panel on wall*

- You can mount the thin client on the back of a flat panel monitor stand.



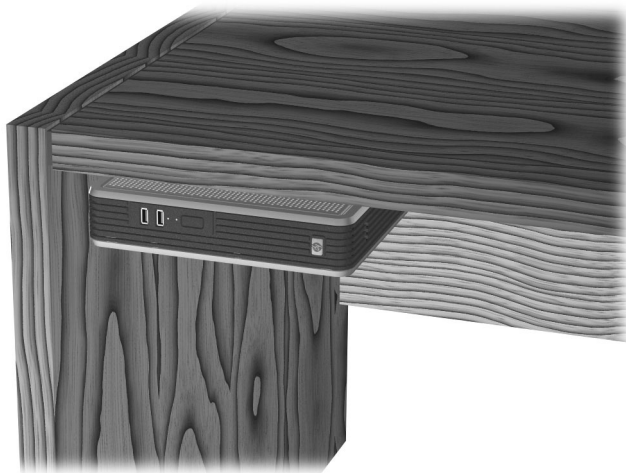
*Thin client mounted on back of monitor stand*

- You can mount the thin client on a wall.



*Thin client mounted on wall*

- You can mount the thin client under a desk.



*Thin client mounted under desk*

## Non-supported mounting option



**CAUTION:** Mounting a thin client in a non-supported manner could result in failure of the HP Quick Release and damage to the thin client and/or other equipment.

---

Do not mount the thin client on a flat panel monitor stand, between the panel and the stand.



*Unsupported mounting position - thin client between stand and monitor*

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## Electrostatic discharge

A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

### Preventing electrostatic damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

## Grounding methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded Thin Client chassis. Wrist straps are flexible straps with a minimum of 1 megohm +/- 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.
- Use heelstraps, toestraps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, contact an HP authorized dealer, reseller, or service provider.



For more information about static electricity, contact an HP authorized dealer, reseller, or service provider.

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## Thin client operation

### Routine thin client care

Use the following information to properly care for your thin client:

- Operate the thin client on a sturdy, level surface. Leave a 1-inch (2.5-cm) clearance around the air vents to permit the required airflow.
- Never operate the thin client with the outside panel removed.
- Never restrict the airflow into the thin client by blocking the vents or air intake.
- Keep the thin client away from excessive moisture, direct sunlight, and extreme heat and cold. For information about the recommended temperature and humidity ranges for the thin client, see [Appendix A, “Specifications”](#).
- Keep liquids away from the thin client and keyboard.
- Turn off the thin client before you do either of the following:
  - ❑ Wipe the exterior of the thin client with a soft, damp cloth as needed. Using cleaning products may discolor or damage the finish.
  - ❑ Occasionally clean the air vents of the thin client. Lint and other foreign matter can block the vents and limit airflow.

## Supported orientations

HP supports the following orientations for the thin client.



**CAUTION:** You must adhere to HP-supported orientations to ensure your thin clients function properly.

---

- You can stand thin clients vertically.



*Vertical orientation*

- You can lay thin clients horizontally.



#### *Horizontal orientation*

- You can lay thin clients under a monitor stand with a one-inch clearance above the unit.



#### *Under monitor stand*

## Non-supported orientations

HP does not support the following orientations for the thin client.



**CAUTION:** Non-supported placement of thin clients could result in operation failure and/or damage to the devices.



**CAUTION:** Thin clients require proper ventilation to maintain operating temperature.

- Do not put a monitor directly on top of a thin client.



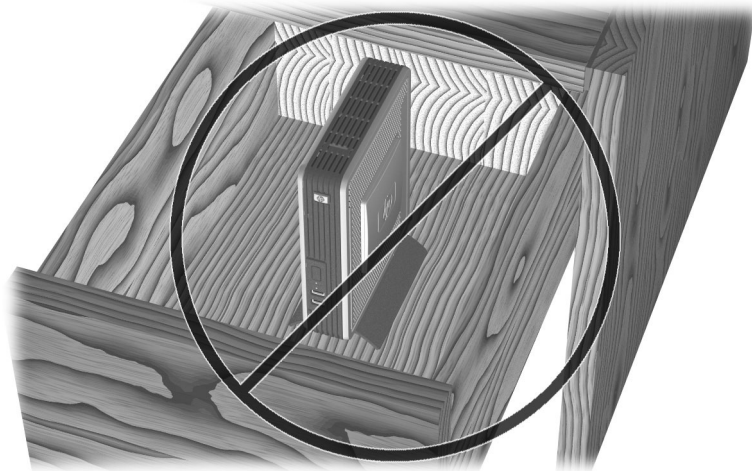
*Do not put a monitor on top of the thin client*

- Do not horizontally stack thin clients. Thin clients require proper ventilation to maintain operating temperatures.



*Do not stack thin clients*

- Do not put thin clients in drawers or other sealed enclosures. Thin clients require proper ventilation to maintain operating temperatures.



*Do not put thin clients in drawers or other sealed enclosures*

- Do not place materials on thin clients that block the vents. Thin clients require proper ventilation to maintain operating temperatures.



*Do not block the vents of the thin client*

- Do not position the thin client vertically without using the stand.



*Do not position the thin client vertically without using the stand*

---

## Shipping information

### Shipping preparation

Follow these suggestions when preparing to ship the thin client:

1. Turn off the thin client and external devices.
2. Disconnect the power cord from the electrical outlet, then from the thin client.
3. Disconnect the system components and external devices from their power sources, then from the thin client.
4. If you have upgraded the SODIMM, remove it and replace the original SODIMM that came with the unit.
5. Pack the system components and external devices in their original packing boxes or similar packaging with sufficient packing material to protect them.



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For environmental nonoperating ranges, see [Appendix A, “Specifications”](#) in this guide.

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## Important service repair information

In all cases, remove and safeguard all external options before returning the thin client to HP for repair or exchange.

In countries that support customer mail-in repair by returning the same unit to the customer, HP makes every effort to return the repaired unit with the same internal memory and flash modules that were sent.

In countries that do not support customer mail-in repair by returning the same unit to the customer, all internal options should be removed and safeguarded in addition to the external options. The thin client should be restored to the **original configuration** before returning it to HP for repair.

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