

User manual

**NC221
NC221-S
NC221-TS
NC221-TW
NC221W
NC241
NC241-TS
NC241-TW
NC241W**

The color and the appearance may differ depending on the product, and the specifications are subject to change without prior notice to improve the performance.

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Before Using the Product

Copyright

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Microsoft and Windows are registered trademarks of Microsoft Corporation.

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- An administration fee may be charged if either
 - ▣ (a) an engineer is called out at your request and there is no defect in the product (i.e. where you have failed to read this user manual).
 - ▣ (b) you bring the unit to a repair centre and there is no defect in the product (i.e. where you have failed to read this user manual).
- The amount of such administration charge will be advised to you before any work or home visit is carried out.

Icons used in this manual



The following images are for reference only. Real-life situations may differ from what is shown in the images.

Before Using the Product

Cleaning

Exercise care when cleaning as the panel and exterior of advanced LCDs are easily scratched.

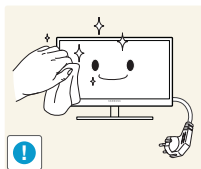
Take the following steps when cleaning.



1. Power off the monitor and computer.
2. Disconnect the power cord from the monitor.



Hold the power cable by the plug and do not touch the cable with wet hands. Otherwise, an electric shock may result.



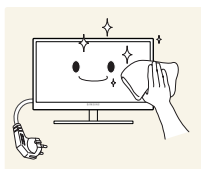
3. Wipe the monitor screen using a clean, soft and dry cloth.



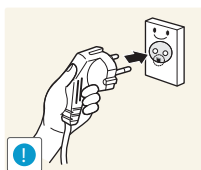
- Do not apply a cleaning agent that contains alcohol, solvent, or surfactant to the monitor.



- Do not spray water or detergent directly on the product.



4. Wet a soft and dry cloth in water and wring thoroughly to clean the exterior of the monitor.



5. Connect the power cord to the product after cleaning the product.
6. Power on the monitor and computer.

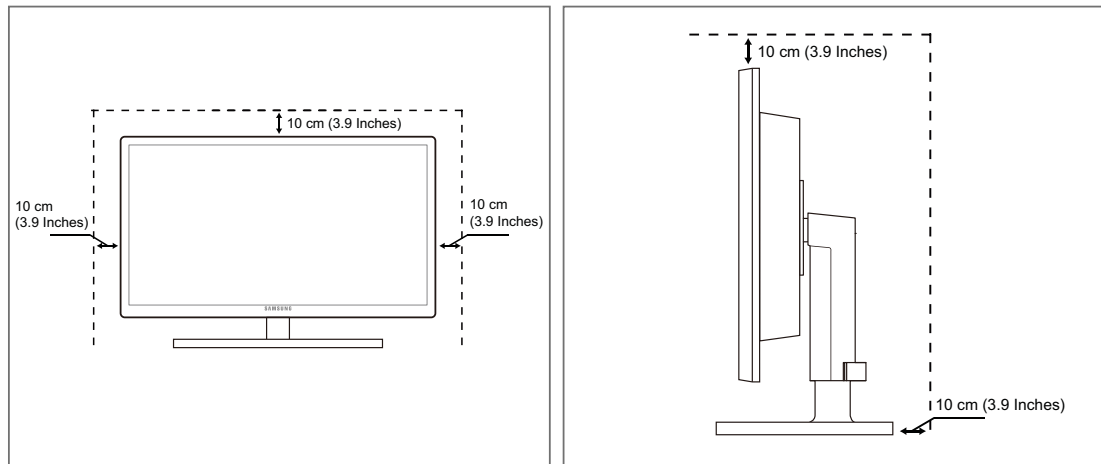
Before Using the Product

Securing the Installation Space

- Ensure some space around the product for ventilation. An internal temperature rise may cause fire and damage the product. Be sure to allow the amount of space as shown below or greater when installing the product.



The exterior may differ depending on the product.



Precautions for storage





Be sure to contact Samsung Customer Service Center (page 104) if the inside of the monitor needs cleaning. (Service fee will be charged.)





Before Using the Product

Safety Precautions

Caution
RISK OF ELECTRIC SHOCK DO NOT OPEN
Caution: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER ALL SERVICING TO QUALIFIED PERSONNEL.

	This symbol indicates that high voltage is present inside. It is dangerous to make any kind of contact with any internal part of this product.
	This symbol alerts you that important literature concerning operation and maintenance has been included with this product.

Symbols

 Warning	A serious or fatal injury may result if instructions are not followed.
 Caution	Personal injury or damage to properties may result if instructions are not followed.
	Activities marked by this symbol are prohibited.
	Instructions marked by this symbol must be followed.

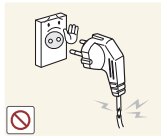
Before Using the Product

Electricity and Safety



The following images are for reference only. Real-life situations may differ from what is shown in the images.

Warning



Do not use a damaged power cord or plug, or a loose power socket.

- An electric shock or fire may result.



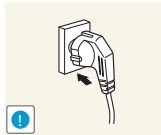
Do not plug many products into the same power socket.

- Otherwise, the socket may overheat and cause a fire.



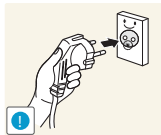
Do not touch the power plug with wet hands.

- Otherwise, an electric shock may result.



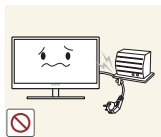
Insert the power plug all the way in so it is not loose.

- An unstable connection may cause a fire.



Ensure you connect the power plug to a grounded power socket. (type 1 insulated devices only).

- An electric shock or injury may result.



Do not bend or pull the power cord with force. Do not weigh the power cord down with a heavy object.

- A damaged power cord may cause an electric shock or fire.



Do not place the power cord or product near heat sources.

- An electric shock or fire may result.



Remove foreign substances such as dust around the plug pins and power socket with a dry cloth.

- Otherwise, a fire may result.

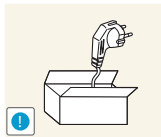
Before Using the Product

Caution



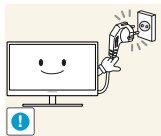
Do not unplug the power cord when the product is in use.

- The product may become damaged by an electric shock.



Do not use the power cord for products other than authorized products supplied by Samsung.

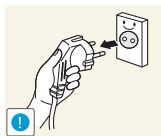
- An electric shock or fire may result.



Keep the power socket where the power cord is connected unobstructed.

- If any problem occurs in the product, unplug the power cable to completely cut the power to the product.

Power to the product cannot be completely cut off with the power button.



Hold the plug when disconnecting the power cord from the power socket.

- An electric shock or fire may result.

Installation and Safety

Warning



DO NOT PLACE CANDLES, INSECT REPELLANTS OR CIGARETTES ON TOP OF THE PRODUCT. DO NOT INSTALL THE PRODUCT NEAR HEAT SOURCES.

- Otherwise, a fire may result.



Avoid installing the product in a narrow space with bad ventilation, such as a bookshelf or wall closet.

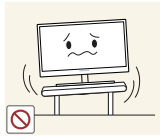
- Otherwise, a fire may result due to an increased internal temperature.



Keep the plastic packaging bag for the product in a place that cannot be reached by children.

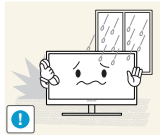
- Children may suffocate.

Before Using the Product



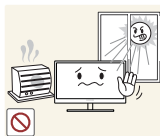
Do not install the product on an unstable or vibrating surface (insecure shelf, sloped surface, etc.).

- The product may fall and break or cause a personal injury.
- Using the product in an area with excess vibration may damage the product or cause a fire.



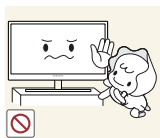
Do not install the product in a vehicle or a place exposed to dust, moisture (water drips, etc.), oil, or smoke.

- An electric shock or fire may result.



Do not expose the product to direct sunlight, heat, or a hot object such as a stove.

- Otherwise, the product lifespan may be reduced, or a fire may result.



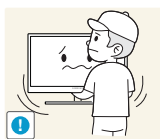
Do not install the product within the reach of young children.

- The product may fall and injure children.



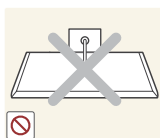
Edible oil, such as soybean oil, can damage or deform the product. Do not install the product in a kitchen or near a kitchen counter.

Caution



Take care not to drop the product when moving it.

- Otherwise, product failure or personal injury may result.



Do not set down the product on its front.

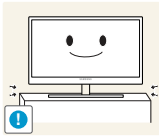
- The screen may become damaged.



When installing the product on a cabinet or shelf, make sure that the bottom edge of the front of the product is not protruding.

- The product may fall and break or cause a personal injury.
- Install the product only on cabinets or shelves of the right size.

Before Using the Product



Put down the product carefully.

- The product may fall and break or cause a personal injury.



Installing the product in an unusual place (a place exposed to a lot of fine dust, chemical substances, extreme temperatures or a significant presence of moisture, or a place where the product will operate continuously for an extended period of time) may seriously affect its performance.

- Be sure to consult Samsung Customer Service Center (page 104) before installation if you want to install the product at such a place.

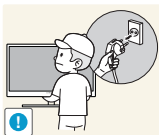
Operation and Safety

Warning



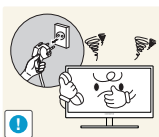
High voltage runs through the product. Do not attempt to disassemble, repair, or modify the product on your own.

- An electric shock or fire may result.
- Contact Samsung Customer Service Center (page 104) for repair.



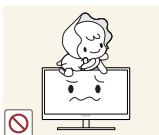
Before moving the product, turn off the power switch and disconnect the power cable and all other connected cables.

- Otherwise, the power cord may be damaged and a fire or electric shock may result.



If the product generates a strange noise, a burning smell, or smoke, remove the power cord immediately and contact Samsung Customer Service Center (page 104).

- An electric shock or fire may result.



Do not let children hang from the product or climb on top of it.

- The product may fall, and your child may become injured or seriously harmed.



If the product falls or the exterior is damaged, power off the product, remove the power cord, and contact Samsung Customer Service Center (page 104).

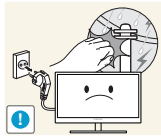
- Otherwise, an electric shock or fire may result.



Do not put a heavy object, toy, or sweets on top of the product.

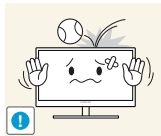
- The product or heavy objects may fall as children try to reach for the toy or sweets resulting in a serious injury.

Before Using the Product



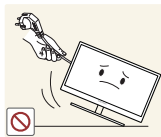
If there is a thunderstorm or lightning strike, turn off the power and disconnect the power cable.

- An electric shock or fire may result.



Do not drop objects on the product or apply impact.

- An electric shock or fire may result.



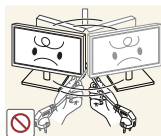
Do not move the product by pulling the power cord or any cable.

- Otherwise, the cable may be damaged and product failure, an electric shock or fire may result.



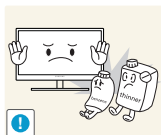
If a gas leakage is found, do not touch the product or power plug. Also, ventilate the area immediately.

- Sparks can cause an explosion or fire.



Do not lift or move the product by pulling the power cord or any cable.

- Otherwise, the cable may be damaged and product failure, an electric shock or fire may result.



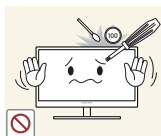
Do not use or keep combustible spray or an inflammable substance near the product.

- An explosion or fire may result.



Ensure the vents are not blocked by tablecloths or curtains.

- Otherwise, a fire may result from an increased internal temperature.



Do not insert a metallic object (a chopstick, coin, hair pin, etc.) or inflammable object (paper, match, etc.) into the vent or ports of the product.

- If water or any foreign substance enters the product, be sure to power off the product, remove the power cord, and contact Samsung Customer Service Center (page 104).
- Product failure, an electric shock or fire may result.

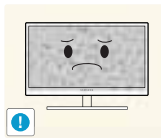


Do not place objects containing liquid (vases, pots, bottles, etc) or metallic objects on top of the product.

- If water or any foreign substance enters the product, be sure to power off the product, remove the power cord, and contact Samsung Customer Service Center (page 104).
- Product failure, an electric shock or fire may result.

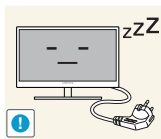
Before Using the Product

Caution



Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.

- If you are not going to use the product for an extended period of time, activate power-saving mode or a moving-picture screen saver.



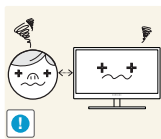
Disconnect the power cord from the power socket if you do not plan on using the product for an extended period of time (vacation, etc.).

- Otherwise, a fire may result from accumulated dust, overheating, an electric shock, or electric leakage.



Use the product at the recommended resolution and frequency.

- Your eyesight may deteriorate.



Looking at the screen too close for an extended period of time can deteriorate your eyesight.



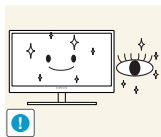
Do not hold the monitor upside-down or move it by holding the stand.

- The product may fall and break or cause a personal injury.



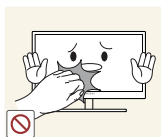
Do not use humidifiers or stoves around the product.

- An electric shock or fire may result.

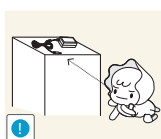


Rest your eyes for more than 5 minutes for every 1 hour of product use.

- Eye fatigue will be relieved.



Do not touch the screen when the product has been turned on for an extended period of time as it will become hot.



Store the small accessories used with the product out of reach of children.

Before Using the Product



Exercise caution when adjusting the product angle or stand height.

- Otherwise, children's fingers or hands may become stuck and injured.
- Tilting the product excessively may cause it to fall and result in personal injury.



Do not place heavy objects on the product.

- Product failure or personal injury may result.



Do not increase the volume too high when using headphones (earphones).

- Sound particularly at a higher volume could potentially affect long-term hearing.

Correct posture to use the product



Use the product in the correct posture as follows:

- Straighten your back.
- Allow a distance of 45 to 50cm between your eye and the screen, and look slightly downward at the screen.
Keep your eyes directly in front of the screen.
- Adjust the angle so light does not reflect on the screen.
- Keep your forearms perpendicular to your upper arms and level with the back of your hands.
- Keep your elbows at about a right angle.
- Adjust the height of the product so you can keep your knees bent at 90 degrees or more, your heels attached to the floor, and your arms lower than your heart.

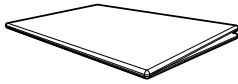
1.1 Checking the Contents

1.1.1 Checking the Components



- Contact the dealer from whom you purchased the product if any item is missing.
- The appearance of the components may differ from the images shown.

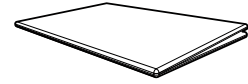
Components



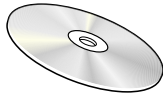
Quick Setup Guide



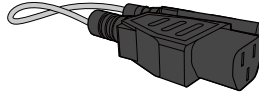
Warranty card
(Not available in some locations)



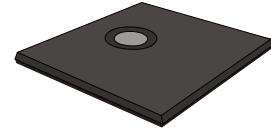
Regulatory guide



User manual



Power cable



Stand base



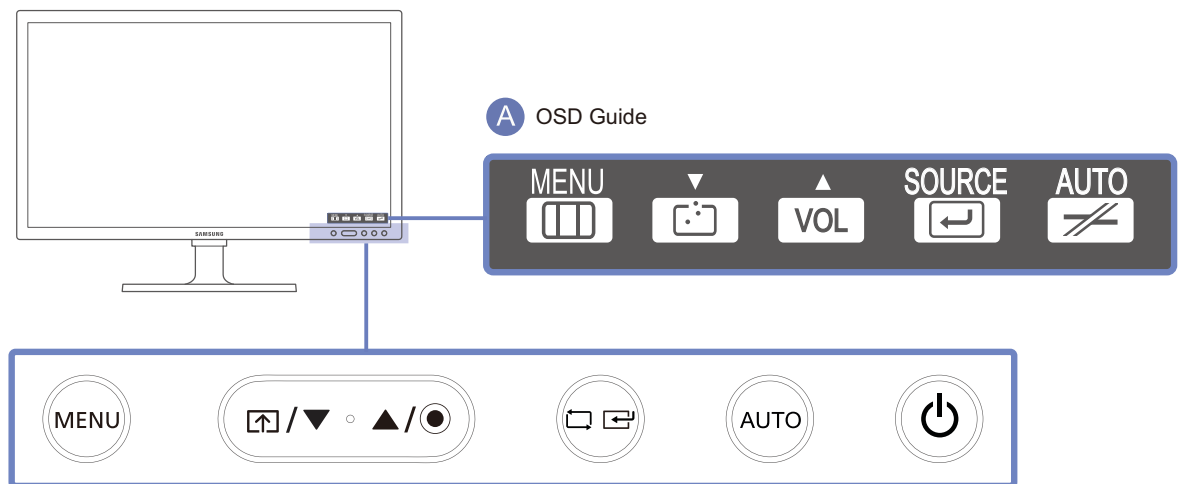
Components may vary depending on the country.

1.2 Parts





1.2.1 Frontal Buttons



The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



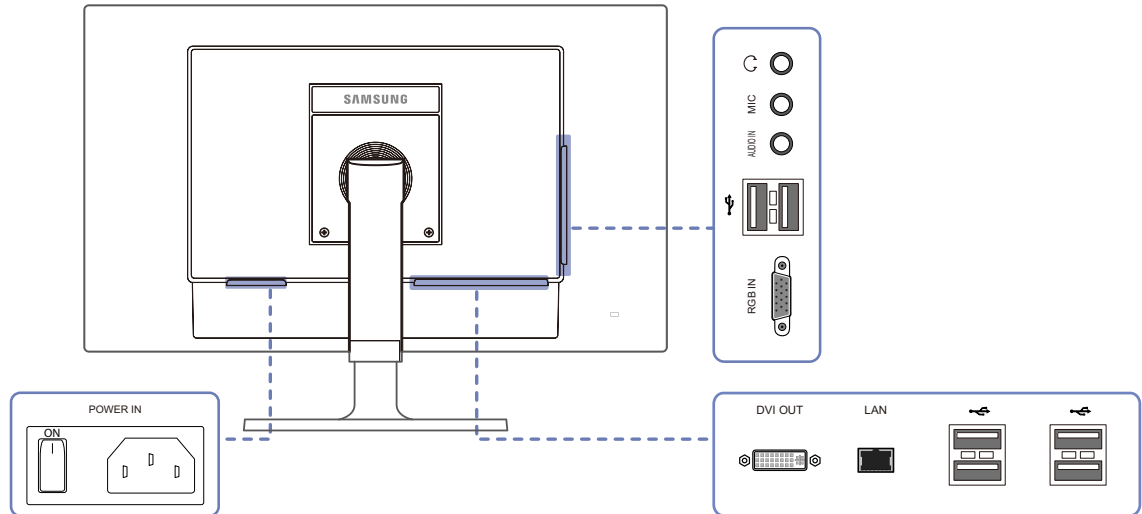
Icons	Description
	<ul style="list-style-type: none"> Open or close the onscreen display (OSD) menu, or return to the parent menu. OSD control lock: Maintain the current settings, or lock the OSD control to prevent unintended changes to settings. <p>Enable: To lock the OSD control, press the MENU button [MENU] for five seconds.</p> <p>Disable: To unlock the locked OSD control, press the MENU button [MENU] for more than five seconds.</p>
	Connect to a server.
	Move to the upper or lower menu or adjust the value for an option on the OSD menu.
	<p>Adjust the Volume.</p> <p>When the OSD guide is displayed, the [●] button activates the function assigned to Volume.</p>








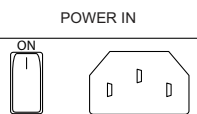
Icons	Description
	<p>Confirm a menu selection.</p> <p>Pressing the [□/□] button when the OSD menu is not displayed will change the input source (Client/Analog). If you power on the product or change the input source by pressing the [□/□] button, a message that shows the changed input source will appear at the top left corner of the screen.</p>
	<p>Analog mode: Automatically adjust the screen settings.</p> <p>Client mode: Disconnect from the server.</p>
	<p>Power on or off the product.</p> <ul style="list-style-type: none"> Go to SETUP&RESET → Power Key and select Power Off or Screen Off. (Refer to "7.5 Power Key" for details on Power Key). To turn the product on or off when Power Off is selected, press the power button. The default setting is Power Off.
 OSD Guide	<p>When a control button on the product is pressed, the OSD guide will be displayed before the onscreen menu opens. (The guide shows the function of the button pressed.)</p> <p>To access the onscreen menu when the guide is displayed, press the corresponding button again.</p> <p>The OSD guide may vary depending on the function or product model. Refer to the actual product.</p>

1.2.2 Reverse Side



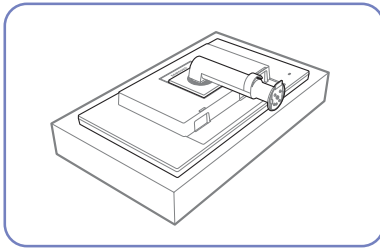
The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



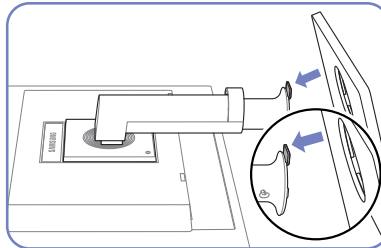
Port	Description
	Connect to an audio output device such as headphones.
MIC 	Connect to a microphone.
AUDIO IN 	Connect to an audio-input source using an audio cable.
	Connect to a USB device.
RGB IN 	Connect to a PC using the D-SUB cable.
DVI OUT 	Connect to a secondary monitor using the DVI cable.
LAN 	Connect to a network using the LAN cable.
POWER IN 	Connect to the power cable.

1.3 Installation

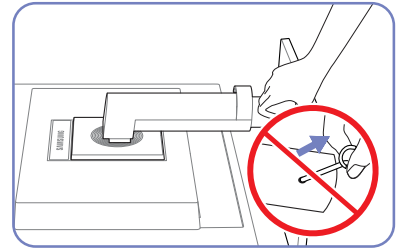
1.3.1 Attaching the cradle



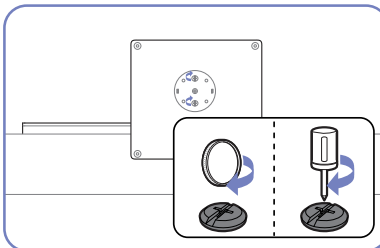
Place a protective cloth or cushion on a flat surface. Next, place the product with the face down on top of the cloth or cushion.



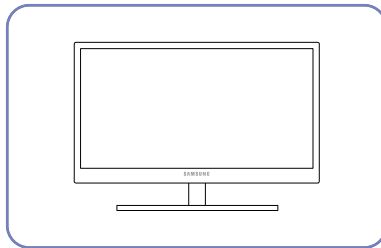
Insert the stand base into the stand in the direction of the arrow.



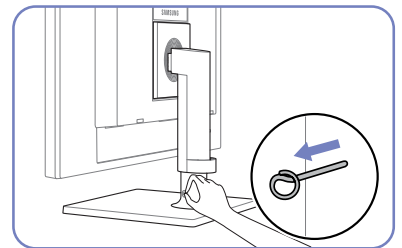
Do not remove the fixing pin until you are finished attaching the stand.



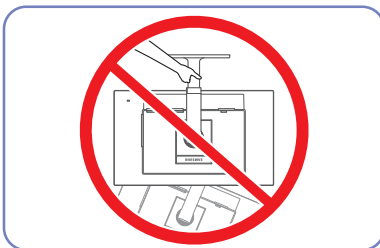
Fasten the screw tightly (using a screwdriver or coin) into the bottom of the base.



After installing the stand, place the product upright.



You can remove the fixing pin and adjust the stand now.



- Caution

Do not hold the product upside down only by the stand.

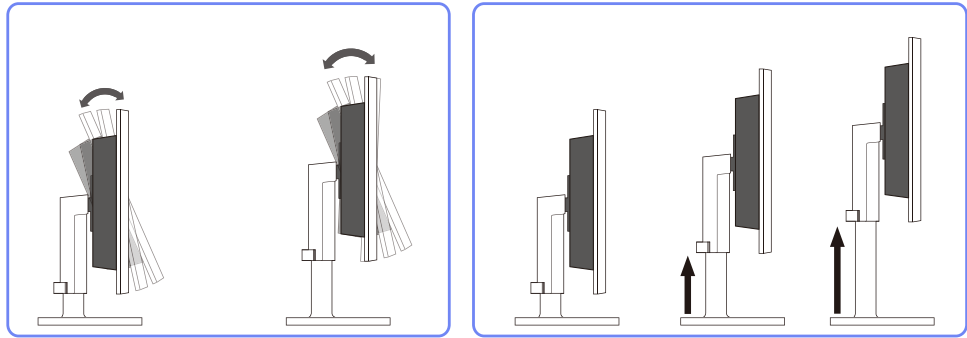


- Disassembly is the reverse order of assembly.
- The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

1.3.2 Adjusting the Product Tilt and Height



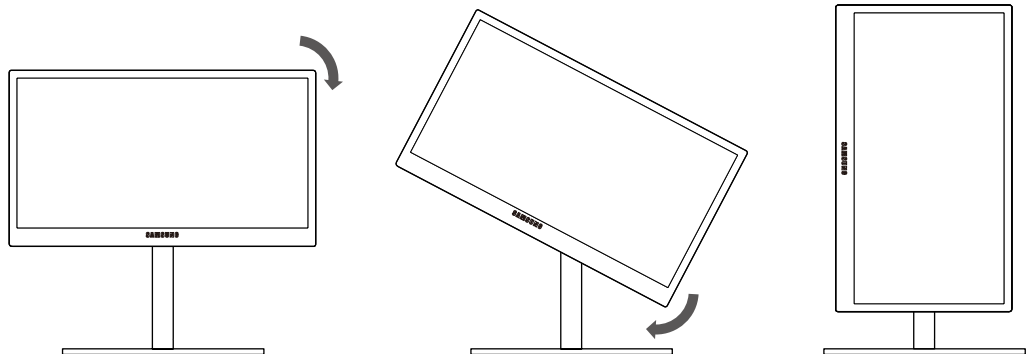
The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



- To adjust the height, remove the fixing pin.
- The monitor tilt and height can be adjusted.
- Hold the top center of the product and adjust the height carefully.

1.3.3 Rotating the Monitor

You can rotate your monitor as shown below.



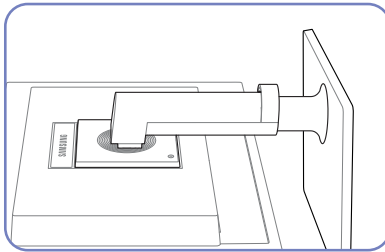
- Be sure to fully extend the stand before rotating the monitor.
- If you rotate the monitor without fully extending the stand, the corner of the monitor may hit the floor and get damaged.
- Do not rotate the monitor counterclockwise. The monitor may get damaged.

1.3.4 Installing a Wall-mount Kit or Desktop Stand

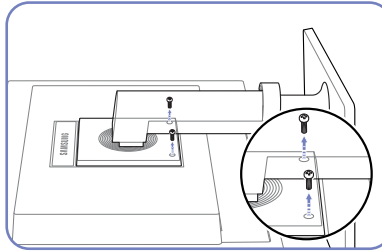
Before Installation



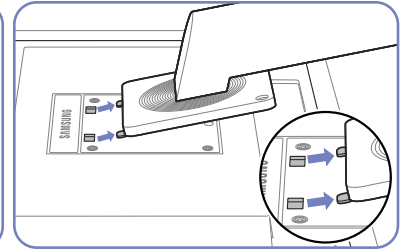
Power the product off and remove the power cable from the power socket.



Place a protective cloth or cushion on a flat surface. Next, place the product with the face down on top of the cloth or cushion.

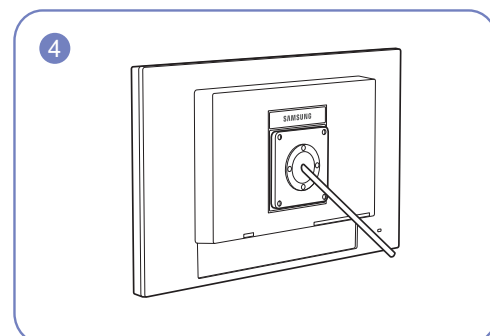
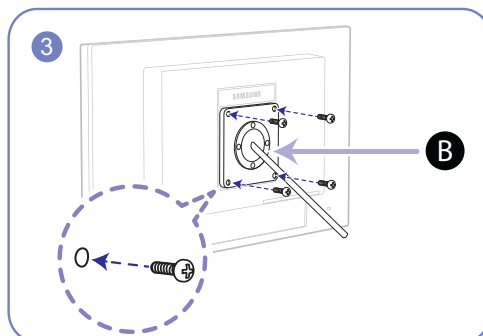
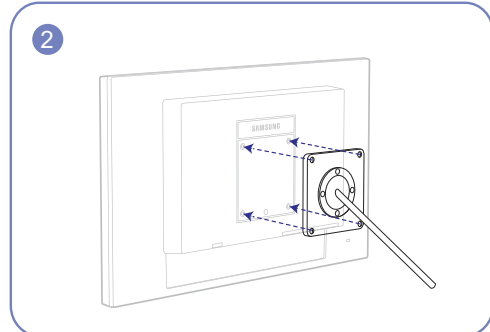
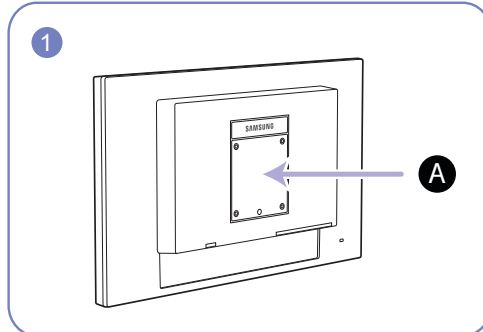


Unfasten the screw from the back of the product.



Lift and detach the stand.

Installing a Wall-mount Kit or Desktop Stand



A Attach the wall-mount kit or desktop stand here

B Bracket (sold separately)

Align the grooves and tightly fasten the screws on the bracket on the product with the corresponding parts on the wall-mount kit or desktop stand you want to attach.

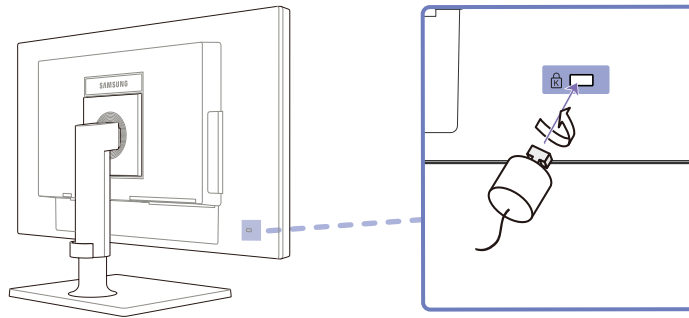


Notes

- Using a screw longer than the standard length can damage the internal components of the product.
- The length of screws required for a wall mount that does not comply with the VESA standards may vary depending on the specifications.
- Do not use screws that do not comply with the VESA standards. Do not attach the wall-mount kit or desktop stand using excessive force. The product may get damaged or fall and cause personal injury. Samsung shall not be held liable for any damage or injury caused by using improper screws or attaching the wall-mount kit or desktop stand using excessive force.
- Samsung shall not be held liable for any product damage or personal injury caused by using a wall-mount kit other than the one specified or from an attempt to install the wall-mount kit on your own.
- To mount the product on a wall, ensure you purchase a wall-mount kit that can be installed 10cm or farther away from the wall.
- Be sure to use a wall-mount kit that complies with the standards.
- To install the monitor using a wall mount, disconnect the stand base from the monitor.

1.3.5 Anti-theft Lock

An anti-theft lock allows you to use the product securely even in public places. The locking device shape and locking method depend on the manufacturer. Refer to the user guide provided with your anti-theft locking device for details. The lock device is sold separately.



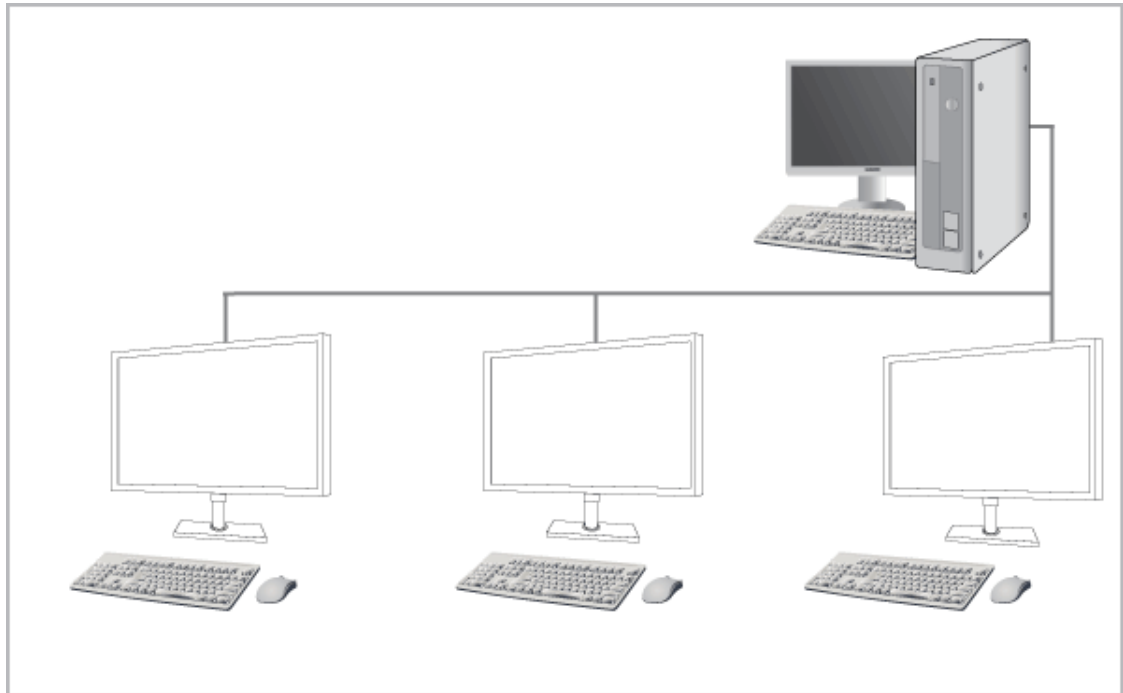
To lock an anti-theft locking device:

- 1 Fix the cable of your anti-theft locking device to a heavy object such as a desk.
- 2 Put one end of the cable through the loop on the other end.
- 3 Insert the locking device into the anti-theft lock slot at the back of the product.
- 4 Lock the locking device.



- An anti-theft locking device can be purchased separately.
- Refer to the user guide provided with your anti-theft locking device for details.
- Anti-theft locking devices can be purchased at electronics retailers or online.

2.1 What is a "PC over IP"?

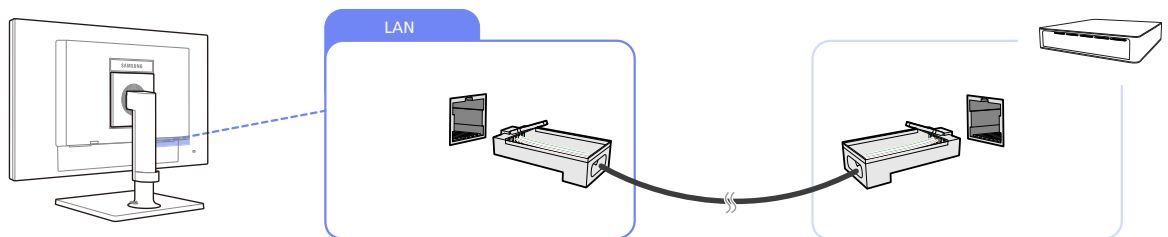


- This monitor can decode and display the screen of the server PC encoded and transmitted through the network (LAN) as well as display the computer screen like a conventional monitor. This monitor shows a far more improved performance than a normal RDP and has been designed to support a resolution of 1920*1080 pixels for high-quality graphic work.
- This monitor enables reinforced security because it is used by connecting it to a server PC and enabling you to access the Internet, create documents and edit figures. In addition, this new-concept monitor enables you to play music, videos and games by connecting an external input source device such as DSC, MP3, external storage device etc. to the USB port.
- This monitor can be utilized for various fields such as video conferencing and co-working by displaying the network display screen on another display device by connecting the device through the DVI OUT port.

2.2 Connection to Use "PCoIP"

- Do not connect the power cable before connecting all other cables.
Ensure you connect a source device first before connecting the power cable.

2.2.1 LAN Connection



- 1 Connect the LAN cable to [LAN] on the back of the product.

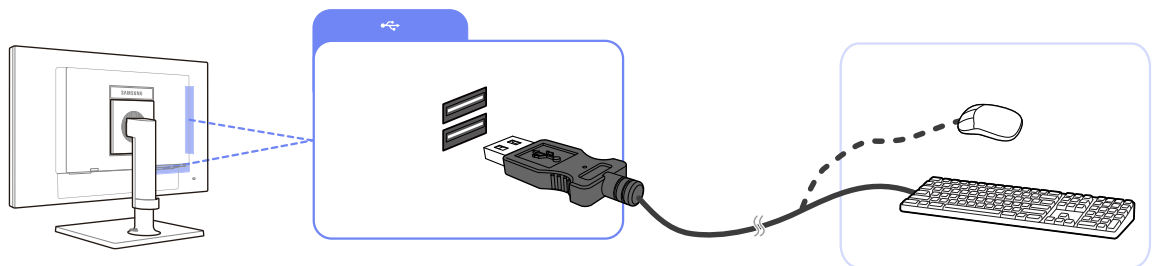


- It is not supported when the network speed is below or equal to 10Mbps.
- Use Cat7(*STP Type) cable for the connection.
*STP: Shielded Twist Pair

2.2.2 Connecting USB Devices

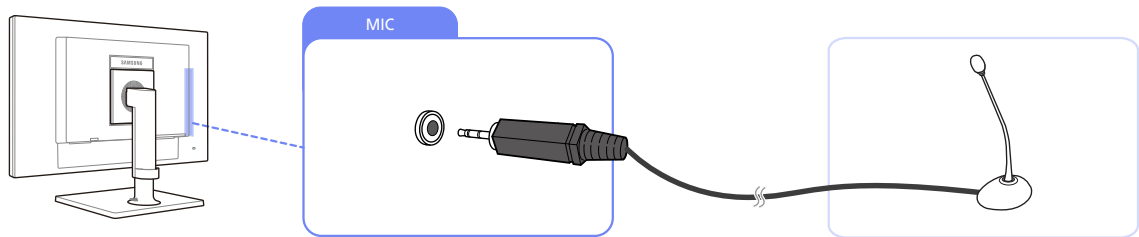


- The [USB] port supports up to USB 2.0.
- VMware View 4.6** or later is required. Data transfer rate may decrease depending on the network conditions.



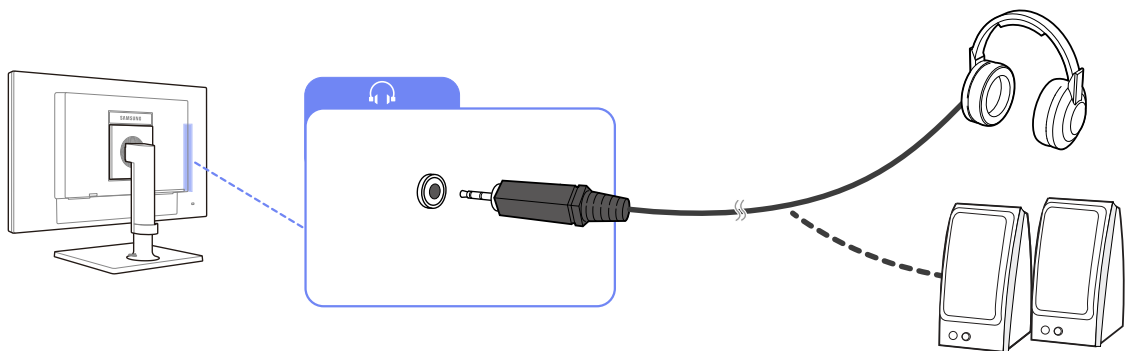
- 1 Connect a USB device, such as a keyboard or mouse, to [USB] at the back of the product.

2.2.3 Connecting a Microphone



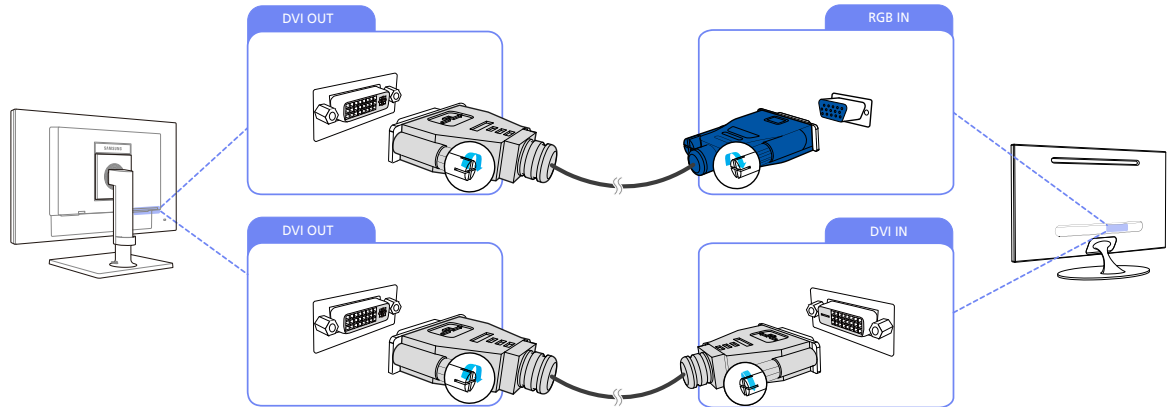
- 1 Connect a microphone to the [MIC] jack at the back of the product.

2.2.4 Connecting to Headphones or Speakers



- 1 Connect an audio output device, such as headphones or speakers, to [🎧] at the back of the product.

2.2.5 Connecting to a Secondary Monitor

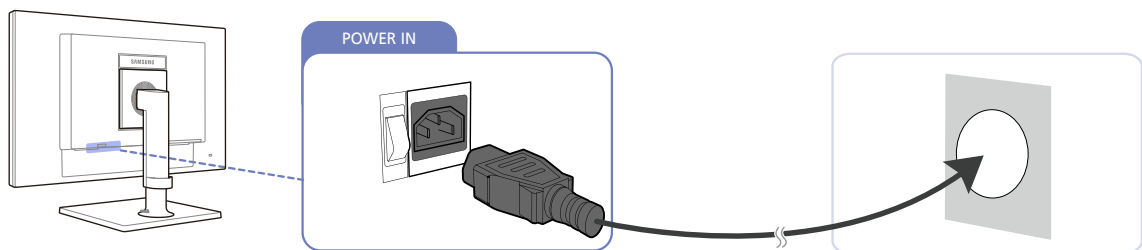


- 1 Connect [DVI OUT] on the product to [DVI IN] or [RGB IN] on another monitor using a DVI or DVI to D-SUB cable.



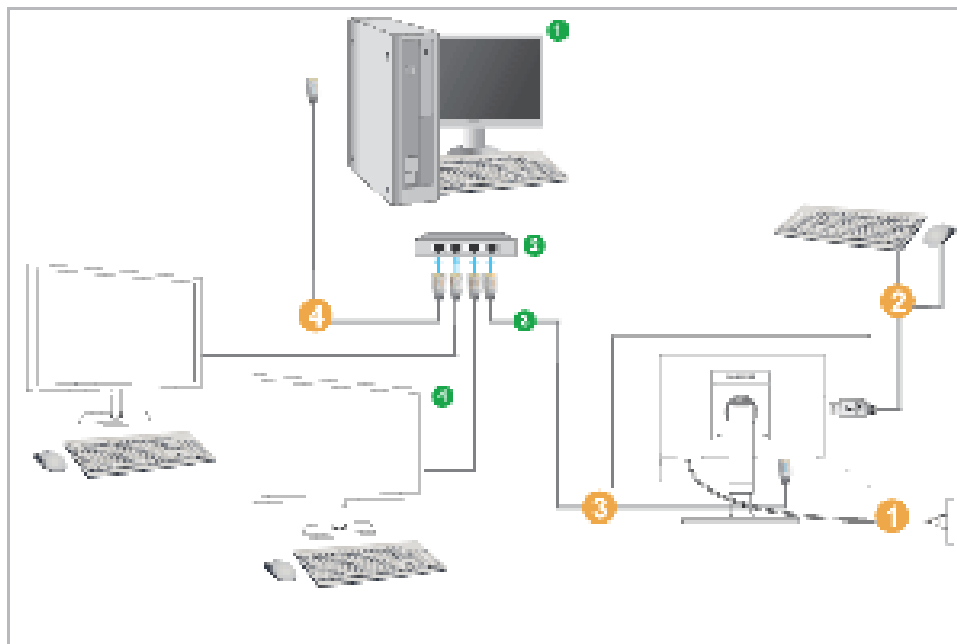
- The [DVI OUT] port can be used only to connect to a dual monitor.
- Connect to the [DVI OUT] port to display the same picture on another monitor such as the projector. (For presentation purposes)
- The maximum resolution is 1920 x 1200 when a dual monitor is connected.

2.2.6 Connecting the Power



- 1 Connect the power cable to the product and the power outlet, then turn on the power switch. (The input voltage is switched automatically).

2.3 Connect to the host PC using a LAN cable



- ① Host PC ② Hub ③ LAN Cable ④ Monitor

- ① Connect the power cord to the power terminal at the back of the monitor.
- ② Connect the mouse and the keyboard to the USB ports.
- ③ Connect the LAN port on the back of the monitor and the hub.
- ④ Connect the hub and the LAN port of the host PC.



The host PC must have an IP address.

After connecting the LAN and setting the IP address, you can view the host PC screen on the monitor.

Use the USB port to connect an external storage device (DSC, MP3, external storage, etc.).

Connecting one Host PC to many client device is possible only when virtualization solution like vmware is installed in Host PC.

2.4 "PCoIP"

2.4.1 On Screen Display (OSD)

The On Screen Display (OSD) local GUI is displayed to the user when the device is powered on and a PCoIP session is not in progress. The OSD lets the user connect to a host device through the **Connect** window.

The **Connect** window allows access to the **Options** page which provides some of the functions provided by the Administrative Web Interface.

To access the **Options** page, click the **Options** menu on the **Connect** window.

2.4.2 Connect Screen

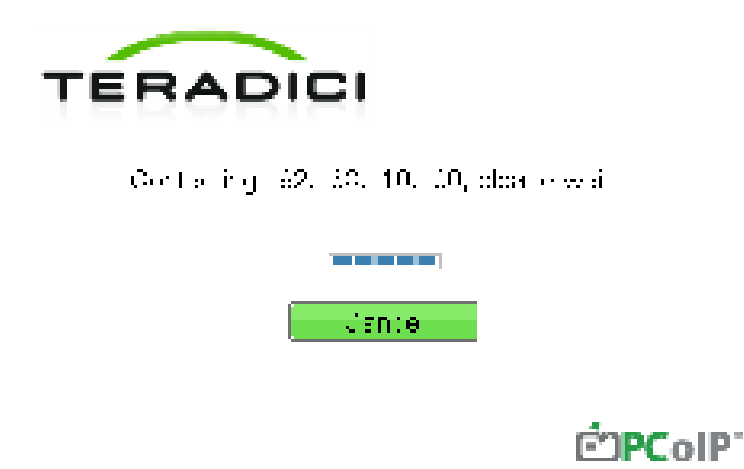
The **Connect** window will appear during startup except when the client is configured for a managed startup or auto-reconnect.

You can change the logo that appears above the **Connect** button by uploading a replacement image through the Administrative Web Interface **Upload** menu.

Connect Button

Click the **Connect** button to start a PCoIP session. When the PCoIP connection is pending, the OSD local GUI displays a "Connection Pending" message. When the connection is established, the OSD local GUI will disappear and the session image will appear.

Figure 2-1: OSD Connect Screen (Connecting)



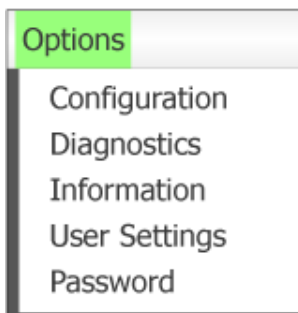
2.4.3 OSD Options Menu

Selecting the **Options** menu will display a list of selections. The OSD **Options** menu contains:

- **Configuration**
This option lets you configure various settings for the device such as network settings, session type, language, and other settings.
- **Diagnostics**
This option helps you troubleshoot the device.
- **Information**
This option lets you view certain details about the device.
- **User Settings**
This option lets the user define certificate checking mode, **Mouse**, **Keyboard**, **Display Topology**, as well as the PCoIP protocol image quality.
- **Password**
This option lets you update the administrative password for the device.
For firmware versions 4.6.0 and later, the default password is set to blank.
Clicking the Unlock button then pressing the Enter key will unlock the product.

Selecting an option will display a settings window.

Figure 2-2: OSD **Options** Menu



2.4.4 Configuration Window

The **Configuration** option on the Administrative Web Interface and OSD lets you configure various settings for the device.

The tabs in the **Configuration** window are:

- **Network**
- **Label**
- **Language**
- **Access**
- **IPv6**
- **Discovery**
- **Power**
- **Audio**
- **SCEP**
- **Session**
- **Display**
- **Reset**

Each tab has the following buttons: **OK**, **Cancel**, and **Apply**.

These buttons allow the administrator to accept or cancel the changes made.



- The **OSD** configuration options are a subset of the options available in the Administrative Web Interface.
- Visit the **Teradici Support Site**: <http://techsupport.teradici.com> for further details on the **SCEP**, **Label**, **Access** and tabs.
- For optimal performance, install the Teradici Audio Driver on your VM and select it as the default playback device.
- For further details, visit the **Teradici Support Site** at <http://techsupport.teradici.com> and log in. Go to **Download Center** → **Teradici Virtual Audio Driver**.

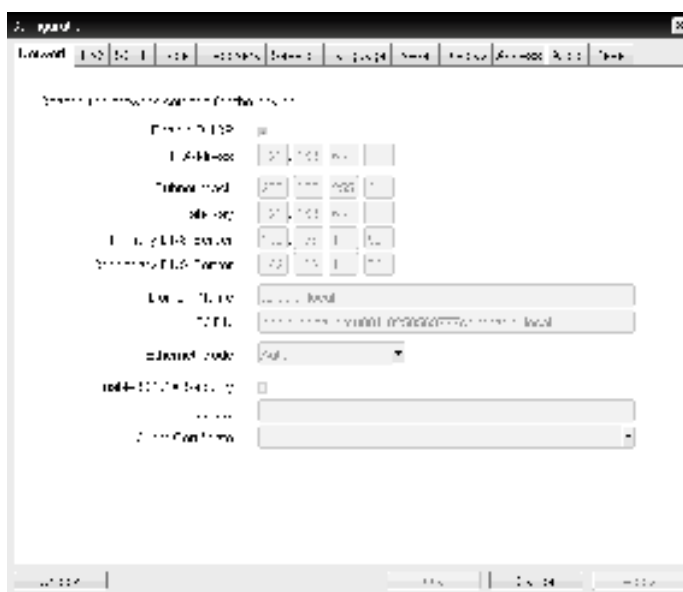
Network Tab

You can configure the host and client network settings from the **Initial Setup** page or **Network** page. After you update the parameters on this page, click **Apply** to save your changes.



The Network parameters can also be configured using the Administrative Web Interface.

Figure 2-3: **Network** Configuration



- **Enable DHCP**

When **Enable DHCP** is enabled, the device will contact a DHCP server to be assigned an IP address, subnet mask, gateway IP address and DNS servers. When disabled, the device requires these parameters to be set manually.

- **IP Address**

The IP address of the device. If DHCP is disabled, you must set this field to a valid IP address. If DHCP is enabled, you cannot edit this field.

- **Subnet Mask**

The subnet mask of the device. If DHCP is disabled, you must set this field to a valid subnet mask. If DHCP is enabled, you cannot edit this field.



It is possible to configure an illegal IP address/subnet mask combination (e.g., invalid mask) making the device unreachable. Ensure you set the subnet mask properly.

- **Gateway**

The gateway IP address of the device. If DHCP is disabled, this field is required. If DHCP is enabled, you cannot edit this field.

- **Primary DNS Server**

The primary DNS IP address of the device. This field is optional. If the DNS server IP address is configured using the Connection Manager, the address may be set as an FQDN instead of an IP address.

- **Secondary DNS Server**

The secondary DNS IP address of the device. This field is optional.

If the DNS server IP address is configured using the Connection Manager, the address may be set as an FQDN instead of an IP address.

- **Domain Name**

The domain name used (e.g., 'domain.local'). This field is optional.

This field specifies the host or domain of the client.

- **FQDN**

The Fully Qualified Domain Name for the host or client. The default value is pcoip-host-<MAC> or pcoipportal-<MAC> where <MAC> is the MAC address of the host or client.

The domain name is appended if used (e.g., pcoip-host-<MAC>.domain.local).

This field is read-only on this page.

- **Ethernet Mode**

Lets you configure the Ethernet mode of the host or client as:

- **Auto**
- **100 Mbps Full-Duplex**
- **10 Mbps Full-Duplex**

When you choose **10 Mbps Full-Duplex** or **100 Mbps Full-Duplex** and then click **Apply**, a warning message will appear.

"Warning: When Auto-Negotiation is disabled on the PCoIP device, it must also be disabled on the switch. Additionally, the PCoIP device and switch must be configured to use the same speed and duplex parameters. Different parameters may result in a loss of network connectivity.

Are you sure you want to continue?" Click **OK** to change the parameter.



You should always set the **Ethernet Mode** to **Auto** and only use **10 Mbps Full-Duplex** or **100 Mbps Full-duplex** when the other network equipment (i.e., switch) is also configured to operate at **10 Mbps Full-Duplex** or **100 Mbps Full-duplex**. An improperly configured Ethernet Mode may result in the network operating at half-duplex which is not supported by the PCoIP protocol. The session will be severely degraded and eventually dropped.

- **Enable 802.1X Security:** If the connected network supports 802.1x, **Enable 802.1X Security** should be enabled and security-authenticated devices can only be used.
If **Enable 802.1X Security** is enabled, configure the **Authentication**, **Identity** and **Client Certificate** settings.
TLS (Transport Layer Security) is only supported as an authentication protocol at present.
- **Identity:** Enter the product ID that will be used on the network.
- **Client Certificate:** Select a certificate uploaded from the **Certificate Upload** page.

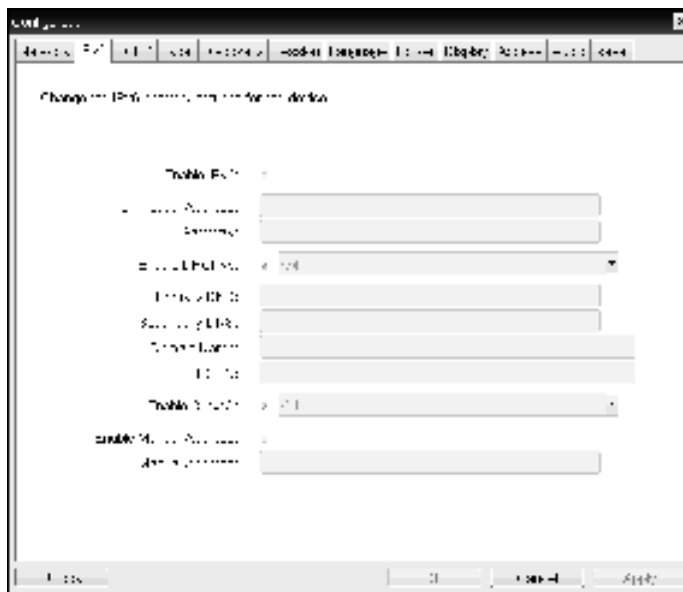
IPv6 Tab

The **IPv6** page lets you enable IPv6 for PCoIP devices connected to your IPv6 network.



When you make a change to one of the settings on this page, you must reboot your device for the change to take effect.

Figure 2-4: **IPv6** Configuration



- **Enable IPv6**
Enable this field to enable IPv6 for your PCoIP devices.
- **Link Local Address**
This field is automatically populated.
- **Gateway**
Enter the gateway address.
- **Enable DHCPv6**
Enable this field to set up Dynamic Host Configuration Protocol version 6 (DHCPv6) for your device.
- **Primary DNS**
The primary DNS IP address of the device. If DHCPv6 is enabled, this field is automatically populated by the DHCPv6 server.
- **Secondary DNS**
The secondary DNS IP address of the device. If DHCPv6 is enabled, this field is automatically populated by the DHCPv6 server.
- **Domain Name**
The domain name used (e.g., 'domain.local') for the host or client. If DHCPv6 is enabled, this field is automatically populated by the DHCPv6 server.

- **FQDN**

The fully qualified domain name for the host or client. If DHCPv6 is enabled, this field is automatically populated by the DHCPv6 server.

- **Enable SLAAC**

Enable this field to set up stateless address auto-configuration (SLAAC) for your devices.

- **Enable Manual Address**

Enable this field to set up a manual (static) address for the device.

- **Manual Address**

Enter the IP address for the device.

Label Tab

The **Label** page is available from the host or client. The **Label** page lets you add information for the device.



The Portal Label parameters can also be configured using the Administrative Web Interface.

Figure 2-5: **Label** Configuration

- PCoIP Device Name**
 If the **PCoIP Device Name** allows the administrator to give the Host or Portal a logical name. The default value is pcoip-host-MAC or pcoip-portal-MAC where MAC is the MAC address of the Host or Portal.
- PCoIP Device Description**
 A description and additional information such as the location of the endpoint for the device. The firmware does not use this field. It is provided for administrator use only.
- Generic Tag**
 Generic tag information about the device. The firmware does not use this field. It is provided for administrator use only.

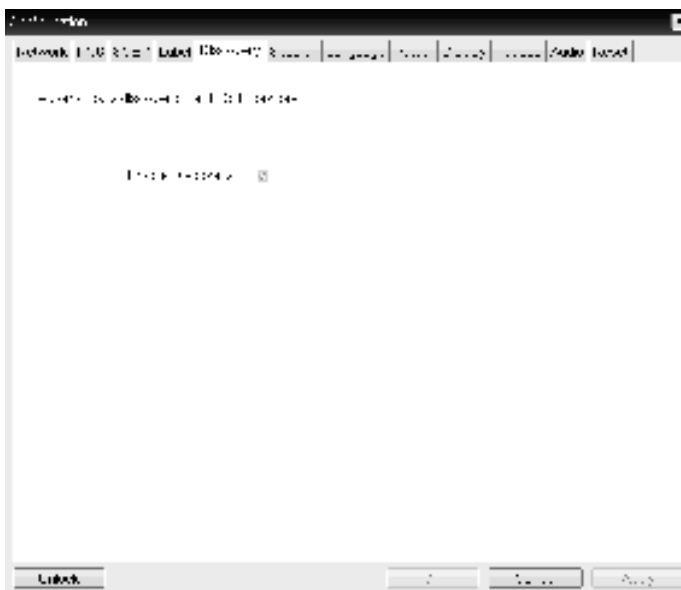
Discovery Tab

Use the settings on the **Discovery** page to erase the discovery of hosts and clients in your PCoIP system and dramatically reduce the configuration and maintenance effort for complex systems. This discovery mechanism is independent of DNS SRV discovery.



For SLP discovery to work, routers must be configured to forward multicast traffic between subnets. DNS-SRV Discovery is the recommended discovery mechanism because most deployments do not allow this.

Figure 2-6: **Discovery** Configuration



- **Enable Discovery**

If the **Enable Discovery** option is enabled, the device will dynamically discover peer devices using SLP Discovery without requiring prior information on their locations in the network.

This can dramatically reduce configuration and maintenance effort for complex systems.



SLP discovery requires routers configured to allow multicast. DNS-SRV Discovery is the recommended method.

Session Tab

The **Session** page lets you configure how the host or client device connects to or accepts connections from peer devices.



The Session parameters can also be configured using the Administrative Web Interface.

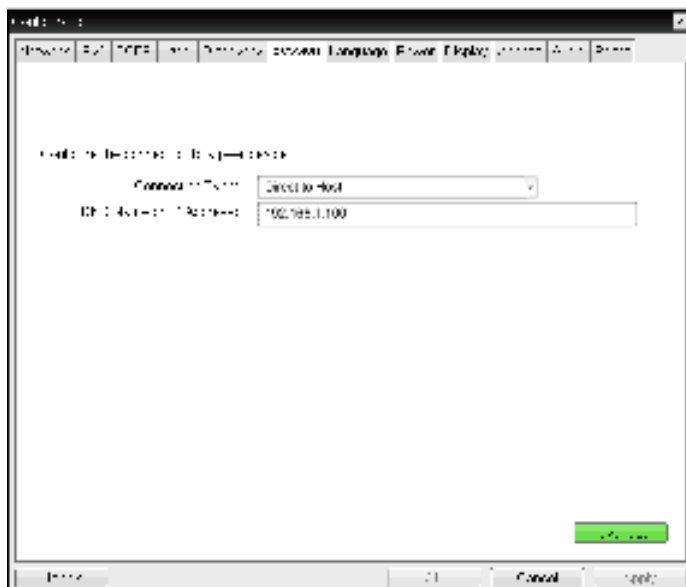
Figure 2-7: **Session** Configuration



- **Connection Type**

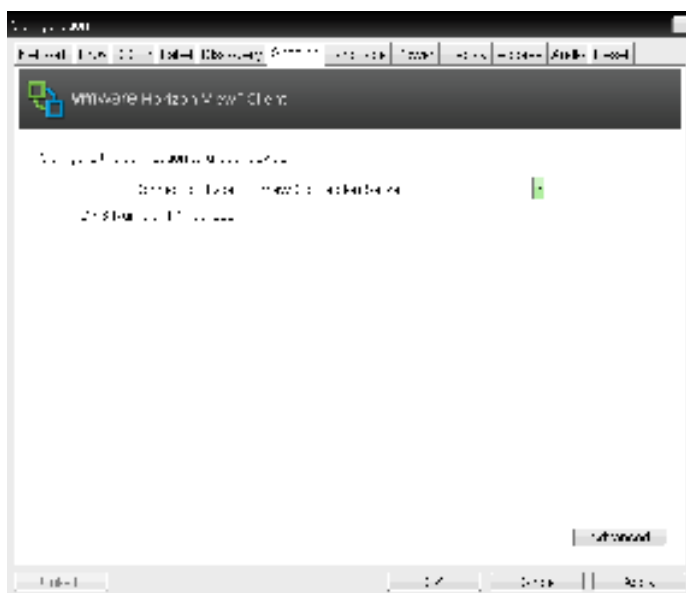
Select **Direct to Host** from the Session page to display the following setting items:

- **Direct to Host:** Connect to a PC or Work Station that has a **Host Card** installed.
- **DNS Name or IP Address:** Enter the **DNS Name or IP Address** of the server to connect to.

Figure 2-8: **Connection Type** Configuration

When you select a **View Connection Server** type from the Session page, specific configuration options will appear.

- ▣ **View Connection Server:** Connect to the **VMware VDI (Virtual Desktop Infrastructure)** server. VMware VDI is a virtual desktop solution.
- ▣ **DNS Name or IP Address:** Enter the **VMware View Connection Server's DNS Name or IP Address**.

Figure 2-9: **Connection Type** Configuration

- **Advanced**

Visit the **Teradici Support Site**: <http://techsupport.teradici.com> for further details.

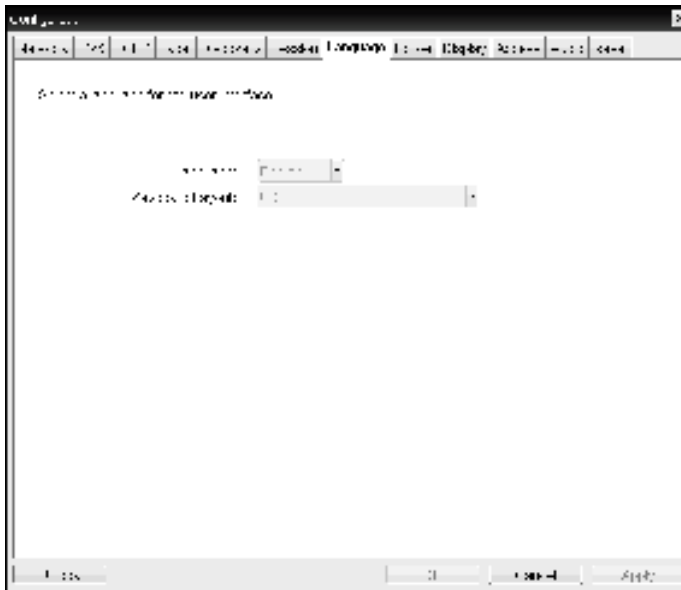
Language Tab

The **Language** page lets you change the user interface language.



- This setting affects the local OSD GUI. It is only available on the client.
- The Language parameters can also be configured using the Administrative Web Interface.

Figure 2-10: **Language** Configuration



- **Language**

Configure the OSD language. This setting determines the language for OSD only. It does not affect the language setting for the actual user session.



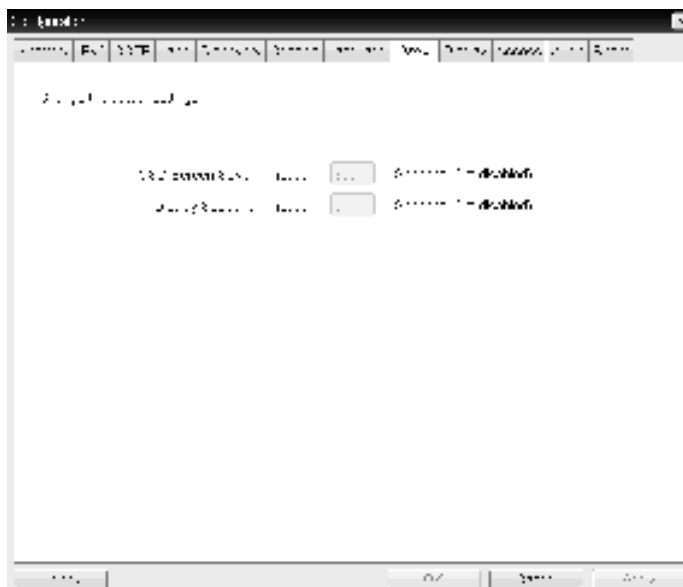
Supported languages: English, French, German, Greek, Spanish, Italian, Portuguese, Korean, Japanese, Traditional Chinese, Simplified Chinese

- **Keyboard Layout**

Change the layout of the keyboard. When the user starts a session, this setting is controlled through the virtual machine. If the Windows Group Policy Object (GPO) is set to allow the keyboard layout setting, the setting is applied during the session of the user. If the Windows GPO is not set to allow the setting, the setting is not applied.

Power Tab

Figure 2-11: **Power** Configuration



- **OSD Screen-Saver Timeout** (when not connected to a session): Connected monitors will go into standby mode if left idle for a specified period of time (in seconds).
Enter "0" if you do not want to use the standby mode function.
- **Display Suspend Timeout** (when connected to a session): Connected monitors will go into standby mode if left idle for a specified period of time (in seconds).
Enter "0" if you do not want to use the standby mode function.

Display Tab

The **Display** page lets you enable the **Extended Display Identification Data(EDID)** override mode.



This function is only available through the OSD.

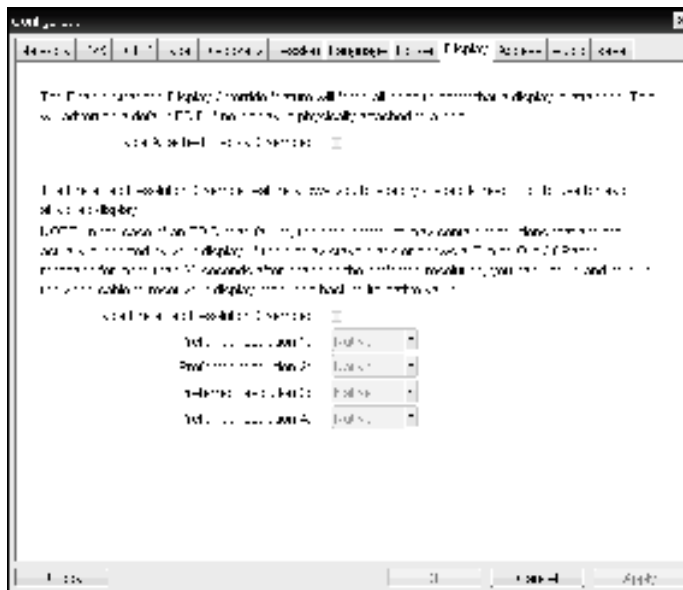
Under normal operation, the **GPU** in the host computer queries a monitor attached to the zero client to determine the monitor's capabilities. In some situations, a monitor may be connected to a client in a way that prevents the client from reading the **EDID** information, such as when connecting through certain **KVM** devices.

The options in this page configure the client to advertise default **EDID** information to the **GPU**.



Enabling display override forces the default monitor display information to be used which may not be compatible with the connected monitor resulting in a blank monitor. Only enable display override when there is no valid EDID information and monitor display characteristics are known.

Figure 2-12: **Display** Configuration



- **Enable Attached Display Override**

This option is intended for legacy systems. It configures the client to send default **EDID** information to the host when a monitor cannot be detected or is not attached to the client. In versions of Windows prior to Windows 7, once the host had no **EDID** information, it would assume no monitors were attached and would never recheck. This option ensures that the host always has **EDID** information when the client is in session.

The following default resolutions are advertised when this option is enabled:

- 800 x 600 @ 60 Hz
- 1024 x 768 @ 60 Hz (native resolution advertised)
- 1280 x 800 @ 60 Hz
- 1280 x 960 @ 60 Hz

- 1280 x 1024 @ 60 Hz
- 1600 x 1200 @ 60 Hz
- 1680 x 1050 @ 60 Hz
- 1920 x 1080 @ 60 Hz
- 1920 x 1200 @ 60 Hz



If **Enable Attached Display Override** is activated, all displays connected to the client are set to the default resolution of 1024 x 768.

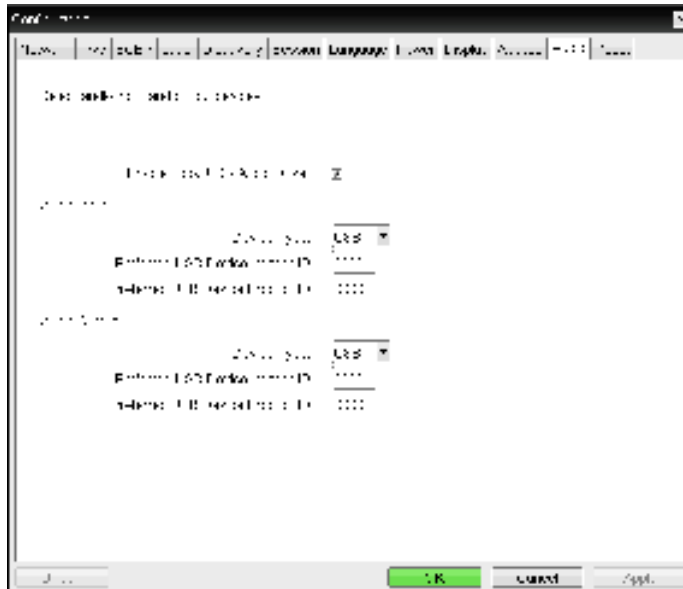
- **Enable Display Cloning**

This feature allows you to display the same screen on two monitors simultaneously while in dual monitor mode.

Audio Tab

Configure the audio settings (e.g., mic and headphones).

Figure 2-13: **Audio** Configuration



- **Enable Local USB Audio Driver**
Sound will play from the internal speakers when playing music found on the server.
 - **Sound output and connected devices**

Connected devices	Enable Local USB Audio Driver	Device Type	Sound output
USB headphones + earphones	Select (<input checked="" type="checkbox"/>)	USB	USB headphones
USB headphones + earphones	Select (<input checked="" type="checkbox"/>)	Analog	earphone
Earphones only	Deselect (<input type="checkbox"/>)	-	earphone
-	Deselect (<input type="checkbox"/>)	-	Internal speakers

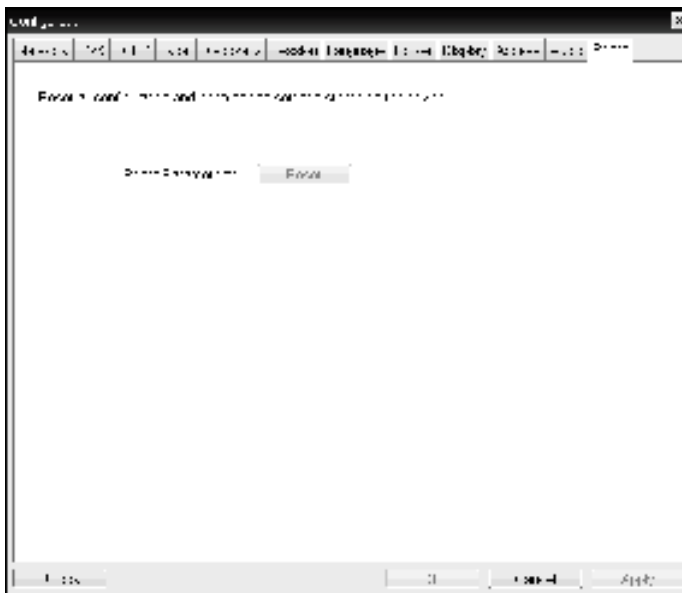
Reset Tab

The **Reset** page lets you reset configuration and permissions to factory default values stored in onboard flash memory.



- Reset can also be initiated using the Administrative Web Interface.
- Resetting parameters to factory default values does not revert the firmware or clear the custom OSD logo.

Figure 2-14: **Reset** Configuration



- **Reset Parameters**

When you click this button, a message will appear prompting you for confirmation. This prevents an accidental reset.

2.4.5 Diagnostics Window

The **Diagnostic** menu contains links to pages with run-time information and functions that may be useful for troubleshooting.



The **Diagnostic** options in the OSD are a subset of those available through the Administrative Web Interface.

- **Event Log**
- **Session Statistics**
- **PCoIP Processor**
- **Ping**

Each tab has a **Close** button to close the window.

Event Log Tab

The **Event Log** page lets you view and clear event log messages from the host or client.

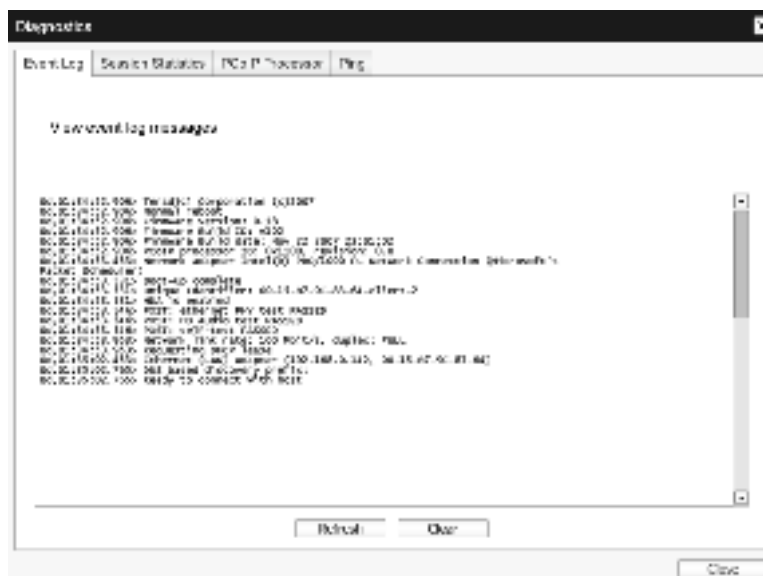
The Administrative Web Interface allows you to change the log filter setting on the device which controls the level of detail of the messages in the log. When you set the filter to "terse", the device will log short and concise messages.

The **Event Log** page allows you to enable and define syslog to collect and report events that meet the IETF standard for logging program messages.



The **Event Log** can also be initiated using the administrative web interface.

Figure 2-15: **Event Log** Configuration



- **View event log messages**

The **View event log messages** field displays log messages with time stamp information. There are two buttons available.

- **Refresh**

Selecting the **Refresh** button refreshes the event log messages displayed.

- Clear

Click to delete all event log messages stored on the device.

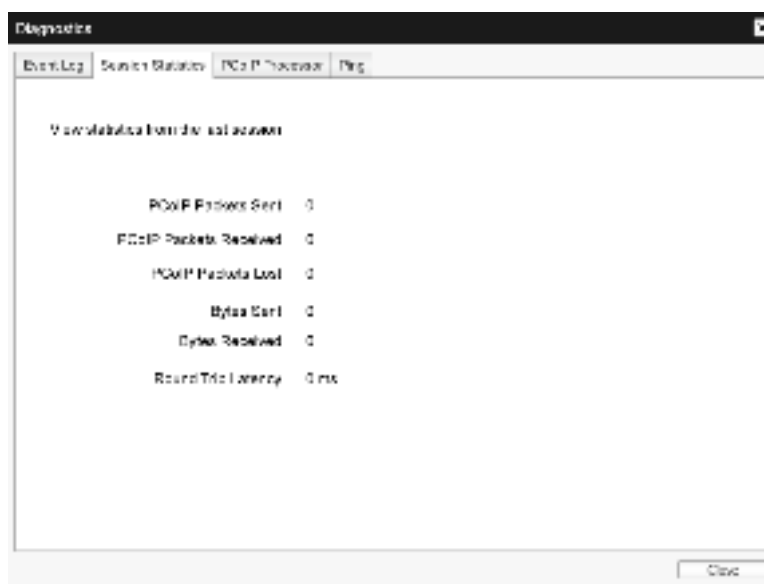
Session Statistics Tab

The **Session Statistics** page lets you view current statistics when a session is active. If a session is not active, you can view the statistics from the last session.



Session Statistics can also be viewed using the administrative web interface.

Figure 2-16: **Session Statistics** Configuration



- PCoIP Packets Statistics
 - **PCoIP Packets Sent**

The total number of PCoIP packets sent in the current/last session.
 - **PCoIP Packets Received**

The total number of PCoIP packets received in the current/last session.
 - **PCoIP Packets Lost**

The total number of PCoIP packets lost in the current/last session.
- Bytes Statistics
 - **Bytes Sent**

The total number of bytes sent in the current/last session.
 - **Bytes Received**

The total number of bytes received in the current/last session.
- **Round Trip Latency**

The minimum, average, and maximum roundtrip PCoIP system (e.g., host to client and then back to host) and network latency in milliseconds (+/- 1 ms).

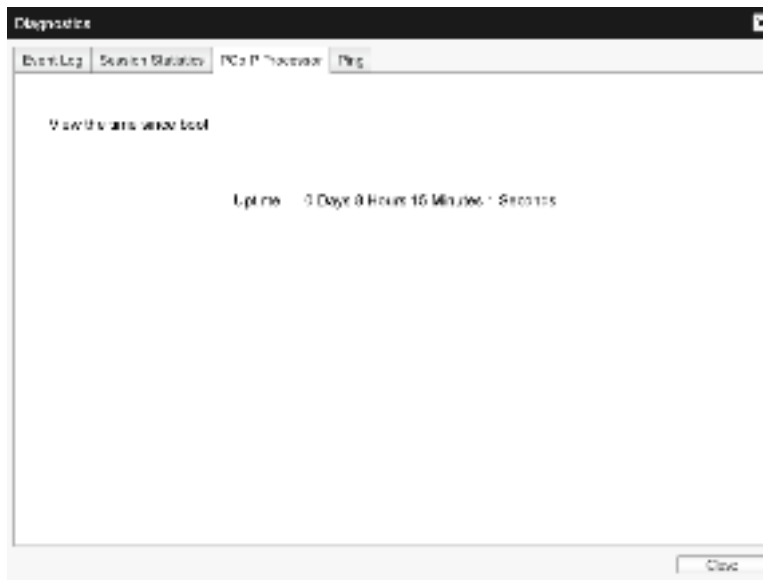
PCoIP Processor Tab

The **PCoIP Processor** page lets you reset the host or client and view the uptime of the client PCoIP processor since the last boot.



The **PCoIP Processor** Uptime can also be viewed in the administrative web interface.

Figure 2-17: **PCoIP Processor** Configuration

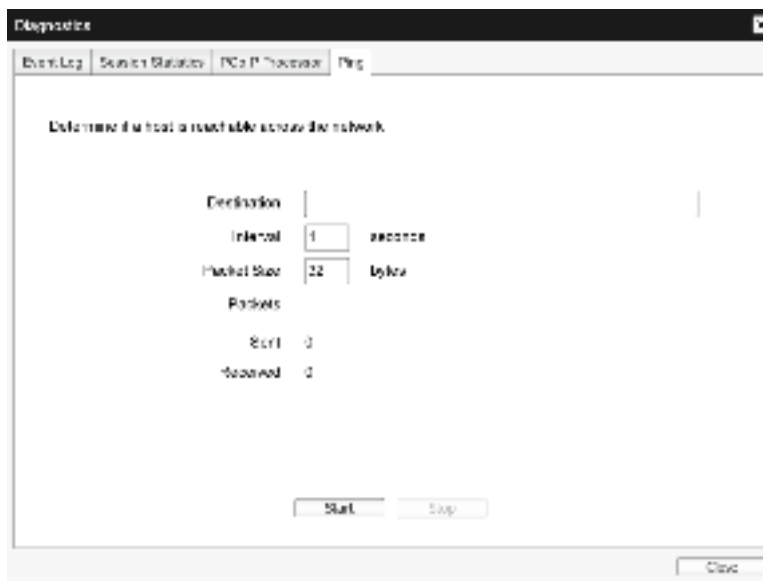


Ping Tab

The **Ping** page allows you to ping a device to see if it is reachable across the IP network.

This may help you determine if a host is reachable. As a result of firmware releases 3.2.0 and later forcing the "do not fragment" flag in the ping command, you can use this feature to determine the maximum MTU size.

Figure 2-18: **Ping** Configuration



- Ping Settings
 - **Destination**
IP Address or FQDN to ping
 - **Interval**
Interval between ping packets
 - **Packet Size**
Size of the ping packet
- **Packets**
 - **Sent**
Number of ping packets transmitted
 - **Received**
Number of ping packets received

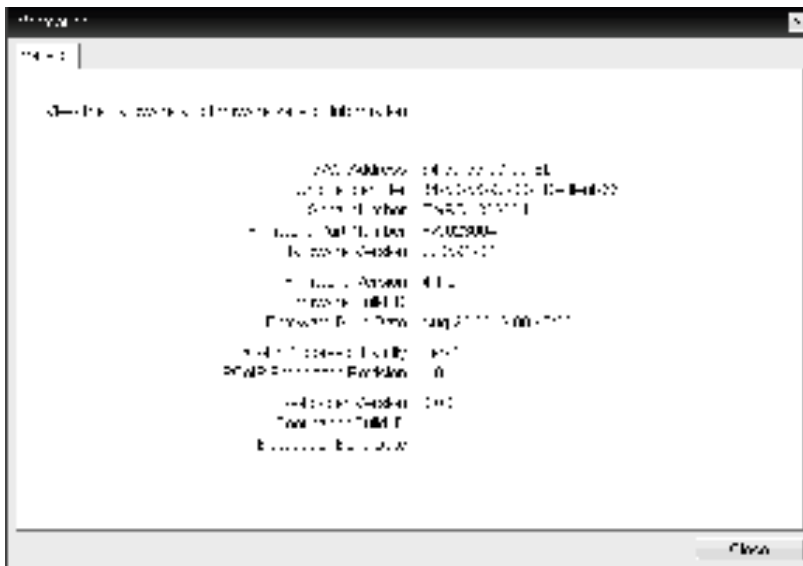
2.4.6 Information Window

The **Information** page lets you see details about the device. The Administrative Web Interface shows version, VPD, and attached device information. The OSD lets you view the device version information.



The **Version** page lets you view the hardware and firmware version details for a device.

Figure 2-19: **Version** Configuration



- VPD Information

Vital Product Data (VPD) is information set by the factory to uniquely identify each Portal or Host.

 - **MAC Address**
Host/client unique MAC address
 - **Unique Identifier**
Host/client unique identifier
 - **Serial Number**
Host/client unique serial number
 - **Firmware Part Number**
Part number of the current firmware
 - **Hardware Version**
Host/client hardware version number
- Firmware Information

The Firmware Information reflects the current PCoIP firmware details.

 - **Firmware Version**
Version of the current firmware
 - **Firmware Build ID**
Revision code of the current firmware

- **Firmware Build Date**

Build date for the current firmware

- **PCoIP Processor Family**

The Tera family name is displayed. Tera is a host processor from **Teradici**.

This product uses a TERA2321 from the newer generation Tera2 host processor family and is displayed as Tera2.

- **PCoIP Processor Revision**

The silicon revision of the PCoIP processor. Revision B of the silicon is denoted by a 1.0.

- **Bootloader Information**

The Bootloader information reflects the current PCoIP bootloader details.

- **Bootloader Version**

Version of the current bootloader

- **Bootloader Build ID**

Revision code of the current bootloader

- **Bootloader Build Date**

Build date of the current bootloader

2.4.7 User Settings Window

The **User Settings** page allows you to access tabs to define the Certificate Checking Mode, the mouse and keyboard settings, PCoIP protocol image quality, and display topology.

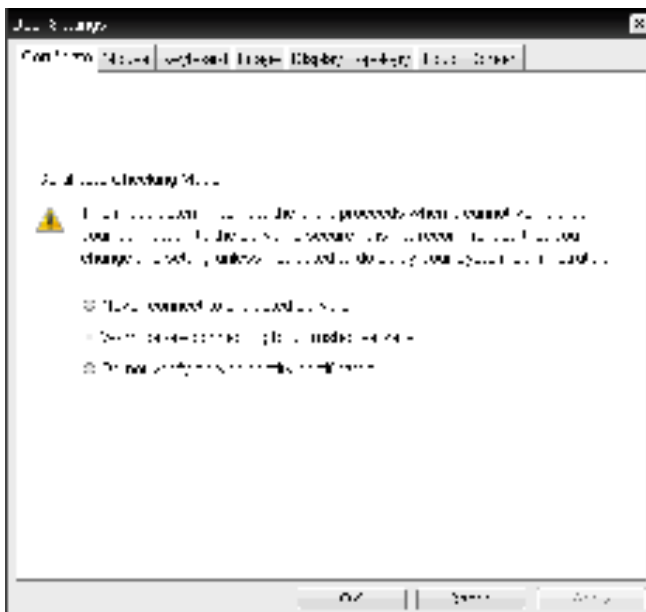
The tabs in the **User Settings** menu are:

- **Certificate**
- **Mouse**
- **Keyboard**
- **Image**
- **Display Topology**
- **Touch Screen**

Certificate Tab

In this tab, select the next steps to take when the security for connection to a server cannot be verified. It is recommended to change this setting only with approval from the system manager.

Figure 2-20: **Certificate** Configuration



- **Never connect to untrusted servers:** Select this option if you do not want to connect to a server that has no certificate or has an untrusted certificate.
- **Warn before connecting to untrusted servers:** Select this option if you want to display a warning prompt before connecting to an untrusted server.
- **Do not verify server identity certificates:** Select this option if you want to permit connections with a server without verifying the server ID certificate.

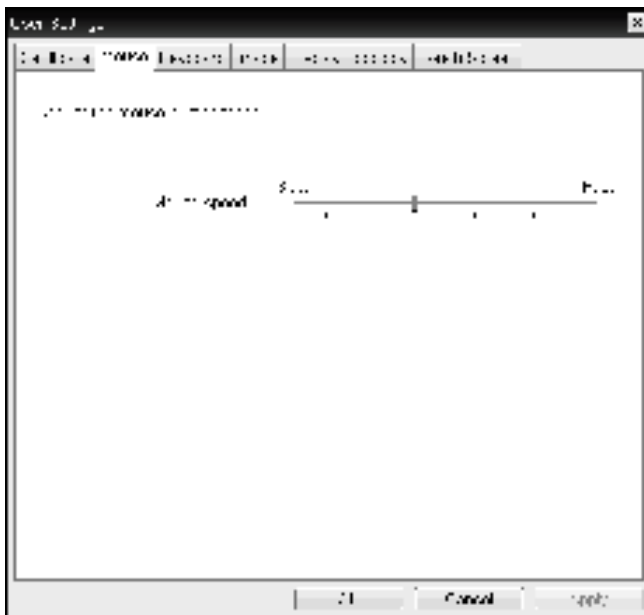
Mouse Tab

The **Mouse** page lets you change the mouse cursor speed settings for the OSD sessions.



The OSD mouse cursor speed setting does not affect the mouse cursor settings when a PCoIP session is active unless the **Local Keyboard Host Driver** function is being used. Refer to the "PCoIP Host Software for Windows User Guide: TER0810001" for more details. This function is only available through the OSD. It is not available in the Administrative Web Interface.

Figure 2-21: **Mouse** Configuration



- **Mouse Speed**

Configure the speed of the mouse cursor.



You can also configure the mouse speed through the PCoIP host software. Refer to the "PCoIP Host Software for Windows User Guide: TER0810001" for more details.

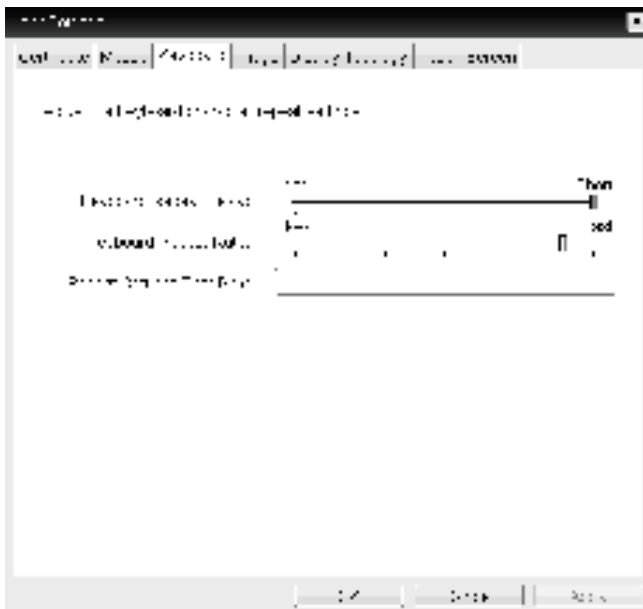
Keyboard Tab

The **Keyboard** page lets you change the keyboard repeat settings for the OSD session.



- The keyboard settings do not affect the keyboard settings when a PCoIP session is active unless the **Local Keyboard Host Driver** function is used. Refer to the "PCoIP Host Software for Windows User Guide: TER0810001" for more details. This setting is only available through the OSD. It does not appear on the Administration Web Interface.
- You can also configure the keyboard repeat settings through the PCoIP host software. Refer to the "PCoIP Host Software for Windows User Guide: TER0810001" for more details.

Figure 2-22: **Keyboard** Configuration

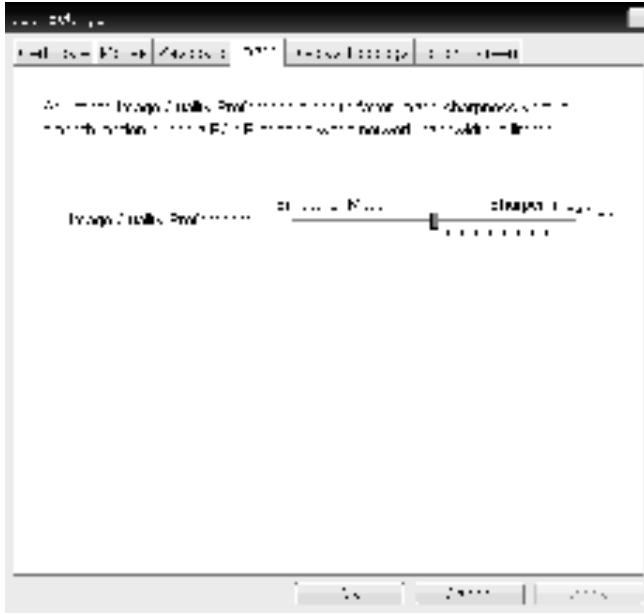


- **Keyboard Repeat Delay**
Lets users configure the client keyboard repeat delay.
- **Keyboard Repeat Rate**
Lets users configure the client keyboard repeat rate.
- **Repeat Settings Test Box**
Lets users test the chosen keyboard settings.

Image Tab

The **Image** page allows you to make changes to the image quality of the PCoIP session.

Figure 2-23: **Image** Configuration



- **Image Quality Preference**

Use the slider to adjust the balance between image sharpness and smooth motion during a PCoIP session when network bandwidth is limited.



This field is also accessible on the host if the PCoIP Host Software is installed. The slider can be found under the **Image** tab of the host software.

Display Topology Tab

To apply the **Display Topology** feature to a PCoIP session between a zero client and a PCoIP host, you must have the PCoIP host software installed on the host. Refer to the "PCoIP Host Software for Windows User Guide: TER0810001" for more details.

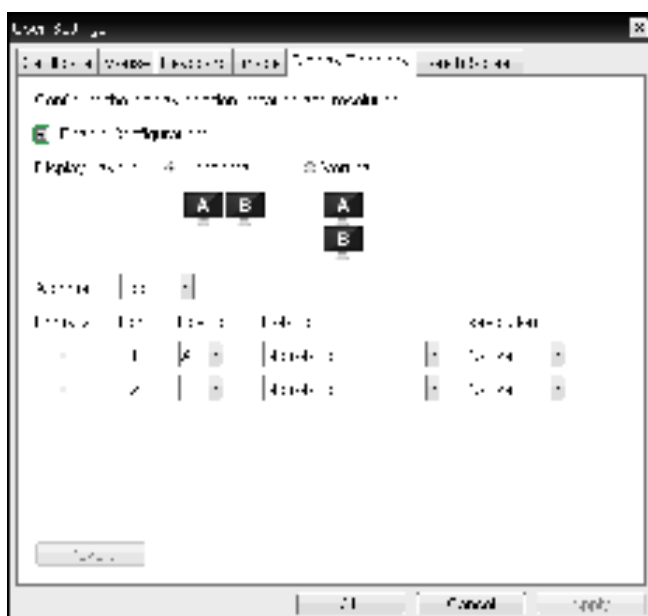


The **Display Topology** tab has no corresponding menu in the Administration Web Interface.

For details about the **Display Topology** feature for a PCoIP session between a host card and a zero client, refer to the "PCoIP Host Software for Windows User Guide: TER0810001".

Always change the **Display Topology** settings using the **Display Topology** tab on the zero client OSD → **Options** → **User Settings interface**.

Figure 2-24: **Display Topology** Configuration



- **Enable Configuration**

The device can be configured with display position, rotation and resolution settings if enabled. The settings are saved when you click **Apply** or **OK** and are applied when the device is reset.

- **Display Layout**

Select whether you want a horizontal or vertical layout for your displays (A and B). This setting should reflect the physical layout of the displays on your desk.

- **Horizontal:** Select to arrange A and B horizontally, with A located to the left of B.
- **Vertical:** Select to arrange A and B vertically, with A located above B.



A maximum of two displays can be enabled at the same time.

- **Alignment**

Select how you want displays A and B aligned when they are different sizes.



This setting affects which area of the screen to use when you move the cursor from one display to the other. The alignment options that appear in the drop-down list depend on whether you have selected a horizontal or vertical display layout.

- **Primary**

Configure which DVI port on the zero client that you want as the primary port.



The display that is connected to the primary port becomes the primary display (i.e., the display that contains the OSD menus before you initiate a PCoIP session and the display that is requested for the Windows taskbar after you initiate the session).

- **Port 1:** Select to configure DVI-1 port on the zero client as the primary port.
- **Port 2:** Select to configure DVI-2 port on the zero client as the primary port.

- **Position**

Specify which display is physically connected to **Port 1** and **Port 2**.

- **Rotation**

Configure the rotation of the display in **Port 1** and **Port 2**:

- No rotation
- 90° clockwise
- 180° rotation
- 90° counter-clockwise

- **Resolution**

The display resolution can be configured for a PCoIP session between a virtual machine or host and a zero client. The zero client detects the supported display resolutions of the monitor and populates them to the drop-down menu. By default, the native resolution of the display is used.

- **Revert**

Resets the configurations on this page to their last saved settings.

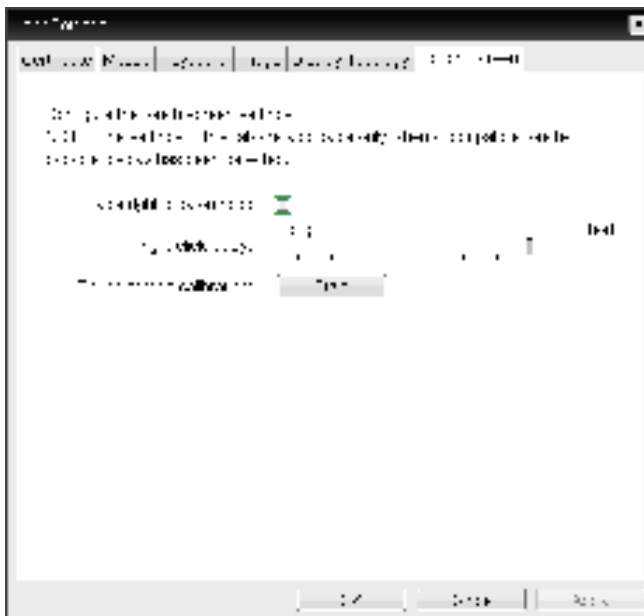
Touch Screen Tab

The **Touch Screen** page allows you to configure and calibrate certain settings of an attached **Elo TouchSystems** touch screen display.



The **Touch Screen** page is only available through the OSD. It is not available in the Administrative Web Interface.

Figure 2-25: **Touch Screen** Configuration



- Enable right click on hold**
 Select this checkbox to allow users to emulate a right-click when they touch the screen and hold it for a few seconds. If disabled, right-click is not supported.
- Right click delay**
 Slide the pointer to a position between Long and Short to determine how long a user must touch and hold the screen to emulate a right-click.
- Touch screen calibration**
 When you first connect the touch screen to the zero client, the calibration program will start. On the touch screen, touch each of the three targets as they appear.
 To test the calibration, run your finger along the monitor and ensure that the cursor follows it. If it is not successful, the calibration program automatically restarts.
 Once calibrated, the coordinates are stored in flash.
 To manually start the calibration program, from the OSD **Touch Screen** page, click **Start**. Follow the onscreen prompts.

2.4.8 Password Window



This option is available through the **Management Console Program**.

Visit the **Teradici Support Site**: <http://techsupport.teradici.com> for further details.

The **Password** page lets you update the local administrative password for the device.

The Password can be a maximum of 20 characters.



- This parameter affects the Administrative Web Interface and the local **OSD** GUI.
- Take care when updating the client password as the client may become unusable if the password is lost.

Figure 2-26: **Change Password** Configuration

- **Old Password**

This field must match the current administrative password before you can update the password.

- **New Password**

The new administrative password for both the administrative web interface and the local OSD GUI.

- **Confirm New Password**

This field must match the **New Password** field for the password to be updated.

- **Reset**

If the client password is lost, you can click the **Reset** button to request a response code from the client vendor. The challenge code is sent to the vendor.

The vendor qualifies the request and returns a response code if authorized by **Teradici**.

When the response code is correctly entered, the password of the client is set to an empty value.

You must enter a new password.



Contact the client vendor for more information when an authorized password reset is required.

This option is not available through the Administrative Web Interface.

It is only available through the OSD.

Figure 2-27: **Authorized Password Reset** Configuration

Authorized Password Reset

Connect your hardware vendor to reset local password.

Challenge: K1TC CSKs LURP GURP PUSN B4OK

Response: [] [] [] [] [] []

OK Cancel



Details on how to use PCoIP are subject to change without notice.

To view the latest information, visit the Teradici website at <http://www.teradici.com>.

2.4.9 Wake On LAN

This feature allows you to power on the product by sending a pre-determined command from an external system to the product over a network.

Make sure the network is capable of data communication with the PC that sends the command to the product. Ensure you have a program that can generate **Wake on LAN** signals.



- Make sure a power supply is always connected to ensure the feature works when the product is turned off.
- The feature is intended to power on the product. (It does not support the function to power off the product.)

Configuring the settings

- 1 Set the product and PC IP addresses to enable the product to connect to the PC over a network.
- 2 Enter the IP address set for the product in the URL address field on the PC to access the product administrative web page.
- 3 To change the power settings, log in (**Log In**) and select **Configuration** → **Power**.
- 4 Configure the settings to suit the environment in which the product is used. (See the image below.)



2.4.10 Wake on USB

If you turn off the power after activating **Wake On USB** on the product administrative web page, the system switches to standby mode.

The **Wake on USB** feature switches the system from standby mode to normal mode if a change to the keyboard or mouse input is detected.



Changes include clicking a mouse button or pressing a key on the keyboard.

Configuring the settings

- 1 Set the product and PC IP addresses to enable the product to connect to the PC over a network.
- 2 Enter the IP address set for the product in the URL address field on the PC to access the product administrative web page.
- 3 To change the power settings, log in (**Log In**) and select **Configuration** → **Power**.
- 4 Configure the settings to suit the environment in which the product is used. (See the image below.)



2.4.11 OSD Logo Upload

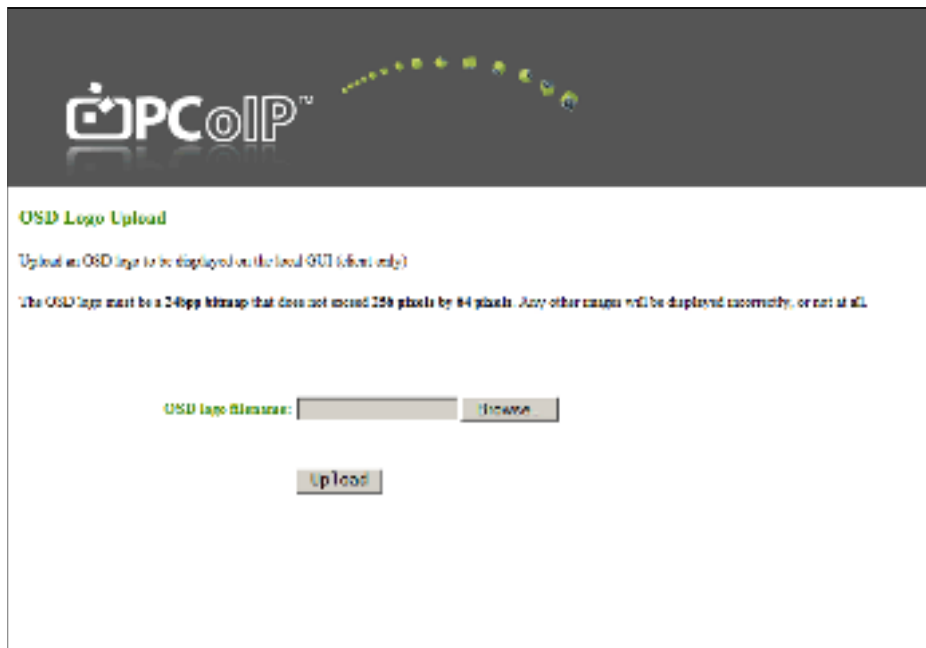
Using the **OSD Logo Upload** page, change the logo displayed on the **Teradici OSD**.

Configuring the settings

- 1 Set the product and PC IP addresses to enable the product to connect to the PC over a network.
- 2 Enter the IP address set for the product in the URL address field on the PC to access the product administrative web page.
- 3 Log in (**Log In**) and select **Upload** → **OSD Logo**. The **OSD Logo Upload** page appears. (See the image below.)
- 4 Select a new file to replace the logo and press **Upload**.



Make sure the OSD logo file is a 24bpp Bitmap file that does not exceed 256 x 64 pixels.



2.4.12 Firmwre Update

Using the **Firmwre Update** page, change the **Teradici Firmware**.

Configuring the settings

- 1 Set the product and PC IP addresses to enable the product to connect to the PC over a network.
- 2 Enter the IP address set for the product in the URL address field on the PC to access the product administrative web page.
- 3 Log in (**Log In**) and select **Upload** → **Firmware**. The **Firmware Upload** page appears. (See the image below.)
- 4 Select a **Firmware** to replace the logo and press **Upload**.
- 5 Once upload is complete, the **Reset** button appears. Click the **Reset** button to reboot the client. Go to **Options** → **Information**, and view the **Firmware Version** information.



3.1 Before Connecting

3.1.1 Pre-connection Checkpoints

- Before connecting a source device, read the user manual provided with it.
The number and locations of ports on source devices may differ from device to device.
- Do not connect the power cable until all connections are completed.
Connecting the power cable during connection may damage the product.
- Check the types of ports at the back of the product you want to connect.

3.2 Connecting and Using a PC

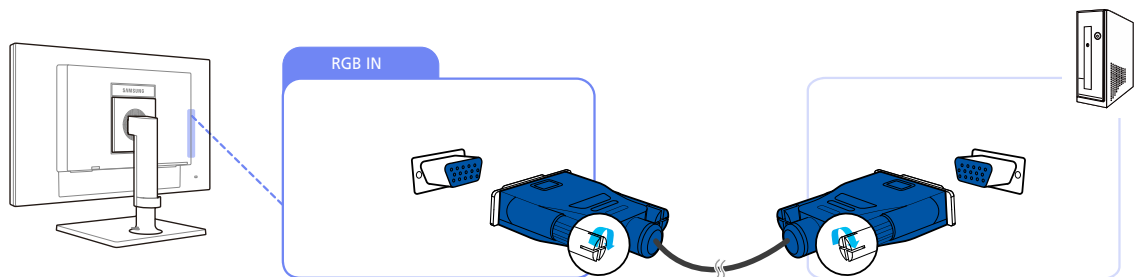
3.2.1 Connecting to a PC

- Do not connect the power cable before connecting all other cables.
Ensure you connect a source device first before connecting the power cable.
- Select a connection method suitable for your PC.



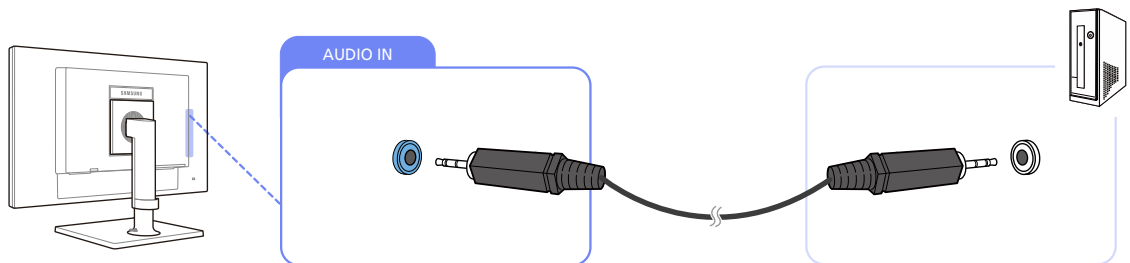
Connecting parts may differ in different products.

Connection Using the D-SUB Cable (Analogue Type)



- 1 Connect the D-SUB cable to the [RGB IN] port on the back of the product and the RGB port on the PC.
- 2 Connect the DC power adapter to the product and a power socket. Next, turn on the power switch on the PC.
(For details, refer to "2.2.6 Connecting the Power".)
- 3 Press [□/⏻] to change the input source to **Analog**.

Connecting a Stereo Cable



- Connect the [AUDIO IN] port on the rear side of the monitor to the sound card of the PC.

3.2.2 "Windows Driver" Installation



- You can set the optimum resolution and frequency for this product by installing the corresponding drivers.
- An installation driver is contained on the CD supplied with the product.

- 1 Insert the user manual CD provided with the product into the CD-ROM drive.
- 2 Click "Windows Driver".
- 3 Follow the instructions given on the screen to proceed with installation.
- 4 Select your product model from the list of models.

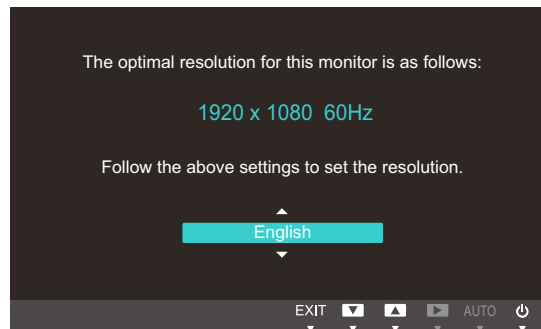


- 5 Go to Display Properties and check that the resolution and refresh rate are appropriate. Refer to your Windows OS manual for further details.

3.2.3 Setting Optimum Resolution

An information message about setting optimum resolution will appear if you power on the product for the first time after purchase.

Select a language and change the resolution to the optimum value.



- 1 Press [$\blacktriangle/\blacktriangledown$] to move to the language you want and press [\square/\boxtimes].
- 2 To hide the information message, press [MENU].



- If the optimum resolution is not selected, the message will appear up to three times for a specified time even when the product is turned off and on again.
- If the product is used as standard monitor, the optimum resolution can be configured from Control Panel on a PC.
- To configure the resolution when using the product as a network monitor, refer to "2.4 "PCoIP"".

Configure the screen settings such as brightness and color tone.

4.1 Brightness

You can adjust the general brightness of the picture. (Range: 0~100)

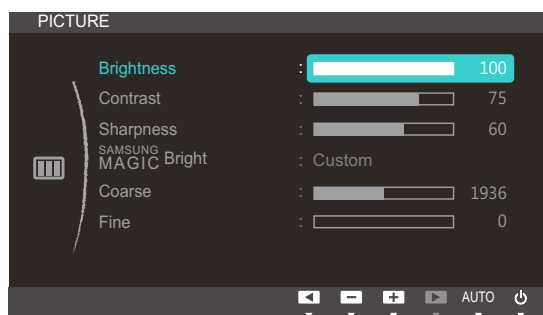
A higher value will make the picture appear brighter.



This menu is not available when **SAMSUNG MAGICBright** is set to **Dynamic Contrast** mode.

4.1.1 Configuring Brightness

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Brightness** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Brightness** using the [▲/▼] buttons.
- 5 The selected option will be applied.

4.2 Contrast

Adjust the contrast between the objects and background. (Range: 0~100)

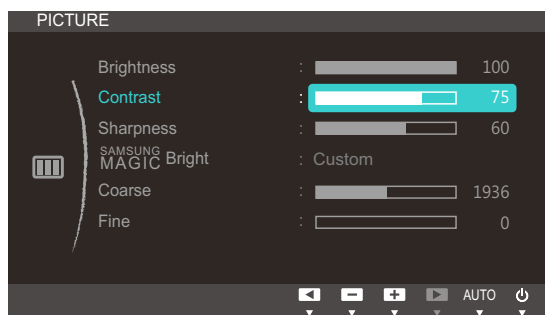
A higher value will increase the contrast to make the object appear clearer.



- This menu is not available when **SAMSUNG MAGIC Bright** is in **Cinema** or **Dynamic Contrast** mode.
- This menu is not available when **SAMSUNG MAGIC Color** is in **Full** or **Intelligent** mode.

4.2.1 Configuring Contrast

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Contrast** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Contrast** using the [▲/▼] buttons.
- 5 The selected option will be applied.

4.3 Sharpness

Make the outline of objects more clear or blurry. (Range: 0~100)

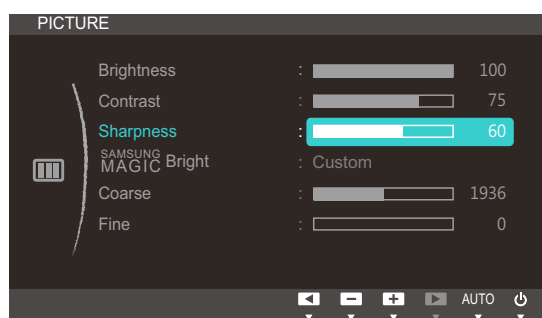
A higher value will make the outline of objects clearer.



- This menu is not available when **SAMSUNG MAGIC Bright** is in **Cinema** or **Dynamic Contrast** mode.
- This menu is not available when **SAMSUNG MAGIC Color** is in **Full** or **Intelligent** mode.

4.3.1 Configuring Sharpness

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Sharpness** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Sharpness** using the [▲/▼] buttons.
- 5 The selected option will be applied.

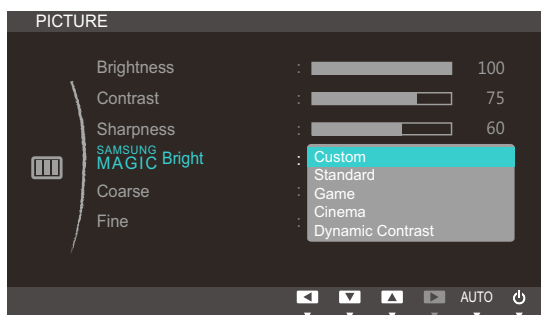
4.4 SAMSUNG MAGIC Bright

This menu provides an optimum picture quality suitable for the environment where the product will be used.

You can customize the brightness to suit your preferences.

4.4.1 Configuring SAMSUNG MAGIC Bright

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **SAMSUNG MAGIC Bright** and press [□/⊞] on the product. The following screen will appear.



- **Custom:** Customize the contrast and brightness as required.
 - **Standard:** Obtain a picture quality suitable for editing documents or using Internet.
 - **Game:** Obtain a picture quality suitable for playing games that involve many graphic effects and dynamic movements.
 - **Cinema:** Obtain the brightness and sharpness of TVs suitable for enjoying video and DVD content.
 - **Dynamic Contrast:** Obtain balanced brightness through automatic contrast adjustment.
- 4 Press [▲/▼] to move to the option you want and press [MENU].
 - 5 The selected option will be applied.

4.5 Coarse

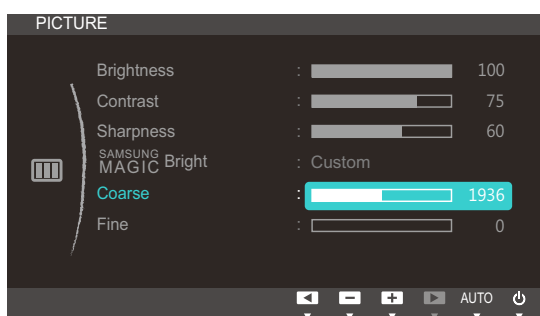
Adjust the screen frequency.



This menu is available in **Analog** mode only.

4.5.1 Adjusting Coarse

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Coarse** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Coarse** using the [▲/▼] buttons.
- 5 The selected option will be applied.

4.6 Fine

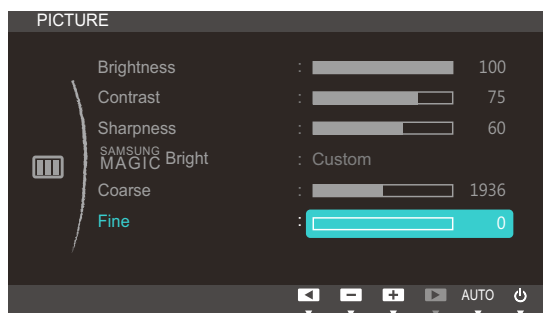
Fine-adjust the screen to obtain a vivid picture.



This menu is available in **Analog** mode only.

4.6.1 Adjusting Fine

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **Picture** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Fine** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Fine** using the [▲/▼] buttons.
- 5 The selected option will be applied.

Configuring Tint

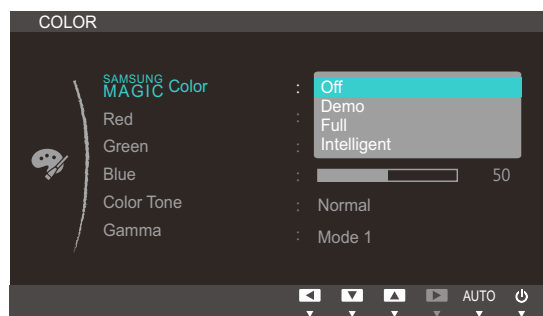
Adjust the tint of the screen. This menu is not available when **SAMSUNG MAGICBright** is set to **Cinema** or **Dynamic Contrast** mode.

5.1 SAMSUNG MAGIC Color

SAMSUNG MAGICColor is a new picture-quality improvement technology developed independently by Samsung, which delivers vivid natural colors without picture quality degradation.

5.1.1 Configuring SAMSUNG MAGIC Color

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **SAMSUNG MAGICColor** and press [□/⊞] on the product. The following screen will appear.



- **Off**: Disable **SAMSUNG MAGICColor**.
 - **Demo**: Compare normal screen mode with **SAMSUNG MAGICColor** mode.
 - **Full**: Obtain a vivid picture quality for all areas including the flesh colors in the picture.
 - **Intelligent**: Improve the chroma for all areas except the flesh colors in the picture.
- 4 Press [▲/▼] to move to the option you want and press [MENU].
 - 5 The selected option will be applied.

5.2 Red

Adjust the value of the color red in the picture. (Range: 0~100)

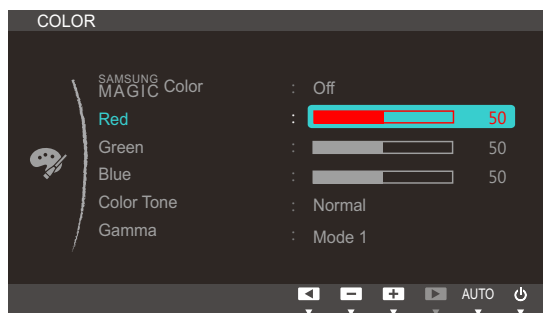
A higher value will increase the intensity of the color.



This menu is not available when **SAMSUNG MAGICColor** is in **Full** or **Intelligent** mode.

5.2.1 Configuring Red

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/□] on the product.
- 3 Press [▲/▼] to move to **Red** and press [□/□] on the product. The following screen will appear.



- 4 Adjust the **Red** using the [▲/▼] buttons.
- 5 The selected option will be applied.

5.3 Green

Adjust the value of the color green in the picture. (Range: 0~100)

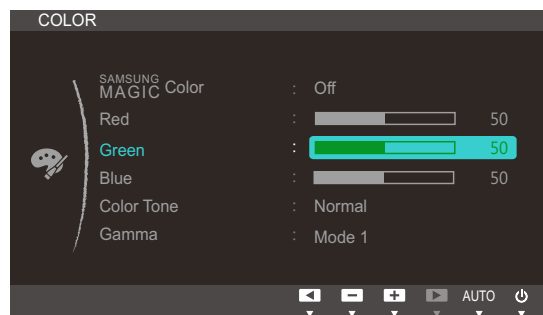
A higher value will increase the intensity of the color.



This menu is not available when **SAMSUNG MAGIC Color** is in **Full** or **Intelligent** mode.

5.3.1 Configuring Green

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Green** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Green** using the [▲/▼] buttons.
- 5 The selected option will be applied.

5.4 Blue

Adjust the value of the color blue in the picture. (Range: 0~100)

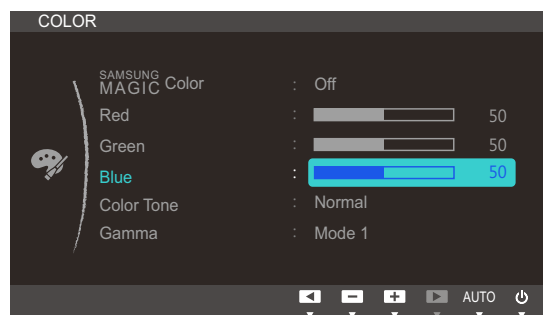
A higher value will increase the intensity of the color.



This menu is not available when **SAMSUNG MAGICColor** is in **Full** or **Intelligent** mode.

5.4.1 Configuring Blue

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Blue** and press [□/⊞] on the product. The following screen will appear.



- 4 Adjust the **Blue** using the [▲/▼] buttons.
- 5 The selected option will be applied.

5.5 Color Tone

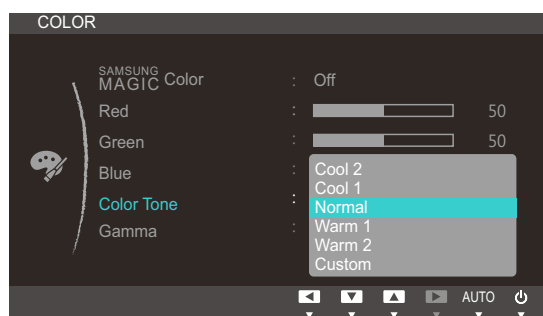
Adjust the general color tone of the picture.



This menu is not available when **SAMSUNG MAGIC Color** is in **Full** or **Intelligent** mode.

5.5.1 Configuring the Color Tone Settings

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Color Tone** and press [□/⊞] on the product. The following screen will appear.



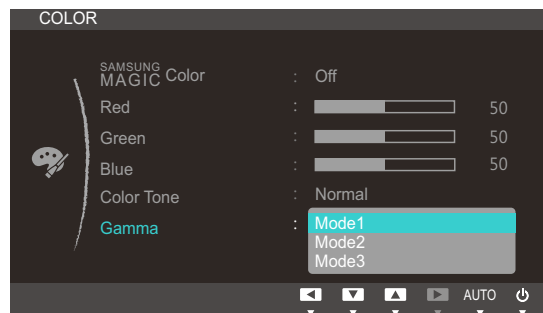
- **Cool 2**: Set the color temperature to be cooler than **Cool 1**.
 - **Cool 1**: Set the color temperature to be cooler than **Normal** mode.
 - **Normal**: Display the standard color tone.
 - **Warm 1**: Set the color temperature to be warmer than **Normal** mode.
 - **Warm 2**: Set the color temperature to be warmer than **Warm 1**.
 - **Custom**: Customize the color tone.
- 4 Press [▲/▼] to move to the option you want and press [MENU].
 - 5 The selected option will be applied.

5.6 Gamma

Adjust the mid-range brightness (Gamma) of the picture.

5.6.1 Configuring Gamma

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **COLOR** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Gamma** and press [□/⊞] on the product. The following screen will appear.



- 4 Press [▲/▼] to move to the option you want and press [MENU].
- 5 The selected option will be applied.

6.1 H-Position & V-Position

H-Position: Move the screen to the left or right.

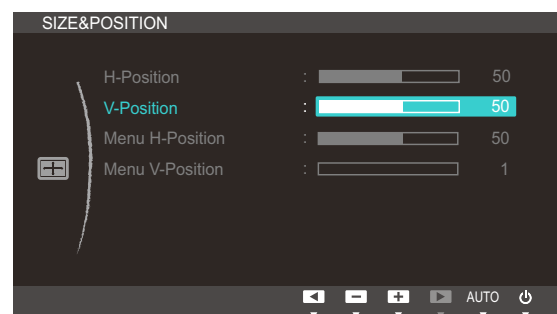
V-Position: Move the screen up or down.



This menu is available in **Analog** mode only.

6.1.1 Configuring H-Position & V-Position

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **SIZE&POSITION** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **H-Position** or **V-Position**, and press [□/⊞]. The following screen will appear.



- 4 Press [▲/▼] to configure **H-Position** or **V-Position**.
- 5 The selected option will be applied.

6.2 Menu H-Position & Menu V-Position

Menu H-Position: Move the menu position to the left or right.

Menu V-Position: Move the menu position up or down.

6.2.1 Configuring Menu H-Position & Menu V-Position

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **SIZE&POSITION** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Menu H-Position** or **Menu V-Position**, and press [□/⊞]. The following screen will appear.



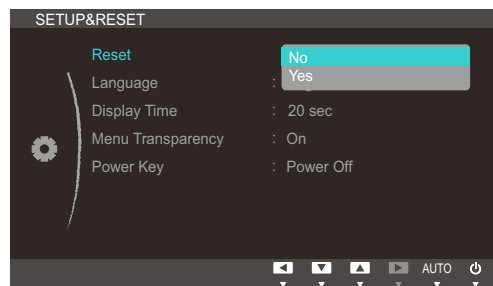
- 4 Press [▲/▼] to configure **Menu H-Position** or **Menu V-Position**.
- 5 The selected option will be applied.

7.1 Reset

Return all the settings for the product to the default factory settings.

7.1.1 Initializing Settings (Reset)

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **SETUP&RESET** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Reset** and press [□/⊞] on the product. The following screen will appear.



- 4 Press [▲/▼] to move to the option you want and press [MENU].
- 5 The selected option will be applied.

7.2 Language

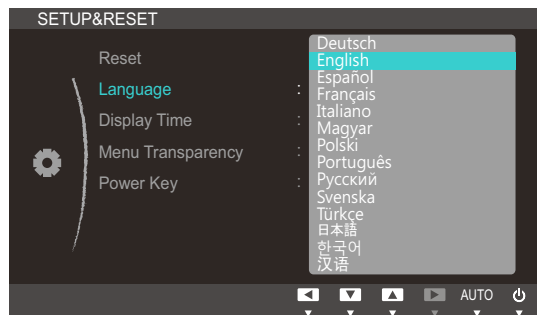
Set the menu language.



- A change to the language setting will only be applied to the onscreen menu display.
- It will not be applied to other functions on your PC.

7.2.1 Changing the Language

- 1 Press any button on the front of the product to display the OSD guide. Next, press **[MENU]** to display the corresponding menu screen.
- 2 Press **[▲/▼]** to move to **SETUP&RESET** and press **[□/⊞]** on the product.
- 3 Press **[▲/▼]** to move to **Language** and press **[□/⊞]** on the product. The following screen will appear.



- 4 Press **[▲/▼]** to move to the language you want and press **[MENU]**.
- 5 The selected option will be applied.

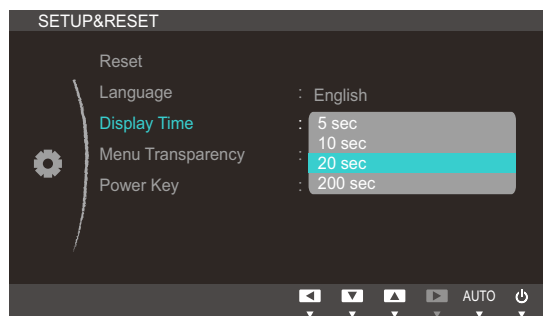
7.3 Display Time

Set the on-screen display (OSD) menu to automatically disappear if the menu is not used for a specified period of time.

Display Time can be used to specify the time after which you want the OSD menu to disappear.

7.3.1 Configuring Display Time

- 1 Press any button on the front of the product to display the OSD guide. Next, press **[MENU]** to display the corresponding menu screen.
- 2 Press **[▲/▼]** to move to **SETUP&RESET** and press **[□/⊞]** on the product.
- 3 Press **[▲/▼]** to move to **Display Time** and press **[□/⊞]** on the product. The following screen will appear.



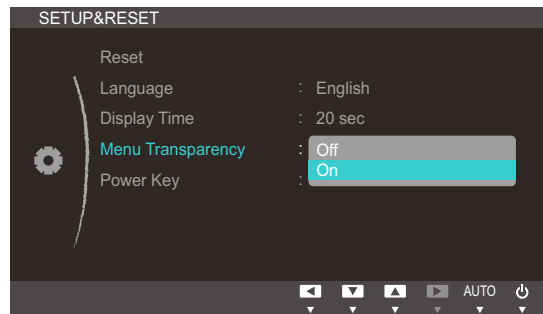
- 4 Press **[▲/▼]** to move to the option you want and press **[MENU]**.
- 5 The selected option will be applied.

7.4 Menu Transparency

Set the transparency for the menu windows:

7.4.1 Changing Menu Transparency

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **SETUP&RESET** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Menu Transparency** and press [□/⊞] on the product. The following screen will appear.



- 4 Press [▲/▼] to move to the option you want and press [MENU].
- 5 The selected option will be applied.

7.5 Power Key

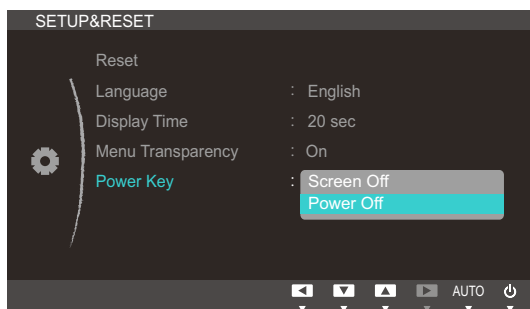
The power button on the product is used to perform two functions.




The default setting is **Power Off**.

7.5.1 Enabling Power Key

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **SETUP&RESET** and press [□/⊞] on the product.
- 3 Press [▲/▼] to move to **Power Key** and press [□/⊞]. The following screen will appear.



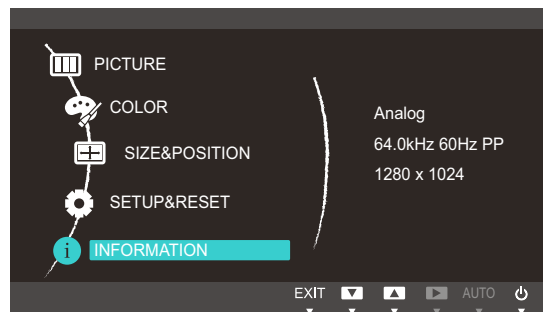
- If **Screen Off** is selected, use the power button as follows:
 - Turning off the screen: Press the power button. A message appears: "The screen will turn off in 5 seconds. Power Off: Press & hold  for 2 seconds." After 5 seconds, the screen switches off. The power indicator on the front of the product alternates between turning off for 3 seconds and turning on for one second.
 - Turning on the screen/power: Press the power button.
 - Turning off the power: Press the power button for more than 2 seconds.
 - To turn the product on or off when **Power Off** is selected, press the power button.
- 4 Press [▲/▼] to move to the option you want and press [MENU].
 - 5 The selected option will be applied.

8.1 INFORMATION

View the current input source, frequency and resolution.

8.1.1 Displaying INFORMATION

- 1 Press any button on the front of the product to display the OSD guide. Next, press [MENU] to display the corresponding menu screen.
- 2 Press [▲/▼] to move to **INFORMATION**. The current input source, frequency and resolution will appear.



The displayed menu items may vary depending on the model.

8.2 Configuring Volume in the Initial Screen

Adjust the **Volume** by pressing the [●] button when the OSD guide is displayed.

- 1 Press any button on the front of the product (when no menu screen is displayed) to display the OSD guide. Next, press [●].
- 2 The following screen will appear.



- 3 Adjust the **Volume** using the [▲/▼] buttons.

9.1 Natural Color

9.1.1 What is Natural Color?

One of the problems with using a PC is that the colors you see on the screen are different from the colors of printed pictures or source images input through a scanner or digital camera. Natural Color is a color management system developed by Samsung Electronics to resolve this problem. This software works with Samsung products only and enables you to adjust the displayed colors on the screen to match the colors of the printed pictures. For more information, refer to the online help of the software (F1).

The Natural Color is provided online. You can download it from the website below and install;

http://www.samsung.com/us/consumer/learningresources/monitor/naturalcolorexpert/pop_download.html

9.2 MultiScreen



The **MultiScreen** program can be installed on the VDI server's virtual machine or on a host PC with a compatible Windows-series operating system.

Virtual Desktop Infrastructure: a PC equipped with **VMware View** and **Teradici Hostcard**



MultiScreen

MultiScreen enables users to use the monitor by partitioning multiple sections.

9.2.1 Installing the Software

1 Insert the installation CD into the [CD-ROM] drive.

2 Select the "MultiScreen" setup program.



If the pop-up screen for the software installation does not appear on the main screen, find and double-click the "MultiScreen" setup file on the [CD-ROM].

3 When the Installation Wizard appears, click "Next".

4 Follow the instructions given on the screen to proceed with installation.



- The software may not work properly if you do not restart the computer after the installation.
- The "MultiScreen" icon may not appear depending on the computer system and the product specifications.
- If the shortcut icon does not appear, press the "F5" key.

Restrictions and Problems with the Installation (MultiScreen)

The "MultiScreen" installation may be affected by the Graphics card, Motherboard and the Networking environment.

Operating System

"OS"

- "Windows 2000"
- "Windows XP Home Edition"
- "Windows XP Professional"
- "Windows Vista 32bit"
- "Windows 7 32bit"
- "Windows 8 32bit"



For "MultiScreen", the operating systems "Windows 2000" or later is recommended.

"Hardware"

- At least 32MB of memory
- At least 60MB of free space on the hard disk drive

9.2.2 Removing the Software

Click **[Start]**, select **[Settings]/[Control Panel]**, and then double-click **[Add or Remove Programs]**.

Select "MultiScreen" from the program list and click the **[Add/Delete]** button.



10.1 Requirements Before Contacting Samsung Customer Service Center

10.1.1 Testing the Product



Before calling Samsung Customer Service Center, test your product as follows. If the problem persists, contact Samsung Customer Service Center.

Check if your product is operating normally by using the product test function.

If the screen is turned off and the power indicator blinks even though the product is properly connected to a PC, perform a self-diagnosis test.

- 1 Power off both the PC and product.
- 2 Disconnect the cables from the product.
- 3 Power on the product.
- 4 If the message "**Check Signal Cable**" appears, the product is working normally.



If the screen remains blank, check the PC system, video controller and cable.

10.1.2 Checking the Resolution and Frequency

For a mode that exceeds the supported resolution (refer to "11.2 Standard Signal Mode Table"), the message "**Not Optimum Mode**" will appear for a short time.

10.1.3 Check the following.

Installation issue (PC mode)

Issues	Solutions
The screen keeps switching on and off.	Check the cable connection between the product and PC, and ensure the connectors are locked. (Refer to "3.2 Connecting and Using a PC")



Troubleshooting Guide

Screen issue

Issues	Solutions
The power LED is off. The screen will not switch on.	Check that the power cable is connected properly. (Refer to "3.2 Connecting and Using a PC")
The message " Check Signal Cable " appears.	Check that the cable is properly connected to the product. (Refer to "3.2 Connecting and Using a PC")
	Check that the device connected to the product is powered on.
Not Optimum Mode is displayed.	This message appears if the signal from the graphics card exceeds the maximum resolution or frequency for the product.
	Change the maximum resolution and frequency to suit the product performance, referring to Standard Signal Mode Table (page 102).
The images on the screen look distorted.	Check the cable connection to the product (Refer to "3.2 Connecting and Using a PC")
The screen is not clear. The screen is blurry.	Adjust Coarse (page 76) and Fine (page 77).
	Remove any accessories (video extension cable, etc.) and try again.
	Set the resolution and frequency to the recommended level. (Refer to "11.1 General")
The screen appears unstable and shaky.	Check that the resolution and frequency for the PC are within the range of resolution and frequency compatible with the product. Next, if required, change the settings, referring to Standard Signal Mode Table (page 102) in this manual and the INFORMATION menu on the product.
There are shadows or ghost images left on the screen.	
The screen is too bright. The screen is too dark.	Adjust Brightness (page 72) and Contrast (page 73).
Screen color is inconsistent.	Change the COLOR settings. (Refer to "Configuring Tint")
The colors on the screen have a shadow and are distorted.	Change the COLOR settings. (Refer to "Configuring Tint")
White does not really look white.	Change the COLOR settings. (Refer to "Configuring Tint")



Troubleshooting Guide

Issues	Solutions
There is no image on the screen and the power LED blinks every 0.5 to 1 second.	The product is operating in power-saving mode.
	Press any key on the keyboard or move the mouse to return to normal operating mode.

Sound issue

Issues	Solutions
There is no sound.	Check the connection of the audio cable or adjust the volume.
	Check the volume.
The volume is too low.	Adjust the volume.
	If the volume is still low after turning it up to the maximum level, adjust the volume on your PC sound card or software program.

Source device issue

Issues	Solutions
A beeping sound is heard when my PC is booting.	If a beeping sound is heard when your PC is booting, have your PC serviced.



10.2 Q & A

Question	Answer
How can I change the frequency?	<p>Set the frequency on your graphics card.</p> <ul style="list-style-type: none">• Windows XP: Go to Control Panel → Appearance and Themes → Display → Settings → Advanced → Monitor, and adjust Refresh rate under Monitor settings.• Windows ME/2000: Go to Control Panel → Display → Settings → Advanced → Monitor, and adjust Refresh rate under Monitor settings.• Windows Vista: Go to Control Panel → Appearance and Personalization → Personalization → Display Settings → Advanced Settings → Monitor, and adjust Refresh rate under Monitor settings.• Windows 7: Go to Control Panel → Appearance and Personalization → Display → Screen Resolution → Advanced settings → Monitor, and adjust Refresh rate under Monitor settings.• Windows 8: Go to Settings → Control Panel → Appearance and Personalization → Display → Screen Resolution → Advanced settings → Monitor, and adjust Refresh rate under Monitor settings.



Troubleshooting Guide

Question	Answer
How can I change the resolution?	<ul style="list-style-type: none">• Windows XP: Go to Control Panel → Appearance and Themes → Display → Settings, and adjust the resolution.• Windows ME/2000: Go to Control Panel → Display → Settings, and adjust the resolution.• Windows Vista: Go to Control Panel → Appearance and Personalization → Personalize → Display Settings, and adjust the resolution.• Windows 7: Go to Control Panel → Appearance and Personalization → Display → Adjust Resolution, and adjust the resolution.• Windows 8: Go to Settings → Control Panel → Appearance and Personalization → Display → Adjust Resolution, and adjust the resolution.
How do I set power-saving mode?	<ul style="list-style-type: none">• Windows XP: Set power-saving mode in Control Panel → Appearance and Themes → Display → Screen Saver Settings or BIOS SETUP on the PC.• Windows ME/2000: Set power-saving mode in Control Panel → Display → Screen Saver Settings or BIOS SETUP on the PC.• Windows Vista: Set power-saving mode in Control Panel → Appearance and Personalization → Personalize → Screen Saver Settings or BIOS SETUP on the PC.• Windows 7: Set power-saving mode in Control Panel → Appearance and Personalization → Personalize → Screen Saver Settings or BIOS SETUP on the PC.• Windows 8: Set power-saving mode in Settings → Control Panel → Appearance and Personalization → Personalize → Screen Saver Settings or BIOS SETUP on the PC.



Refer to the user manual for your PC or graphics card for further instructions on adjustment.

11.1 General

Model Name		NC221 / NC221-S / NC221-TS / NC221-TW / NC221W	NC241 / NC241-TS / NC241-TW / NC241W
Panel	Image Size	22 Class (21.5 Inches / 54.6 cm)	24 Class (23.5 Inches / 59.8 cm)
	Display area	476.64 mm (H) x 268.11 mm (V) 18.8 inches (H) x 10.6 inches (V)	521.28 mm (H) x 293.22 mm (V) 20.5 inches (H) x 11.5 inches (V)
Display Color		16.7M	
Maximum Pixel Clock		148.50 MHz (Analog / Digital)	
Server connector		Gigabit Ethernet port (LAN Port)	
Power Supply		This product uses 100 to 240V. Refer to the label at the back of the product as the standard voltage can vary in different countries.	
Signal connectors		RGB IN, DVI OUT	
Speakers		1 W x 2 (stereo)	
VESA		100 mm x 100 mm (3.9 inches x 3.9 inches)	
USB		USB 2.0 x 6 (Down Stream)	
Environmental considerations	Operating	Temperature : 50 °F – 104 °F (10 °C – 40 °C) Humidity : 10 % – 80 %, non-condensing	
	Storage	Temperature : -4 °F – 113 °F (-20 °C – 45 °C) Humidity : 5 % – 95 %, non-condensing	



Plug-and-Play

This monitor can be installed and used with any Plug-and-Play compatible systems. Two-way data exchange between the monitor and PC system optimizes the monitor settings. Monitor installation takes place automatically. However, you can customize the installation settings if desired.



Panel Dots (Pixels)

Due to the nature of the manufacturing of this product, approximately 1 pixel per million (1ppm) may be brighter or darker on the LCD panel. This does not affect product performance.



The above specifications are subject to change without notice to improve quality.



This device is a Class B digital apparatus.



For detailed device specifications, visit the Samsung Electronics website.



Specifications

(USA only)

Dispose unwanted electronics through an approved recycler.

To find the nearest recycling location, go to our website:

www.samsung.com/recyclingdirect or call, (877) 278 - 0799

CALIFORNIA USA ONLY (Applicable for networking models only.)

This Perchlorate warning applies only to primary CR(Manganese Dioxide) Lithium coin cells in the product sold or distributed ONLY in California USA

"Perchloate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate."

11.2 Standard Signal Mode Table



- This product can be set to only one resolution for each screen size to obtain the optimum picture quality due to the nature of the panel. Therefore, a resolution other than the specified resolution may degrade the picture quality. To avoid this, it is recommended that you select the optimum resolution specified for the screen size of your product.
- Check the frequency when you exchange a CDT monitor (connected to a PC) for an LCD monitor. If the LCD monitor does not support 85Hz, change the vertical frequency to 60Hz using the CDT monitor before you exchange it with the LCD monitor.

Synchronization	Horizontal Frequency	31 – 80 kHz
	Vertical Frequency	56 – 75 Hz
Resolution	Optimum Resolution	1920 x 1080 @ 60 Hz
	Maximum Resolution	1920 x 1080 @ 60 Hz

If a signal that belongs to the following standard signal modes is transmitted from your PC, the screen will automatically be adjusted. If the signal transmitted from the PC does not belong to the standard signal modes, the screen may be blank even though the power LED turns on. In such a case, change the settings according to the following table by referring to the graphics card user manual.

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
MAC,640 x 480	35.000	66.667	30.240	-/-
VESA,640 x 480	31.469	59.940	25.175	-/-
VESA,640 x 480	37.861	72.809	31.500	-/-
VESA,640 x 480	37.500	75.000	31.500	-/-
IBM,720 x 400	31.469	70.087	28.322	-/+
VESA,800 x 600	35.156	56.250	36.000	+/+
VESA,800 x 600	37.879	60.317	40.000	+/+
VESA,800 x 600	48.077	72.188	50.000	+/+
VESA,800 x 600	46.875	75.000	49.500	+/+
MAC,832 x 624	49.726	74.551	57.284	-/-
VESA,1024 x 768	48.363	60.004	65.000	-/-
VESA,1024 x 768	56.476	70.069	75.000	-/-
VESA,1024 x 768	60.023	75.029	78.750	+/+
VESA,1152 x 864	67.500	75.000	108.000	+/+
MAC,1152 x 870	68.681	75.062	100.000	-/-

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 1280 x 720	45.000	60.000	74.250	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 1024	63.981	60.020	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1600 x 900 RB	60.000	60.000	108.000	+/+
VESA, 1680 x 1050	65.290	59.954	146.250	-/+
VESA, 1920 x 1080	67.500	60.000	148.500	+/+



- Horizontal Frequency

The time required to scan a single line from the left to the right side of the screen is called a horizontal cycle. The reciprocal number of a horizontal cycle is called horizontal frequency. Horizontal frequency is measured in kHz.

- Vertical Frequency

Repeating the same picture dozens of times per second allows you to view natural pictures. The repeat frequency is called "vertical frequency" or "refresh rate" and is indicated in Hz.

Contact SAMSUNG WORLD WIDE

Web site: <http://www.samsung.com>



If you have any questions or comments relating to Samsung products, please contact the SAMSUNG customer care center.

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BOLIVIA	800-10-7260
BRAZIL	0800-124-421 (Demais cidades e regiões) 4004-0000 (Capitais e grandes centros)
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Responsibility for the Pay Service (Cost to Customers)



When the service is requested, in spite of in warranty, we may charge you for a visit from a service technician in the following cases.

Not a product defect

Cleaning of the product, Adjustment, Explanation, Re-installation and etc.

- If a service technician gives instructions on how to use product or simply adjusts options without disassembling product.
- If a defect is caused by external environmental factors (Internet, Antenna, Wired Signal, etc.)
- If a product is reinstalled or devices are connected additionally after installing the purchased product for the first time.
- If a product is reinstalled to move to a different spot or to move to a different house.
- If customer requests instructions on how to use because of another company's product.
- If customer requests instructions on how to use the network or another company's program.
- If customer requests software installation and setup for the product.
- If a service technician removes/cleans dusts or foreign materials inside of the product.
- If customer requests an installation additionally after purchasing a product through home-shopping or online.

A Product damage caused by customer's fault

Product damage caused by customer's mishandling or wrong repair

If a product damage is caused by;

- External impact or drop.
- Use of supplies or separately sold product unspecified by Samsung.
- Repair from a person besides an engineer of outsourcing service company or partner of Samsung Electronics Co., Ltd.
- Remodeling or repairing the product by customer.
- Using it with incorrect voltage or non-authorised electrical connections.
- Not following the "cautions" in User Manual.

Others

- If product fails by natural disaster. (lightning, fire, earthquake, flood damage, etc)
- If consumable components are all used up. (Battery, Toner, Fluorescent lights, Head, Vibrator, Lamp, Filter, Ribbon, etc.)



If customer requests a service in case the product has no defect, service fee may be charged. So please read User Manual first.

Correct Disposal

Correct Disposal of This Product (Waste Electrical & Electronic Equipment)



(Applicable in countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Correct disposal of batteries in this product



(Applicable in countries with separate collection systems)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

Terminology

OSD (On Screen Display)

On screen display (OSD) allows you to customize on-screen settings to optimize the picture quality as required. You can change the screen brightness, tint, size and many other settings using menus displayed on the screen.

Coarse

Coarse refers to the frequency of radio wave vibrations per second. A higher frequency transmits a larger amount of data and is reflected easier. A lower frequency traverses obstacles more easily and can travel farther, but it transmits a smaller amount of data. The Coarse menu allows you to manually adjust the frequency to obtain the optimum picture quality. Adjust Coarse referring to Standard Signal Mode Table (page 102) according to the performance of your product and enjoy improved picture quality.

Gamma

The Gamma menu adjusts the grey scale that represents middle tones on the screen. Adjusting the brightness brightens the whole screen, but adjusting Gamma only brightens the medium brightness.

Grey scale

Scale refers to levels of color intensity that show variations of color change from darker areas to brighter areas on the screen. Changes to the screen brightness are expressed with black and white variation, and grey scale refers to the medium area between black and white. Changing the grey scale through Gamma adjustment will change the medium brightness on the screen.

Scanning rate

Scanning rate, or refresh rate, refers to the frequency of screen refreshes. Screen data is transmitted as it refreshes to display an image, although the refreshing is invisible to the naked eye. The number of screen refreshes is called scanning rate and is measured in Hz. A scanning rate of 60Hz means that the screen refreshes 60 times per second. The screen scanning rate depends on the performance of the graphics cards in your PC and monitor.

Horizontal Frequency

Characters or images displayed on the monitor screen consist of numerous dots (pixels). Pixels are transmitted in horizontal lines, which are then arranged vertically to create an image. The horizontal frequency is measured in kHz and represents how many times horizontal lines per second are transmitted and displayed on the monitor screen. A horizontal frequency of 85 means that the horizontal lines that make up an image are transmitted 85000 times per second. The horizontal frequency is indicated in 85kHz.

Vertical Frequency

One image is made of numerous horizontal lines. The vertical frequency is measured in Hz and represents how many images can be created per second by those horizontal lines. A vertical frequency of 60 means that an image is transmitted 60 times per second. The vertical frequency is also called "refresh rate" and affects screen flicker.

Resolution

Resolution is the number of horizontal pixels and vertical pixels that form a screen. It represents the level of display detail.

A higher resolution displays a greater amount of information on the screen and is suitable for performing multiple tasks at the same time.

E.g. A resolution of 1920 x 1080 consists of 1920 horizontal pixels (horizontal resolution) and 1080 vertical lines (vertical resolution).

E.g. A resolution of 1920 x 1200 consists of 1920 horizontal pixels (horizontal resolution) and 1,200 vertical lines (vertical resolution).

Plug & Play

The Plug & Play feature allows the automatic exchange of information between a monitor and PC to produce an optimum display environment.

The monitor uses VESA DDC (international standard) to execute Plug & Play.

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