User manual

SyncMaster
NS190
NS220
NS240

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.

Copyright

The contents of this manual are subject to change without notice to improve quality.

© 2011 Samsung Electronics

Samsung Electronics owns the copyright for this manual.

Use or reproduction of this manual in parts or entirety without the authorization of Samsung Electronics is prohibited.

The SAMSUNG and SyncMaster logos are registered trademarks of Samsung Electronics.

Microsoft, Windows are registered trademarks of Microsoft Corporation.

VESA, DPM and DDC are registered trademarks of the Video Electronics Standards Association.

• 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.

Symbols for safety precautions

|	
⚠ 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.

Cleaning

Cleaning

Exercise care when cleaning as the panel and exterior of advanced LCDs are easily scratched.
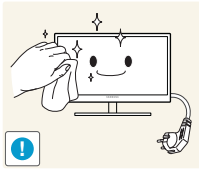
Take the following steps when cleaning.
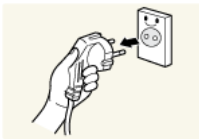
1. Power off the monitor and computer.

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.

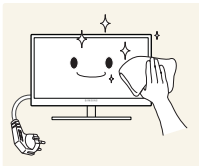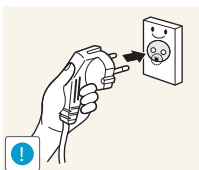3. Wipe the monitor screen using a clean, soft and dry cloth.

- 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.

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.
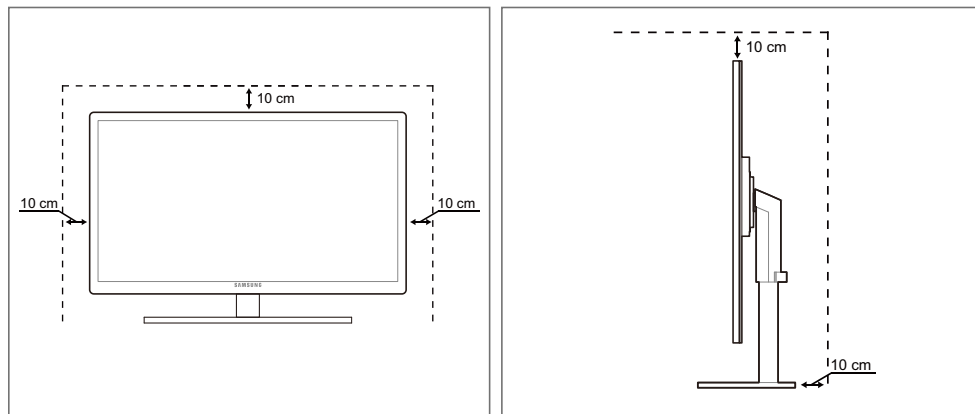
Precautions for storage

> Be sure to contact Samsung Customer Service Center (page 112) if the inside of the monitor needs cleaning. (Service fee will be charged.)

Safety Precautions

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.
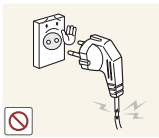
- An electric shock or fire may result.

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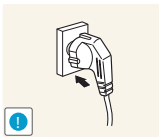
Insert the power plug all the way in so it is not loose.

- An unstable connection may cause a fire.
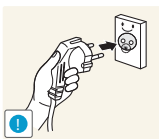
Ensure you connect the power plug to a grounded power socket. (type 1 insulated devices only).

- An electric shock or injury may result.
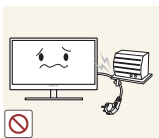
Do not bend or pull the power cord with force. Do not weigh the power cord down with a heavy object.

- 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.

 Caution

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

- The product may become damaged by an electric shock.
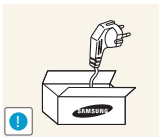
Do not use the power cord for products other than authorized products supplied by Samsung.

- An electric shock or fire may result.
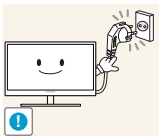
Keep the power socket where the power cord is connected unobstructed.

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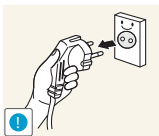
Hold the plug when disconnecting the power cord from the power socket.

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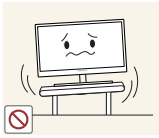
Do not install the product on an unstable or vibrating surface (insecure shelf, sloped surface, etc.).

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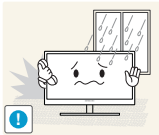
Do not install the product in a vehicle or a place exposed to dust, moisture (water drips, etc.), oil, or smoke.

- 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.

⚠ Caution
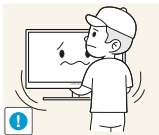
Take care not to drop the product when moving it.

- Otherwise, product failure or personal injury may result.
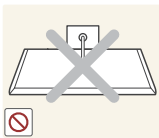
Do not set down the product on its front.

- 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.
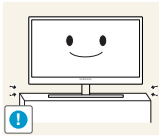
Put down the product carefully.

- 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 particles, chemical substances or extreme temperatures, or an airport or train station where the product should operate continuously for an extended period of time) may seriously affect its performance.

- Be sure to consult Samsung Customer Service Center (page 112) 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 112) for repair.
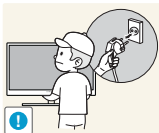
Before moving the product, turn off the power switch and disconnect the power cable and all other connected cables.

- Otherwise, the power cord may be damaged and a fire or electric shock may result.
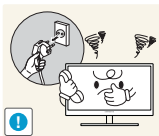
If the product generates a strange noise, a burning smell, or smoke, remove the power cord immediately and contact Samsung Customer Service Center (page 112).

- An electric shock or fire may result.
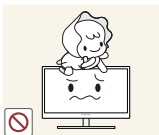
Do not let children hang from the product or climb on top of it.

- 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 112).

- Otherwise, an electric shock or fire may result.
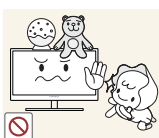
Do not put a heavy object, toy, or sweets on top of the product.

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

During a lightning or thunderstorm, power off the product and remove 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.
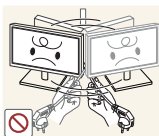
Do not lift or move the product by pulling the power cord or any cable.

- Otherwise, the cable may be damaged and product failure, an electric shock or fire may result.
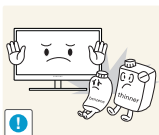
Do not use or keep combustible spray or an inflammable substance near the product.

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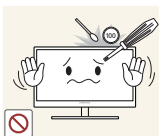
Do not insert a metallic object (a chopstick, coin, hair pin, etc.) or inflammable object (paper, match, etc.) into the vent or ports of the product.

- 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 112).
- 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 112).
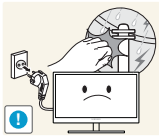- Product failure, an electric shock or fire may result.

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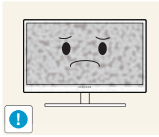
Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.

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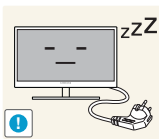
Disconnect the power cord from the power socket if you do not plan on using the product for an extended period of time (vacation, etc.).

- 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.
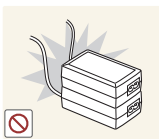
Do not put DC power adapters together.

- Otherwise, a fire may result.
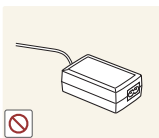
Remove the plastic bag from the DC power adapter before you use it.

- Otherwise, a fire may result.

Do not let water enter the DC power adapter or get the adapter wet.

- An electric shock or fire may result.
- Avoid using the product outdoors where it can be exposed to rain or snow.
- Be careful not to get the DC power adapter wet when you wash the floor.

Do not put the DC power adapter near to any heating apparatus.

- Otherwise, a fire may result.
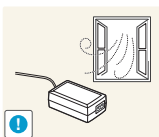
Keep the DC power adapter in a well-ventilated area.
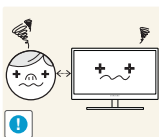
Looking at the screen too close for an extended period of time can deteriorate your eyesight.

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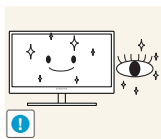
Rest your eyes for more than 5 minutes for every 1 hour of product use.

- 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.
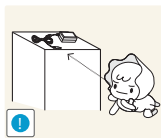
Store the small accessories used with the product out of reach of children.
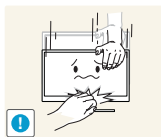
Exercise caution when adjusting the product angle or stand height.

- 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.
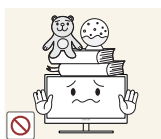
Do not place heavy objects on the product.

- Product failure or personal injure may result.
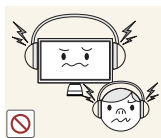
When using headphones or earphones, do not turn the volume too high.

- Having the sound too loud may damage your hearing.

Before Using the Product

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.

Table Of Contents

Table Of Contents

CONNECTING AND USING A SOURCE DEVICE

SCREEN SETUP

Table Of Contents

Table Of Contents

Table Of Contents

1   Preparations

1.1   Checking the Contents

1.1.1   Removing the Packaging

1 Open the packaging box. Be careful not to damage the product when you open the packaging with a sharp instrument.
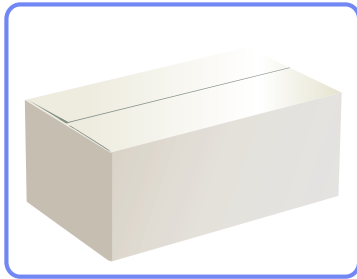
2 Remove the styrofoam from the product.
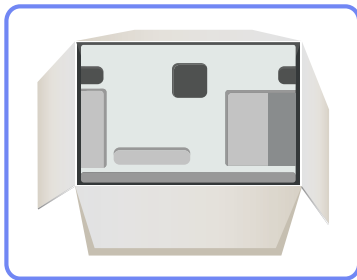
3 Check the components and remove the styrofoam and plastic bag.

> - The appearance of actual components may differ from the image shown.
> - This image is for reference only.
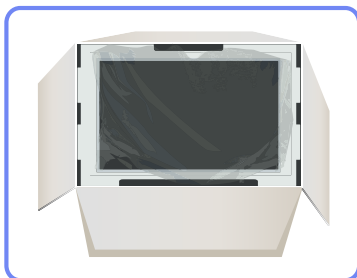
4 Store the box in a dry area so that it can be used when moving the product in the future.

1 Preparations

1.1.2 Checking the Components

> - Contact the dealer from whom you purchased the product if any item is missing.
> - The appearance of the components and items sold separately may differ from the image shown.

Components
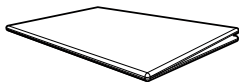
Quick setup guide	Warranty card (Not available in some locations)	User manual
Power cable	DC power adapter	Power extension cable (DC 14V)
Stand base	DVI cable	
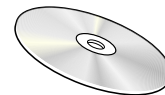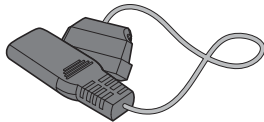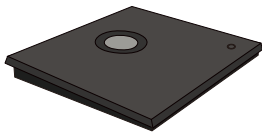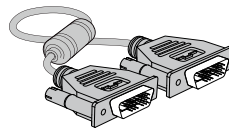
> - Components may vary depending on the country.
> - The stand base supplied with this product contains a circuit board. Care should be taken when handling the base.

Items sold separately

> The following items can be purchased at your nearest retailer.
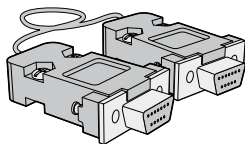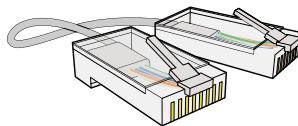
RS-232C Cable	LAN Cable	USB cable
HDMI-DVI cable	D-SUB cable	
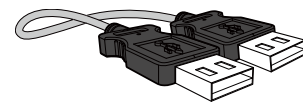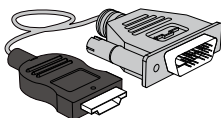
Preparations
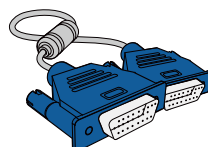
1.2 Parts

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.

OSD Guide

MENU   SAMSUNG MAGIC BRIGHT

| MENU | ⬆/▼ | ▲/◉ | ▢/↵ | AUTO | ⏻ | ○ | ⏻ |

Icons	Description
MENU	• Open or close the onscreen display (OSD) menu, or return to the last menu. • OSD control lock: Maintain the current settings, or lock the OSD control to prevent unintended changes to settings. Enable: To lock the OSD control, press the MENU button [MENU] for five seconds. Disable: To unlock the locked OSD control, press the MENU button [MENU] for more than five seconds. 📖 If the OSD control is locked, • **Brightness** and **Contrast** can be adjusted, and **INFORMATION** can be viewed. • The **Customized Key** function can be used by pressing the [⬆] button. (The **Customized Key** function specified before the OSD control was locked is available even when the OSD control is locked.)
⬆	Configure **Customized Key** and press [⬆]. The following options will be enabled. ᴹᴬᴳᴵᶜ**Angle** - ᴹᴬᴳᴵᶜ**Bright** - **Image Size** 📖 To configure **Customized Key**, go to **SETUP&RESET** → **Customized Key** and select the mode you want.

Preparations
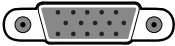
Icons	Description
▲ / ▼	Move to the upper or lower menu or adjust the value for an option on the OSD menu.
⦿	Adjust the screen brightness.
/↵	Confirm a menu selection. Pressing the [/↵] button when the OSD menu is not displayed will change the input source (**Analog**/**Digital**). If you power on the 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.
AUTO	Press the [AUTO] button to automatically adjust the screen settings. Changing the resolution in Display Properties will activate the **Auto Adjustment** function.
⏻	Turn the screen on or off.
(Power lamp)	The power indicator will be lit when the product is operating normally. To reduce power consumption, it is best to remove the power cable when you will not be using the product for an extended period of time.
⏻	This is the PCoIP power button. It is enabled only when the stand base is connected to the monitor. The button light is on when the button is functioning properly. If you press and hold this button for more than 4 seconds, the connection to the server will be disconnected. Refer to "2.2 Connection to Use "PCoIP"" in the "Using PCoIP" section for details on how to connect the stand to the monitor.
OSD Guide	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.) To access the onscreen menu when the guide is displayed, press the corresponding button again. The OSD guide may vary depending on the function or product model. Refer to the actual product.

Preparations

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 a USB device.
	Device which support RS-232C connection (interface) can be connected.
	Connect to a network using the LAN cable.
	Connect to an audio output device such as headphones.
	Connect to a secondary monitor using the D-SUB cable.
	Connect to the stand base or primary monitor using the DVI cable.
[DC 14V OUT]	Connect to [DC 14V] on the monitor using the monitor power cable.
[DC 14V IN]	Connect to the DC power adapter.

Preparations

1.2.3 Right Side View

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

DVI IN   RGB IN   DC 14V   MIC
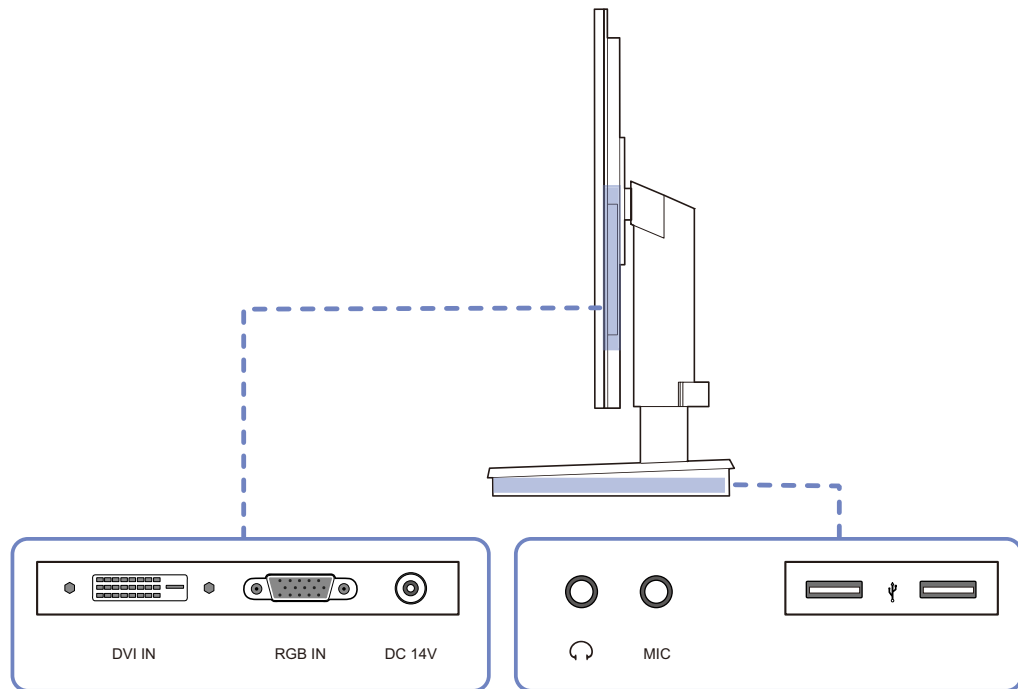
Port	Description
	Connect to a PC or the stand base using the DVI cable.
	Connect to a PC or the stand base using the D-SUB cable.
	Connect to ⊚[DC 14V OUT] on the stand base using a power extension cable.
[ ]	Connect to an audio output device such as headphones.
[MIC]	Connect to a microphone.
	Connect to a USB device.

1   Preparations

1.3   Installation

1.3.1   Attaching the Stand
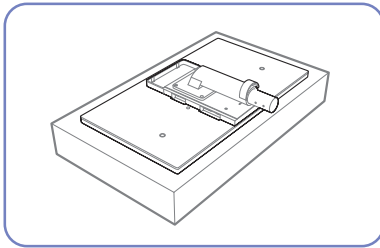
Place a protective cloth or cushion on a flat surface. Next, place the product with the face down on top of the cloth or cushion.
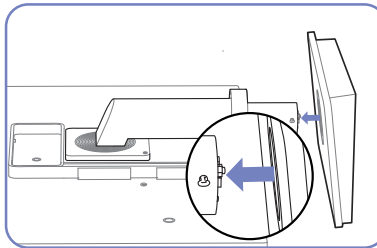
Insert the stand base into the stand in the direction of the arrow.
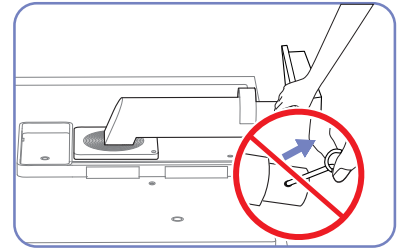
Do not remove the fixing pin until you are finished attaching the stand.
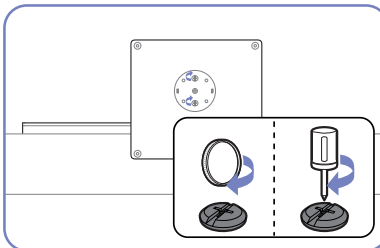
Fasten the screw tightly (using a screwdriver or coin) into the bottom of the stand base.
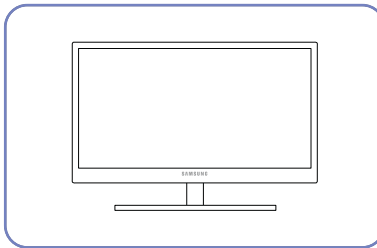
After installing the stand, place the product upright.
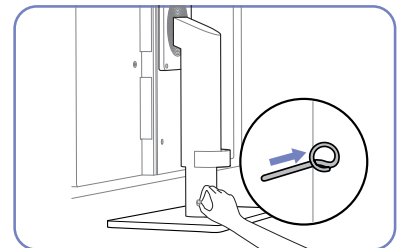
You can remove the fixing pin and adjust the stand now.
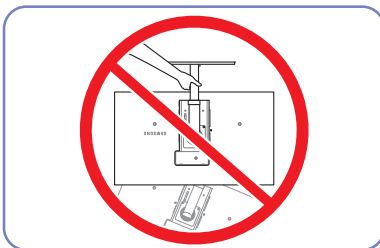
- Caution

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.

Preparations

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.

-2˚~25˚
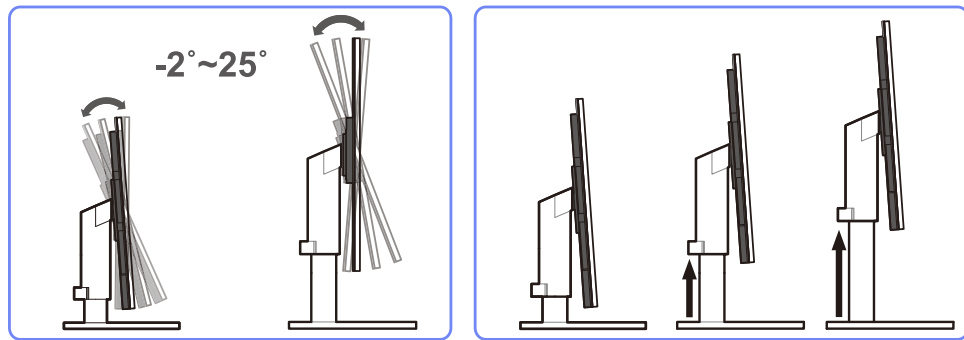
- To adjust the height, remove the fixing pin.
- The monitor tilt and height can be adjusted.
- Hold the top center of the product and adjust the height carefully.

1.3.3   Rotating the Monitor

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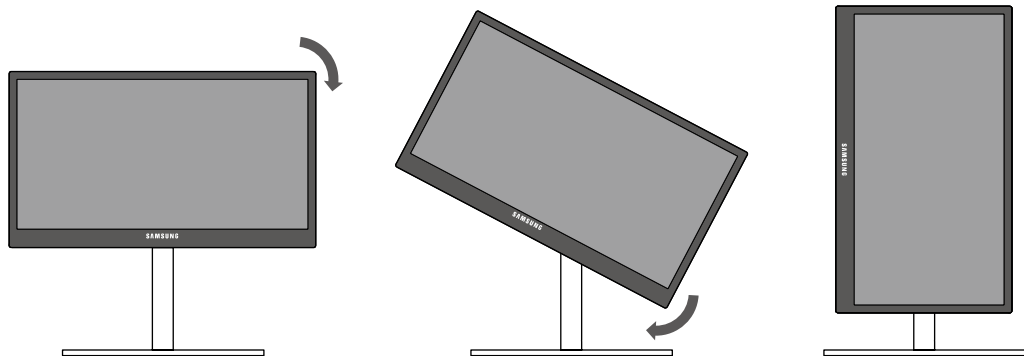
> - Be sure to fully extend the stand before rotating the monitor.
> - If you rotate the monitor without fully extending the stand, the corner of the monitor may hit the floor and get damaged.
> - Do not rotate the monitor counterclockwise. The monitor may get damaged.

1 Preparations

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.
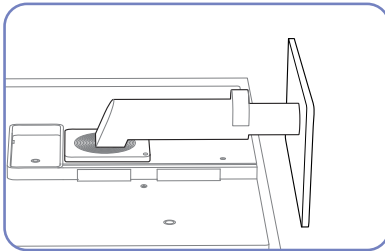
Place a protective cloth or cushion on a flat surface. Next, place the product with the face down on top of the cloth or cushion.
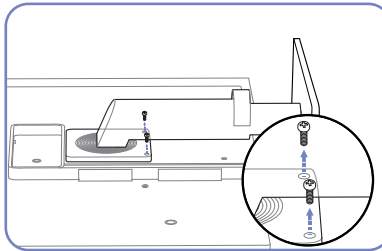
Unfasten the screw from the back of the product.
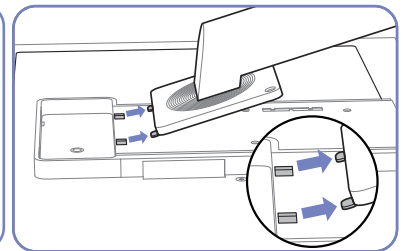
Lift and detach the stand.

Installing a Wall-mount Kit or Desktop Stand
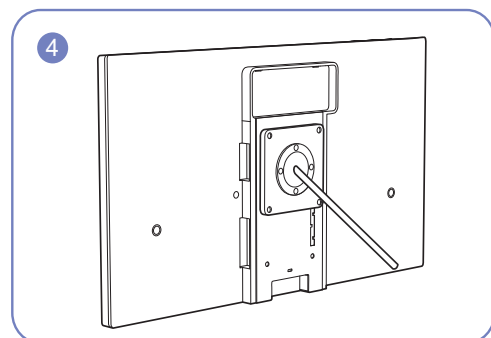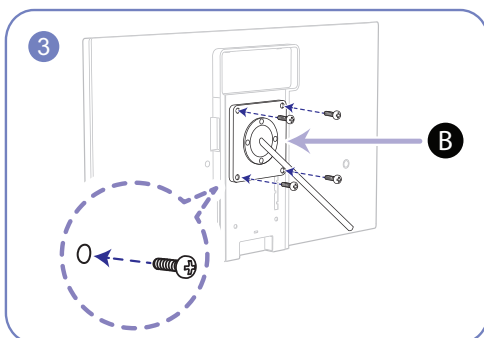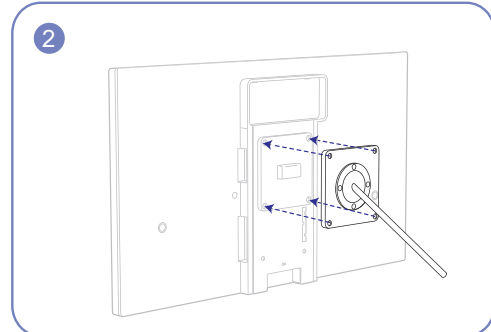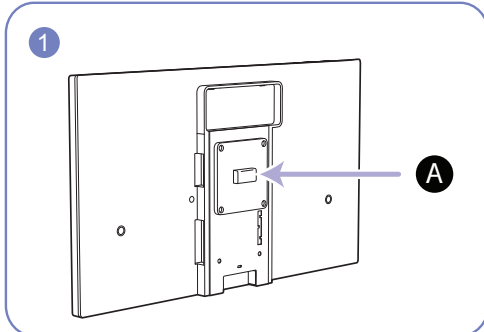
Ⓐ Attach the wall-mount kit or desktop stand here

Ⓑ 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.

Preparations

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.
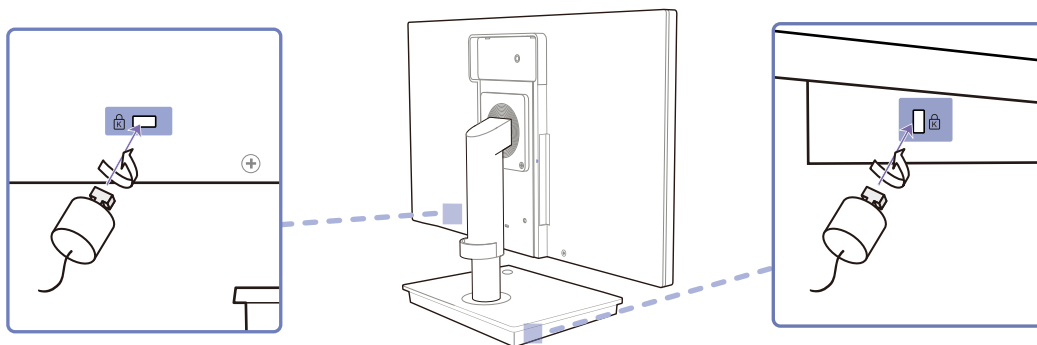
To lock an anti-theft locking device:

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 Using "PCoIP"?

2.1 What is a "PC over IP"?
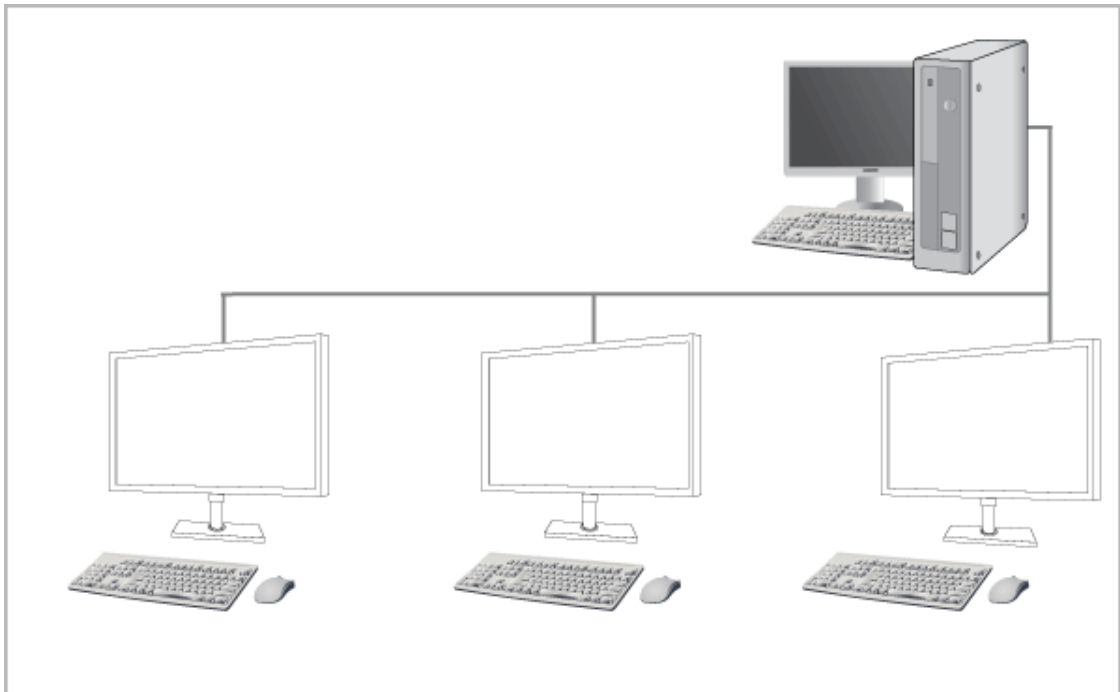
- This monitor can decode and display the screen of the server PC encoded and transmitted through the network (LAN) as well as display the computer screen like a conventional monitor. This monitor shows a far more improved performance than a normal RDP and has been designed to support a resolution of 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(RGB OUT) port.

2 Using "PCoIP"?

2.2 Connection to Use "PCoIP"

2.2.1 Connection Using the DVI Cable
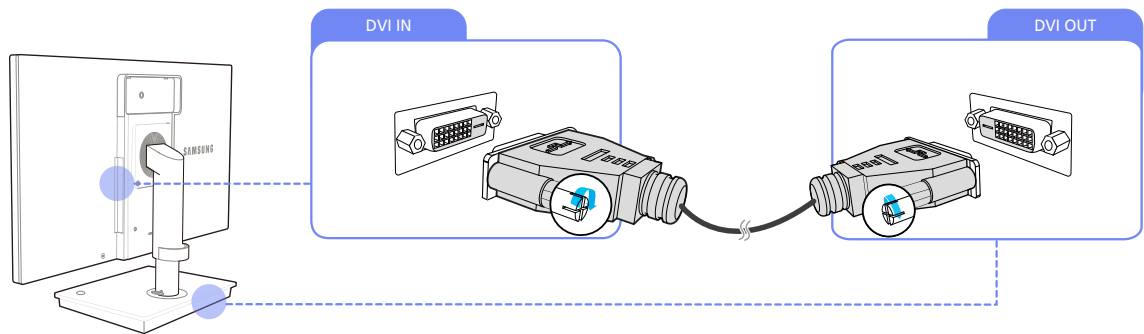
1 Connect the DVI cable to [DVI IN] on the back of the monitor and [DVI OUT] on the stand base.

2 Connect the DC power adapter to the product and a power outlet. Next, turn on the power switch on the stand base.

(For details, refer to "3.3 Connecting the Power".)

3 Press [/] to change the input source to Digital.

2.2.2 Connecting to Headphones or Speakers

Using "PCoIP"?
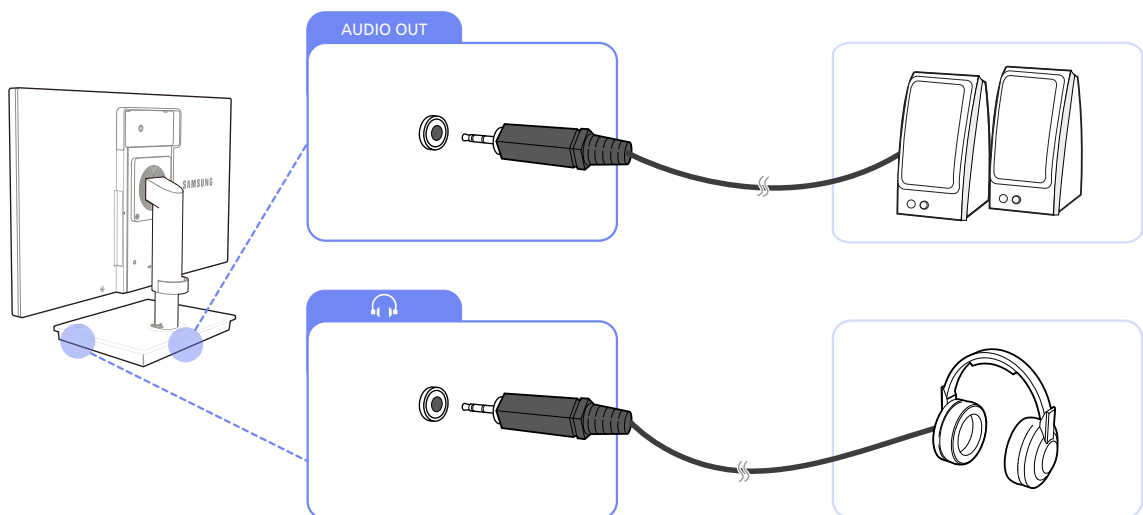
1 Connect an audio output device (headphones or speakers) to [AUDIO OUT] on the back or [🎧] on the right side of the stand base.

2.2.3   Connecting to a LAN

LAN
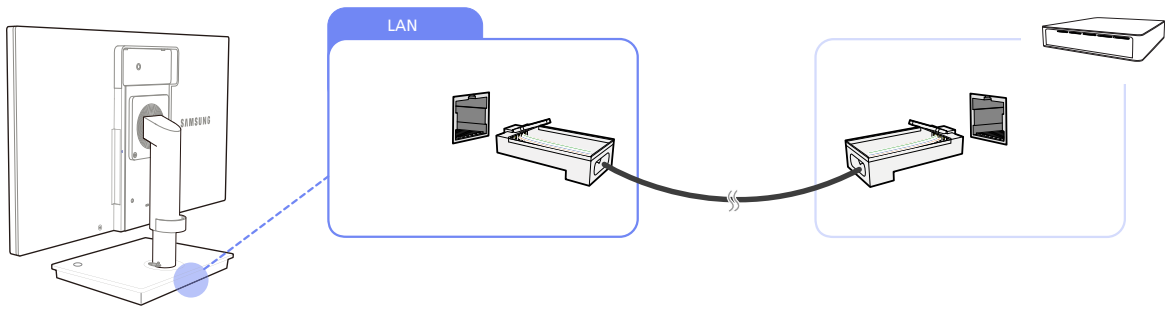
1 Connect the LAN cable to [LAN] on the back of the stand base.

> It is not supported when the network speed is below or equal to 10Mbps.

2 Using "PCoIP"?

2.2.4 Connecting MIC

MIC
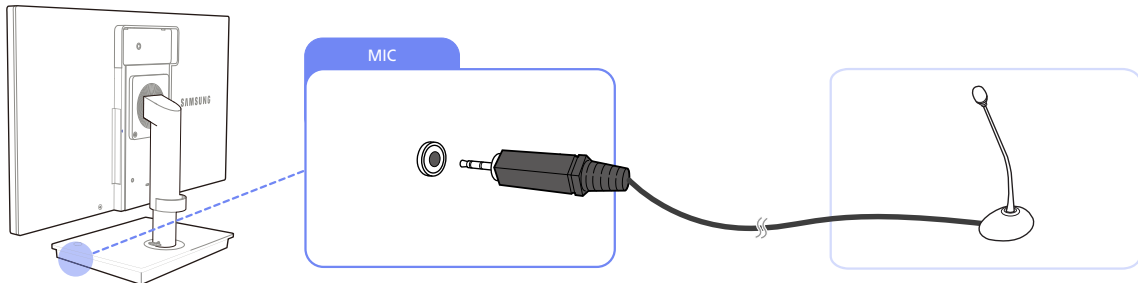
1 Connect the microphone to [MIC] on the right side of the stand base.

2.2.5 Connecting a USB Devices

- The [ ] 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.
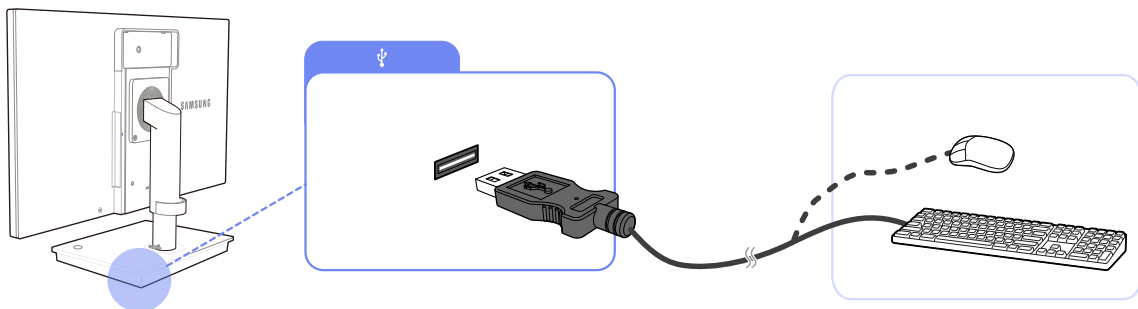
1 Connect a USB device (keyboard, mouse, etc.) to [ ] on the back or right side of the stand base.

2

Using "PCoIP"?

2.2.6 Connecting to a Secondary Monitor
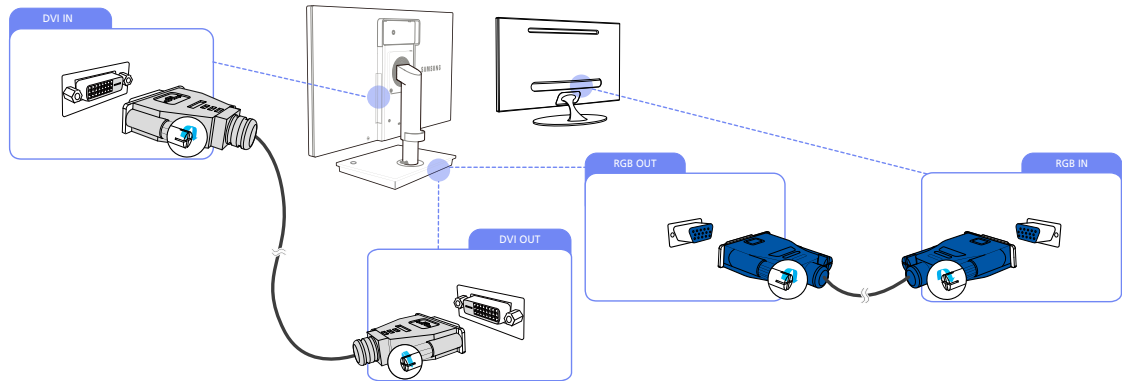
1 Connect the DVI cable to [DVI IN] on the back of the product and [DVI OUT] on the stand base.

2 Connect the D-SUB cable to [RGB OUT] on the stand base and [RGB IN] on the secondary monitor.

3 Connect the DC power adapter to the product and a power outlet. Next, turn on the power switch on the stand base.

(For details, refer to "3.3 Connecting the Power".)

> - The [RGB OUT] port can be used only to connect to a secondary monitor.
> - By removing all the cables from the stand, you can connect the monitor to a PC to use it as a PC monitor.

2 **Using "PCoIP"?**

2.3 "PCoIP"

2.3.1 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 provides a mechanism to connect to a host device via the Connect Screen. The Connect Screen is presented to the user on startup.

The Connect Screen also allows access to the Options Window.

The Options Window is accessible through the <Options> button on the Connect Screen. An administrative password is required to change Portal options.

2.3.2 Connect Screen

The Connect Screen is shown on startup except when the Portal has been configured for a managed start-up or auto-reconnect.

The logo displayed above the <Connect> button can be changed by uploading a replacement image via the Administrative Web Interface.

Figure 2-1: OSD Connect Screen

2 Using "PCoIP"?
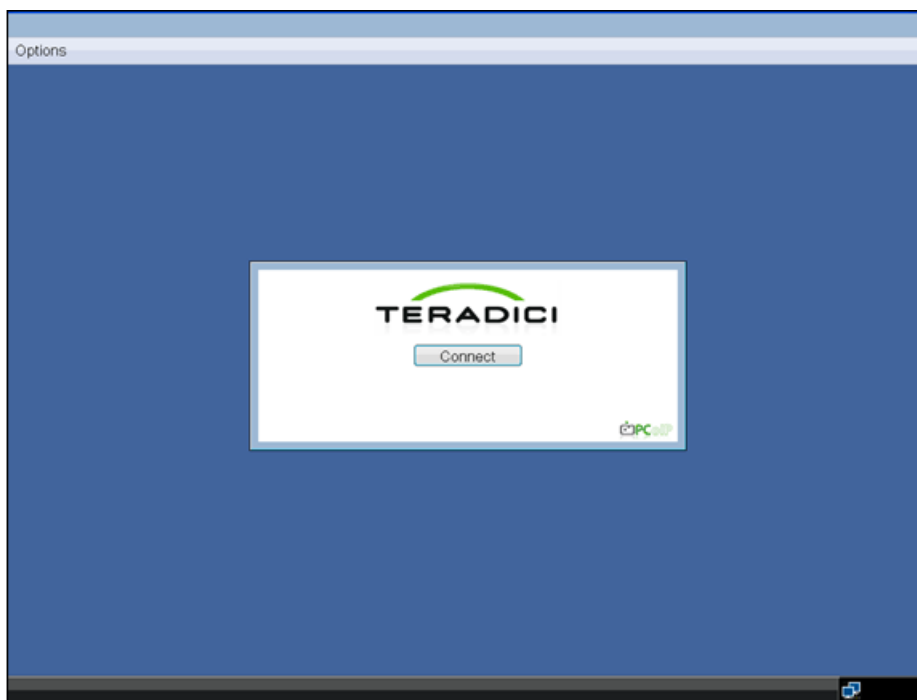
Connect Button

Selecting the Connect button initiates a PCoIP or RDP session, depending on the session settings. While the PCoIP connection is pending, the OSD local GUI will display a "Connection Pending" message. When the connection is established, the OSD local GUI will disappear and be replaced with the session image.

Figure 2-2: OSD Connect Screen (Connecting)

Using "PCoIP"?
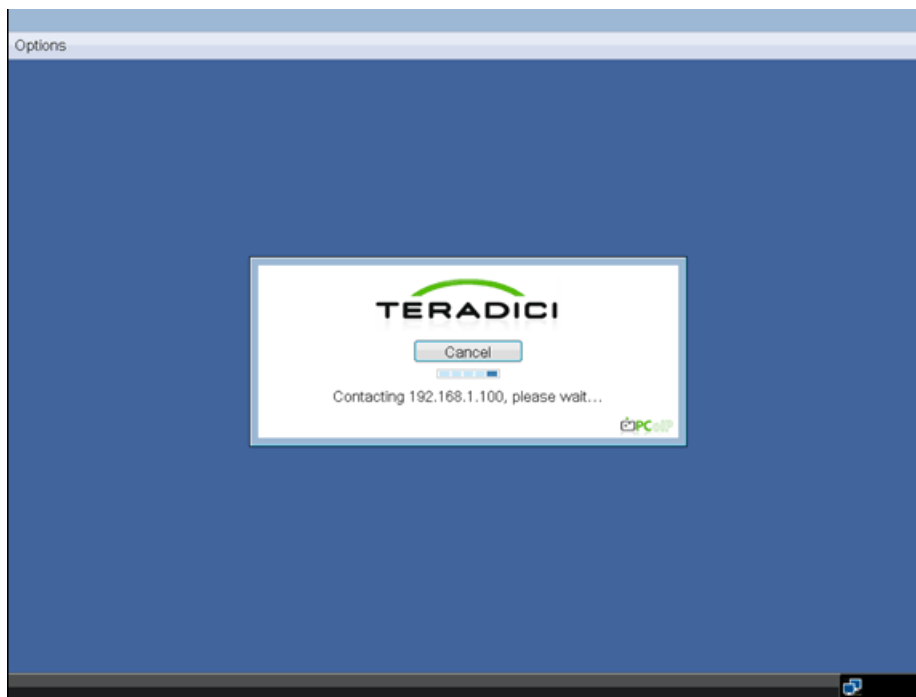
2.3.3 OSD <Options> Menu

Selecting the <**Options**> menu will produce a list of selections. The OSD <**Options**> menu contains:

- <**Configuration**>
- <**Diagnostics**>
- <**Information**>
- <**User Settings**>
- <**Password**>

Selecting one of the selections will produce a settings window.

Figure 2-3: OSD <**Options**> Menu

2.3.4 <Configuration> Window

The <**Configuration**> window allows the administrator to access window tabs with settings that define how the Portal operates and interacts with its environment.

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

- <**Network**>
- <**Label**>
- <**Connection Management**>
- <**Discovery**>
- <**Session**>
- <**RDP**>

Using "PCoIP"?

- <**Language**>
- <**OSD**>
- <**Reset**>
- <**VMware View**>

Each tab has <**OK**>, <**Cancel**>, and <**Apply**> buttons that allow the administrator to accept or cancel the setting changes made on the tab.

> Some PCoIP devices have password protection disabled and do not require a password to login into the administration webpages or access the OSD parameters. Password protection for the Log In page and OSD can be enabled through PCoIP Management Console.

<Network> Tab

The <**Network**> tab allows an administrator to set the Portal network parameters.

> The Network parameters can also be configured using the Webpage Administration Interface.

Figure 2-4: <**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 field is the device's <**IP address**>. If DHCP is disabled, this field is required. If DHCP is enabled, this field is not editable. This field must be a valid IP address, and if an invalid IP address is entered, the OSD will prompt the administrator to correct it.

Using "PCoIP"?

- <**Subnet Mask**>

  The <**Subnet Mask**> field is the device's subnet mask. If DHCP is disabled, this field is required. If DHCP is enabled, this field is not editable. This field must be a valid subnet mask, if an invalid subnet mask is entered, the OSD will prompt the administrator to correct it.

- <**Gateway**>

  The <**Gateway**> field is the device's gateway IP address. If DHCP is disabled, this field is required. If DHCP is enabled, this field is not editable.

- <**Primary DNS Server**>

  The <**Primary DNS Server**> field is the device's primary DNS IP address. This field is optional. If DHCP is enabled, this field is not editable.

- <**Secondary DNS Server**>

  The <**Secondary DNS Server**> field is the device's secondary DNS IP address. This field is optional. If DHCP is enabled, this field is not editable.

- <**Domain Name**>

  The <**Domain Name**> is the domain name used, e.g. 'domain.local'. This field is optional. This field specifies the domain that the Host or Portal is on.

- <**FQDN**>

  The <**FQDN**> is the Fully Qualified Domain Name for the Host or Portal. The default is pcoip-host-MAC or pcoip-portal-MAC where MAC is the Host or Portal's MAC address. If used, the Domain Name will be appended, e.g. pcoip-host-MAC.domain.local.

- <**Ethernet Mode**>

  The <**Ethernet Mode**> field configures the Ethernet mode of the Portal. The options are:

  - □ <**Auto**>
  - □ <**100 Mbps Full-Duplex**>
  - □ <**10 Mbps Full-Duplex**>

  > Administrators should always set the <**Ethernet Mode**> to <**Auto**> and only use <**10 Mbps Full-Duplex**> or <**100Mbps Full-Duplex**> when the other network equipment, e.g. switch, is also configured to operate at <**10 Mbps Full-Duplex**> or <**100 Mbps Full-Duplex**>.

<Label> Tab

The <**Label**> tab allows an administrator to add custom information for the Host or Portal.

> The Portal Label parameters can also be configured using the Webpage Administration Interface.

Using "PCoIP"?

Figure 2-5: <**Label**> Configuration

- <**PCoIP Device Name**>
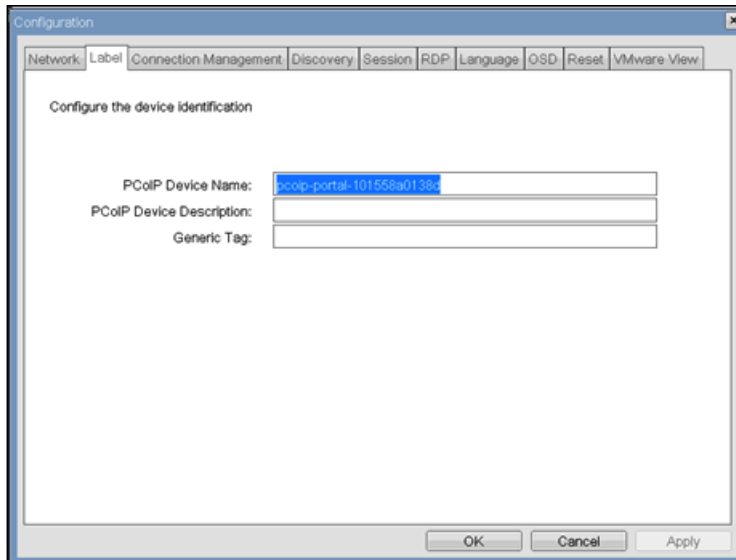
    If the <**PCoIP Device Name**> allows the administrator to give the Host or Portal a logical name. The default is pcoip-host-MAC or pcoip-portal-MAC where MAC is the Host or Portal's MAC address.

- <**PCoIP Device Description**>

    The <**PCoIP Device Description**> allows the administrator to give the Host or Portal a description or more information, e.g. location of endpoint, etc.

- <**Generic Tag**>

    The <**Generic Tag**> allows the administrator to give the Host or Portal a generic tag information.

<Connection Management> Tab

The <**Connection Management**> tab allows enabling or disabling connection management, and to specify the IP address of the connection manager.

In a managed connection, an external <**Connection Managerment**> Server communicates with and can remotely control and configure the device. Additionally, the connection manager can locate an appropriate peer for the device to connect to and initiate the connection. <**Connection management**> can greatly simplify the administration effort for a large, complex system.

> The Connection Management parameters can also be configured using the Webpage Administration Interface.

Using "PCoIP"?

Figure 2-6: <**Connection Management**> Configuration

- <**Enable Connection Management**>
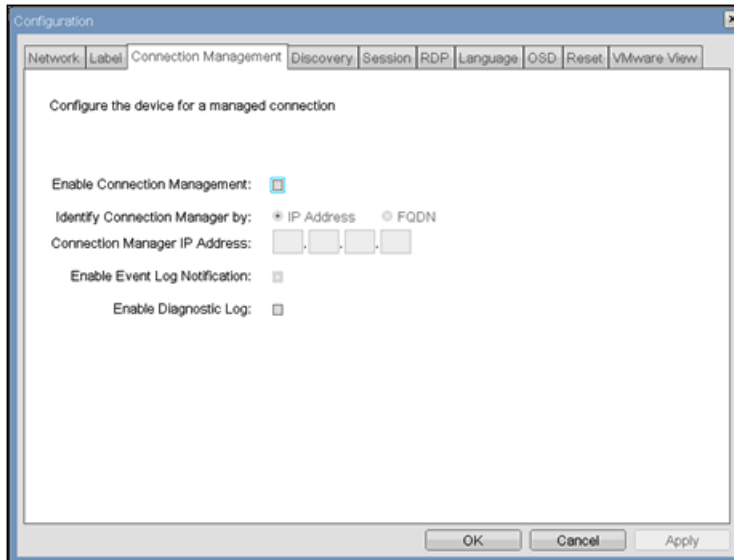
  If the <**Enable Connection Management**> option is enabled, the device can be configured and controlled by an external connection manager.

- <**Identify Connection Manager By**>

  The <**Identify Connection Manager By**> selector allows the administrator to choose whether the connection manager is identified by <**IP address**> or by Fully Qualified Domain Name (FQDN). If connection management is disabled, this field is not required and is not editable.

  Table 2-1 shows the configuration parameters available when either method is chosen. If an invalid IP address or DNS name is entered, the OSD will prompt the administrator to correct it.

  Table 2-1: Connection Manager Method

METHOD	DATA FIELDS
<**IP Address**>	Connection Manager IP Address
<**FQDN**>	Connection Manager DNS name

- <**Enable Event Log Notification**>

  The <**Enable Event Log Notification**> field controls whether the PCoIP Host and Portal devices send the contents of their event logs to the connection management server.

- <**Enable Diagnostic Log**>

  The <**Enable Diagnostic Log**> field controls whether connection management specific debug messages are written to the event log of the PCoIP Host and Portal devices.

2

Using "PCoIP"?

<Discovery> Tab

The <**Discovery**> configuration tab allows the use of features that ease the discovery of Portals in a PCoIP system.

> The Discovery parameters can also be configured using the Webpage Administration Interface.

Figure 2-7: <**Discovery**> Configuration

- <**Enable Discovery**>
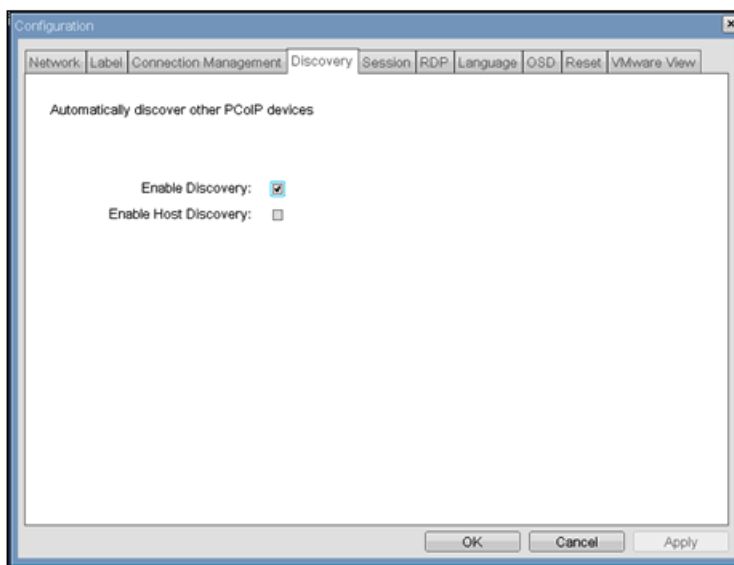
  If the <**Enable Discovery**> option is enabled, the device will dynamically discover peer devices using SLP Discovery, without requiring prior knowledge of their locations in the network. This can dramatically reduce configuration and maintenance effort for complex systems.

  > SLP discovery requires routers configured to allow multicast, and therefore DNS-SRV Discovery is the recommended discovery mechanism.

- <**Enable Host Discovery**>

  The <**Enable Host Discovery**>feature allows the Portal to discover Hosts that are not in a PCoIP session. When enabled, the Portal is able to display up to 10 available hosts in order of being discovered. It is expected that the <**Enable Host Discovery**> feature will be used with small numbers of Hosts.

2 Using "PCoIP"?

<Session> Tab

The <**Session**> tab allows an administrator to configure how the device connects to peer devices.

> 📝 The Session parameters can also be configured using the Webpage Administration Interface.

Figure 2-8: <**Session**> Configuration

- <**Session Type**>
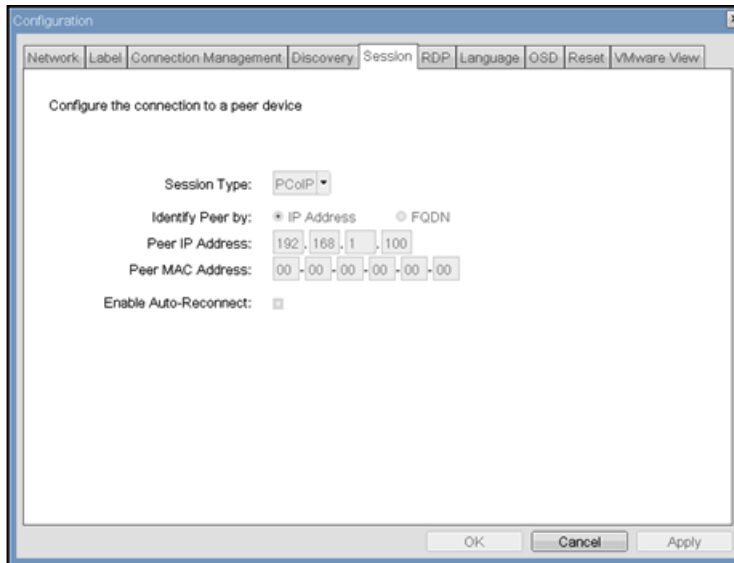
  The <**Session Type**> allows the administrator to configure the Portal for a PCoIP session or RDP session.

- <**Identify Peer By**>

  The <**Identify Peer By**> selector allows the administrator to choose whether the peer device is identified by IP and MAC address or by Fully Qualified Domain Name (FQDN).

  Table 2-2 shows the peer identity parameters available when either method is chosen. If an invalid IP address or DNS name is entered, the OSD will prompt the administrator to correct it.

  Table 2-2: Peer Identity Methods

PEER IDENTITY METHODS	DATA FIELDS	COMMENT
Peer IP/MAC	Peer IP Address	PCoIP
	Peer MAC Address	PCoIP
Peer FQDN	Peer FQDN	PCoIP

- <**Enable Auto-Reconnect**>

  The <**Enable Auto-Reconnect**> option allows the Portal to automatically reconnect with the last connected Host when a session is lost.

Using "PCoIP"?

<RDP>

The <**RDP**> tab allows the administrator to configure settings specific to the Remote Desktop Protocol (<**RDP**>).

> The **RDP** parameters can also be configured using the Webpage Administration Interface.

Figure 2-9: <**RDP**> Configuration

<Resolution>
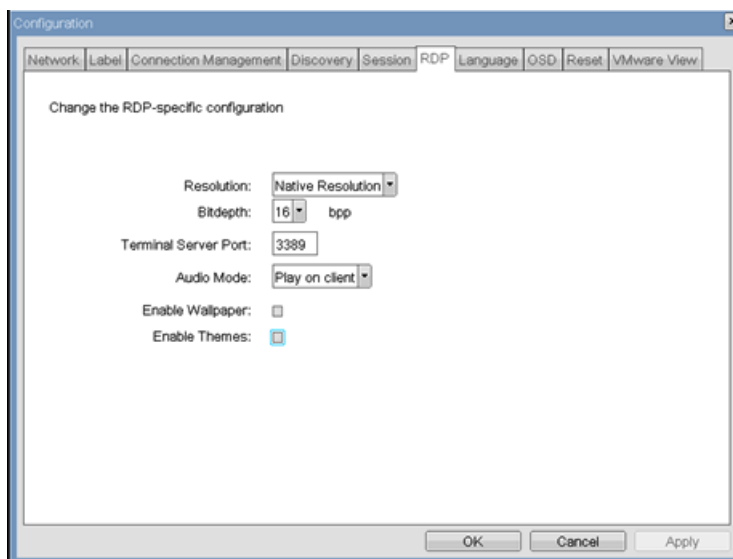
The <**Resolution**> field is the <**RDP**> screen resolution setting. Possible values are:

- <**Native Resolution**>
- <**800x600**>
- <**1024x768**>
- <**1280x768**>
- <**1280x1024**>
- <**1440x900**>
- <**1600x1200**>
- <**1680x1050**>
- <**1920x1080**>
- <**1920x1200**>

<Bit Depth>

The <**Bit Depth**> is the <**RDP**> session colour bit depth. Possible values are:

- <**8 bpp**>(bits per pixel)
- <**16 bpp**>
- <**24 bpp**>

2 Using "PCoIP"?

<Terminal Server Port>

The <**Terminal Server Port**> field sets the port number that the <**RDP**> client connects to.

<Audio Mode>

The <**Audio Mode**> field configures where the audio playback occurs for the <**RDP**> session. Possible options are:

- <**None**>
- <**Play on client**>
- <**Play on host**>

<Enable Wallpaper>

The <**Enable Wallpaper**> field enables the use of wallpaper with the <**RDP**> session.

<Enable Themes>

The <**Enable Themes**> field enables the use of desktop themes with the <**RDP**> session.

Using "PCoIP"?

<Language> Tab

The <**Language**> field allows the administrator to configure the language of the OSD.

🖎 The Language parameters can also be configured using the Webpage Administration Interface.

Figure 2-10: <**Language**> Configuration

<Language>
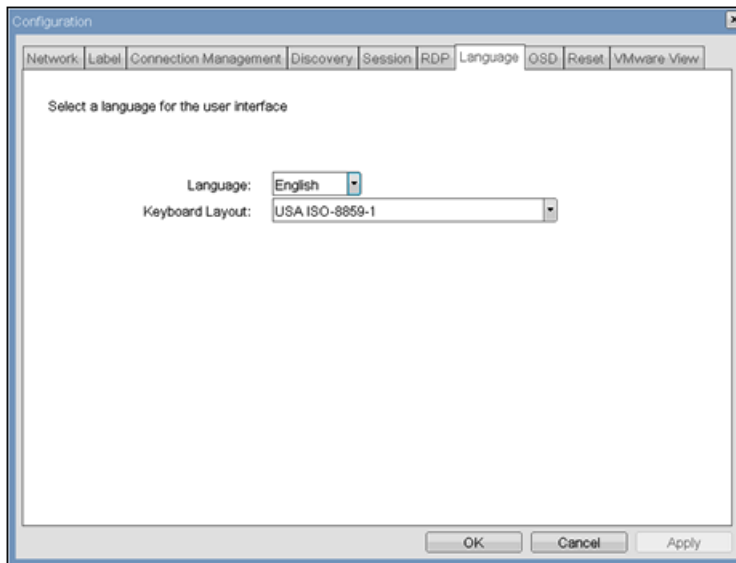
The <**Language**> field can be used to configure the language for the on-screen display and event log messages.

<Keyboard Layout>

The <**Keyboard Layout**> field allows the administrator to change the keyboard layout.

<OSD> Tab

The <**OSD**> tab allows the administrator to modify the On Screen Display (<**OSD**>) parameters.

🖎 The OSD parameters can also be configured using the Webpage Administration Interface.

Using "PCoIP"?

Figure 2-11: <**OSD**> Configuration

<Screen-Saver Message>
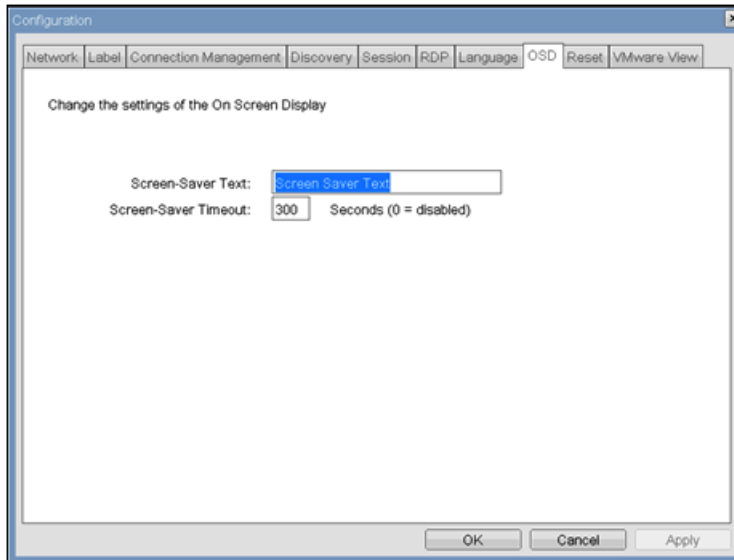
The <**Screen-Saver Message**> field allows the administrator to change the OSD screen-saver text. The text can be up to 240 characters.

The screen-screen saver is a simple black screen with the screen-saver text jumping randomly.

<**Screen-Saver Timeout**>

The <**Screen-Saver Timeout**> field allows the administrator to configure the screen-saver timeout. The timeout can be configured in seconds, up to 9999 seconds. A setting of 0 seconds disables the screen-saver.

<Reset> Tab

The <Reset> tab allows the administrator to reset all the configurable parameters stored in flash.

    The Reset can also be initiated using the Webpage Administration Interface.

Figure 2-12: <Reset>

<Reset Parameters>
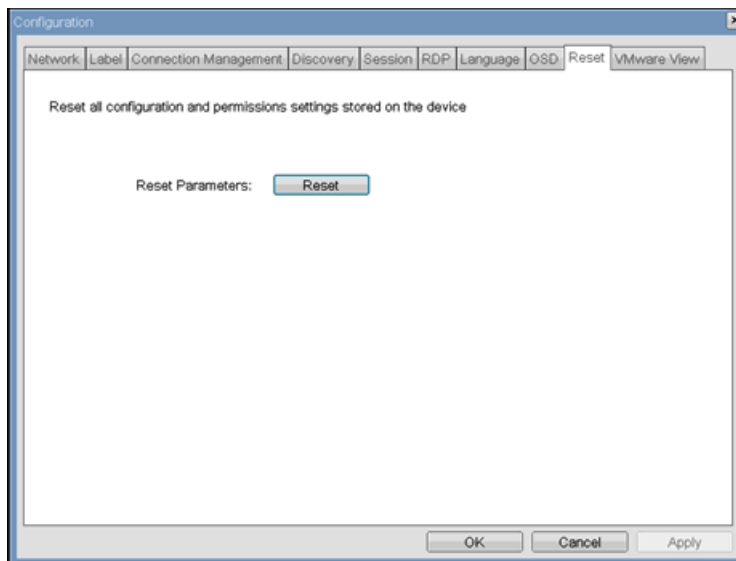
The <Reset Parameters> <Reset> button resets all configuration and permissions to factory default
values.

2 Using "PCoIP"?

<VMware View> Tab

The <**VMware View**> tab allows configuration for use with a VMware View Connection Server.

> 📝 The VMware View parameters can also be configured using the Webpage Administration Interface.

Figure 2-13: <**VMware View**> Configuration

<Enable VMware View>
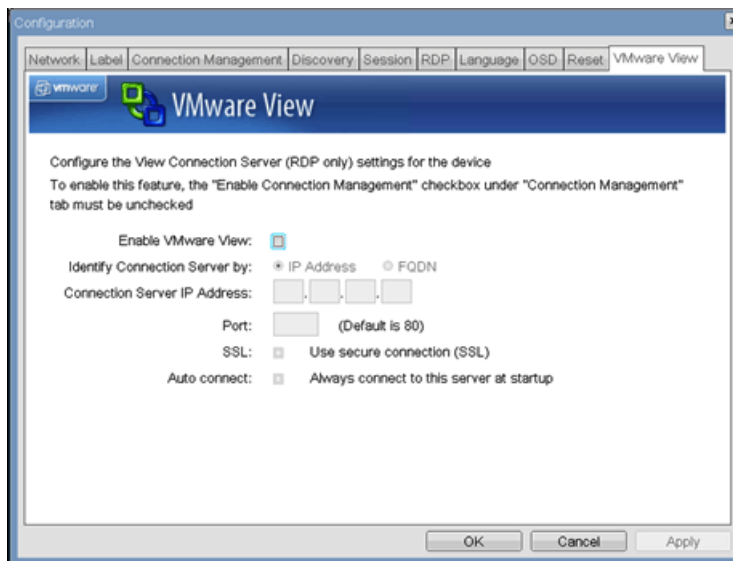
When the <**Enable VMware View**> option is enabled, the Portals can be configured for use with a VMware View Connection Server.

> 📝 To enable the VMware View feature, the <**Connection Management**> checkbox on the <**Enable Connection Management**> tab must be unchecked.

<Identify Connection Server by>

The <**Identify Connection Server by**> selector allows the administrator to choose whether the connection manager is identified by IP address or by Fully Qualified Domain Name (FQDN). If VMware View is disabled, this field is not required and is not editable.

<Port>

The <**Port**> parameter allows the administrator to specify the port used to communicate to the VMware View Connection Server.

<SSL>

The <**SSL**> parameter allows the administrator to specify the <SSL> to communicate with the VMware View Connection Server.

Using "PCoIP"?

<Auto connect>

The <**Auto connect**> parameter allows the administrator to specify that the Portal automatically always connects with the VMware View Connection Server at startup.

2.3.5 <Diagnostics> Window

The <**Diagnostics**> allows the administrator to access window tabs with diagnostics concerning the Portal. The tabs in the <**Diagnostics**> window are:

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

Each tab has a Close button to close the window.

<Event Log> Tab

The <**Event Log**> tab allows the administrator to view and clear event log messages from the Portal.

> The <**Event Log**> can also be initiated using the Webpage Administration Interface.

Figure 2-14: <**Event Log**>

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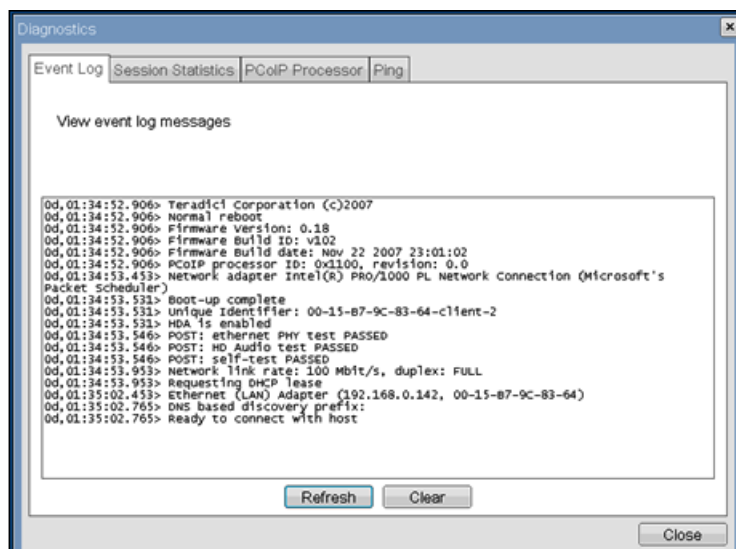
The <**View event log messages**> field displays log messages with time stamp information. There are two associated buttons available.

- <**Refresh**>

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

Using "PCoIP"?

- <**Clear**>

  Selecting the <**Clear**> button clears all of the displayed event log messages.

<Session Statistics> Tab

The <**Session Statistics**> tab allows the administrator to view PCoIP-specific statistics for the last
PCoIP session that was active on the Portal.

>   <**Session Statistics**> can also be viewed using the Webpage Administration Interface.

Figure 2-15: <**Session Statistics**>

<**PCoIP Packets Statistics**>

- <**PCoIP Packets Sent**>
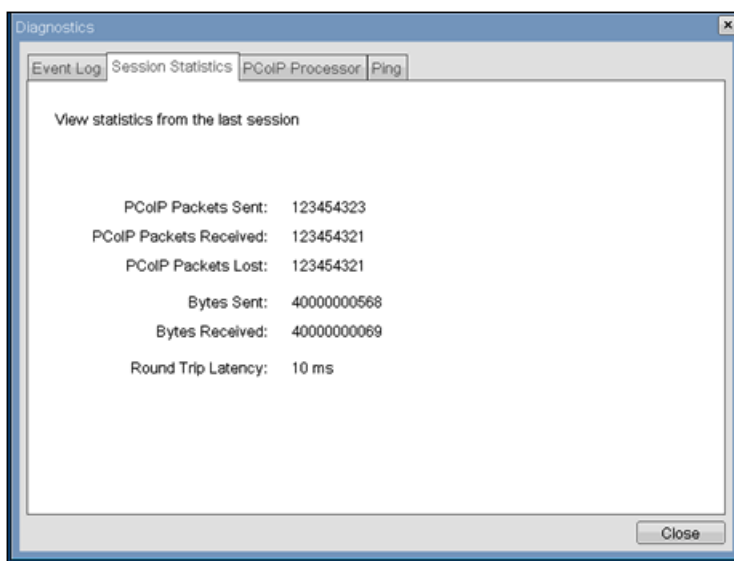
  The <**PCoIP Packets Sent**> field reports the total number of PCoIP packets sent from the Portal to
  the Host in the last active session.

- <**PCoIP Packets Received**>

  The <**PCoIP Packets Received**> ield reports the total number of PCoIP packets received from the
  Host to the Portal in the last active session.

- <**PCoIP Packets Lost**>

  The <**PCoIP Packets Lost**> field reports the total number of PCoIP packets lost in the last active
  session.

<**Bytes Statistics**>

- <**Bytes Sent**>

  The <**Bytes Sent**> field reports the total number of bytes sent in the last active session.

Using "PCoIP"?

- <**Bytes Received**>

    The <**Bytes Received**> field reports the total number of bytes received in the last active session.

<Round Trip Latency>

The <**Round Trip Latency**> field reports the total round-trip PCoIP system (e.g. Portal to Host and back to Portal) and network latency in milliseconds (+/- 1 ms).

<PCoIP Processor> Tab

The <**PCoIP Processor**> tab allows the administrator to view the uptime of the Portal PCoIP processor since last boot.

> The <**PCoIP Processor**> Uptime can also be viewed in the Webpage Administration Interface.

Figure 2-16: <**PCoIP Processor**>

Using "PCoIP"?

<Ping > Tab
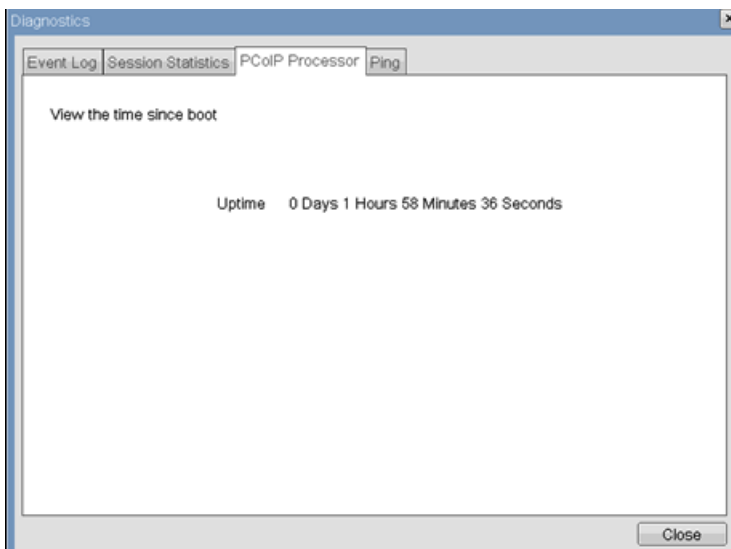
The <**Ping**> tab allows the administrator to ping a device to see if it is reachable across an IP network. This may be useful for determining if a Host is reachable.

Figure 2-17: <**Ping**>

Ping Settings

- <**Destination**>
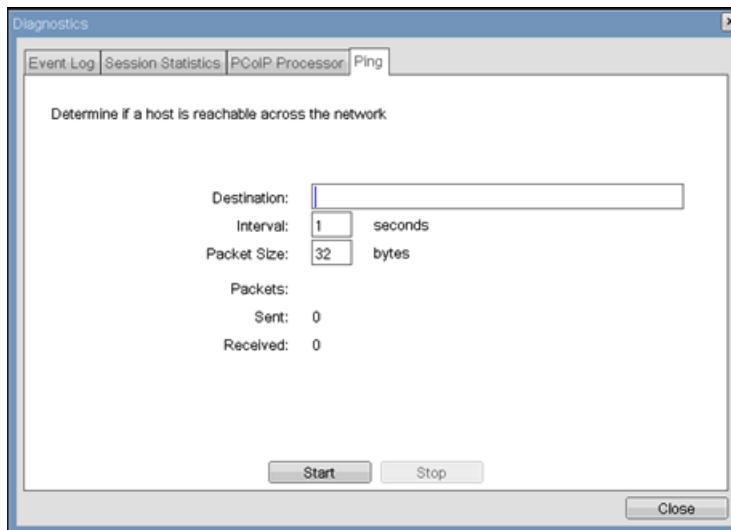
  IP Address or FQDN to ping

- <**Interval**>

  Interval between ping packets

- <**Packet Size**>

  Size of ping packet

Packets

- <**Sent**>

  Number of ping packets sent

- <**Received**>

  Number of ping packets received

2.3.6 <Information> Window

The <**Information**> window allows an administrator to access the Version tab containing information about the device.

> The Version information can also be viewed using the Webpage Administration Interface.

Figure 2-18: <**Version**>
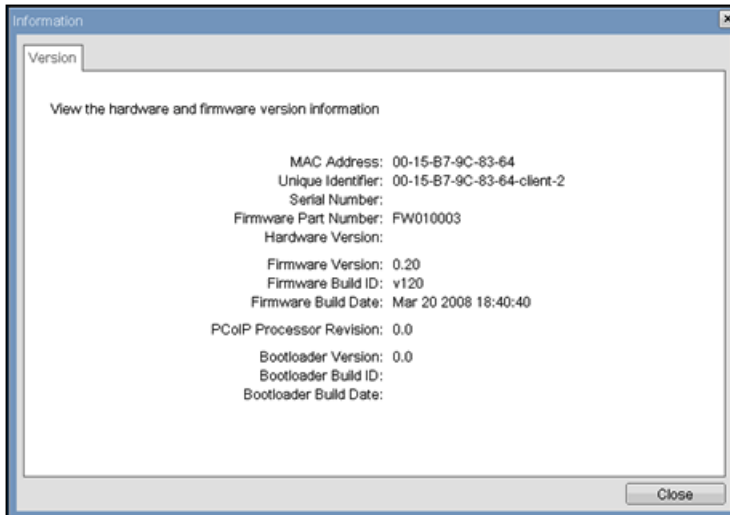
VPD Information

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

- <**MAC Address**>

  Portal unique <**MAC address**>

- <**Unique Identifier**>

  Portal unique identifier

- <**Serial Number**>

  Portal unique serial number

- <**Firmware Part Number**>

  Part number of PCoIP firmware

- <**Hardware Version**>

  Portal hardware version number

Firmware Information

The <**Firmware Information**> reflects the current PCoIP firmware details.

- <**Firmware Version**>

  Version of the current PCoIP firmware

- <**Firmware Build ID**>

  Revision code of the current PCoIP firmware

- <**Firmware Build Date**>

  Build date of the current PCoIP firmware

2 Using "PCoIP"?

<PCoIP Processor Revision>

The <**PCoIP Processor Revision**> Revision field reports the PCoIP Processor Revision code.
TERA1x00 Revision A silicon is denoted by 0.0 and TERA1x00 Revision B silicon is denoted by 1.0.

Bootloader Information

The Bootloader information reflects the current PCoIP bootloader details.

- <**Bootloader Version**>

  Version of the current PCoIP bootloader

- <**Bootloader Build ID**>

  Revision code of the current PCoIP bootloader

- <**Bootloader Build Date**>

  Build date of the current PCoIP bootloader

Using "PCoIP"?

2.3.7 <User Settings> Window

The <**User Settings**> window allows the user to access window tabs that define the mouse and keyboard settings and the PCoIP image quality.

The tabs in the User Settings menu are:

- <**Mouse**>
- <**Keyboard**>
- <**Image**>

<Mouse> Tab

The <**Mouse**> tab allows a user to change the mouse cursor speed settings for the OSD and RDP 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 (see PCoIP Host Software User Guide for more information).

Figure 2-19: <**Mouse**>

- <**Mouse Speed**>
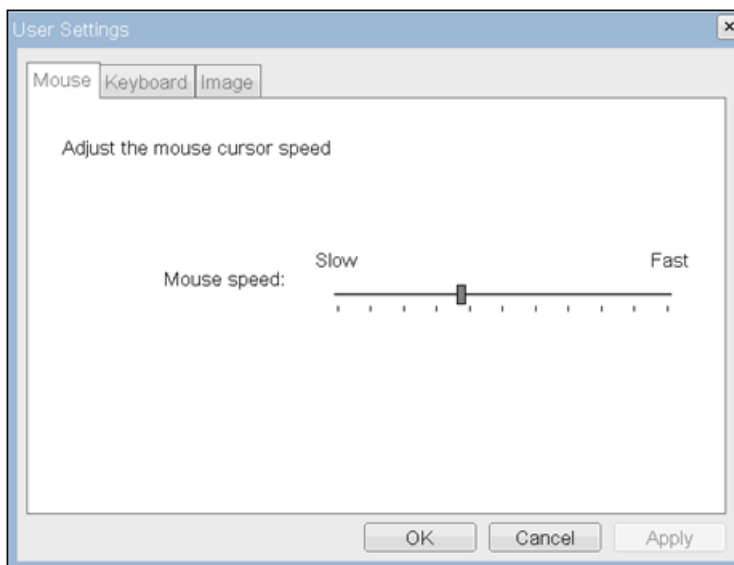
    The <**Mouse Speed**> field allows the Portal mouse cursor speed to be configured.

    > The <**Mouse Speed**> can also be configured via the PCoIP Host Software. For more information on using the PCoIP Host Software, refer to the PCoIP Host Software User Guide for more information.

Using "PCoIP"?

<Keyboard> Tab

The <**Keyboard**> tab allows a user to change the keyboard repeat settings for the OSD and RDP
sessions.

> ✐ The keyboard settings do not affect the keyboard settings when a PCoIP session is active unless the
> Local Keyboard Host Driver function is being used (see PCoIP Host Software User Guide for more
> information).

Figure 2-20: <**Keyboard**>

- ● <**Keyboard Repeat Delay**>

  The <**Keyboard Repeat Delay**> field allows a user to configure the Portal keyboard repeat delay.

- ● <**Keyboard Repeat Rate**>
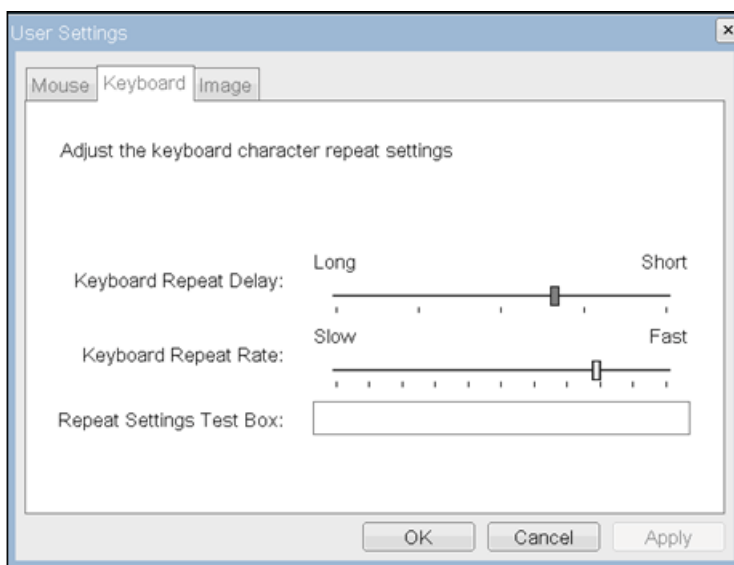
  The <**Keyboard Repeat Rate**> field allows a user to configure the Portal keyboard repeat rate.

- ● <**Repeat Settings Test Box**>

  The <**Repeat Settings Test Box**> field allows a user to test the chosen keyboard settings.

2 Using "PCoIP"?

<Image>

The <**Image**> allows a user to change the image settings on the PCoIP system.

> 📝 The Image parameters can also be configured using the Webpage Administration Interface.

Figure 2-21: <**Image**>

- <**Minimum Image Quality**>
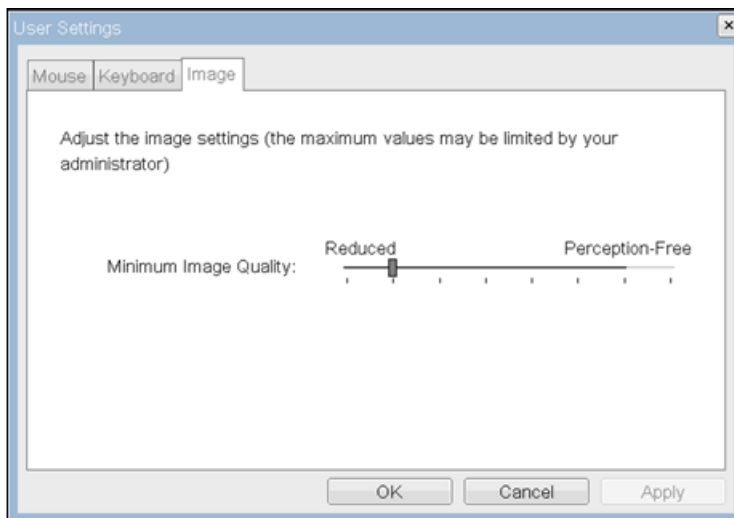
  The <**Minimal Image Quality**> slider allows a user to make compromises between image quality and frame rate when network bandwidth is limited. Some usage cases may require lower-quality images at a higher frame rate, while in other cases higher-quality images at a lower frame rate may be preferred.

  Moving the slider toward <**Reduced**> when the network bandwidth is constrained will degrade the image quality.

  When network bandwidth is not constrained, the PCoIP system will maintain <**perception-free**> quality regardless of the <**Minimum Image Quality**> setting.

2 **Using "PCoIP"?**

2.3.8   <Password> Window

The <**Password**> window allows an administrator to update the administrative password for the device. Note that this will affect the web interface and the local <**OSD**> GUI.

> • Care must be taken when updating the Portal Password as the Portal may become unusable if the password is lost.
> • The Password can also be updated using the Webpage Administration Interface.
> • Some PCoIP devices have password protection disabled by default and this <**Password**> window is not available. Password protection can be enabled through PCoIP Management Console.

Figure 2-22: <**Change Password**>

- <**Old Password**>
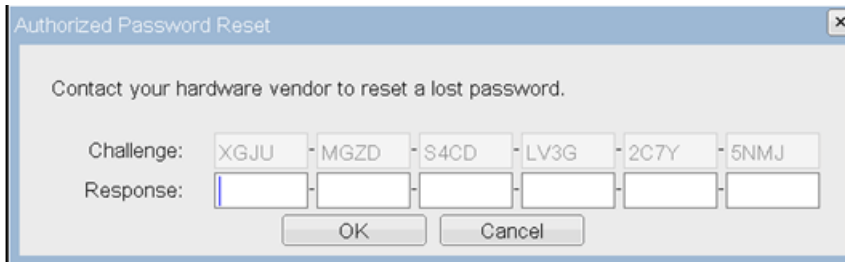
  The <**Old Password**> field must match the current administrative password for the change to take place.

- <**New Password**>

  The <**New Password**> field will be the new administrative password for both the web interface and the local OSD GUI.

- <**Confirm New Password**>

  The <**Confirm New Password**> field must match the <**New Password**> field for the change to take place.

- <**Reset**>

  In the unlikely event that a Portal password is lost, the <**Reset**> button allows an administrator to request a Response code from their vendor. The Challenge code can be sent to the vendor. The vendor will qualify the request and return a Response code if authorized.

  Once the Response code is correctly entered, the Portal's password is reset to an empty string and the administrator is prompted to enter a new password.

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

2 **Using "PCoIP"?**

Figure 2-23: <Authorized Password Reset>

Details on how to use PCoIP are subject to change. To view the latest information, visit the Teradici website. (http://www.teradici.com)

Using "PCoIP"?

2.4   Connect to the host PC using a LAN cable
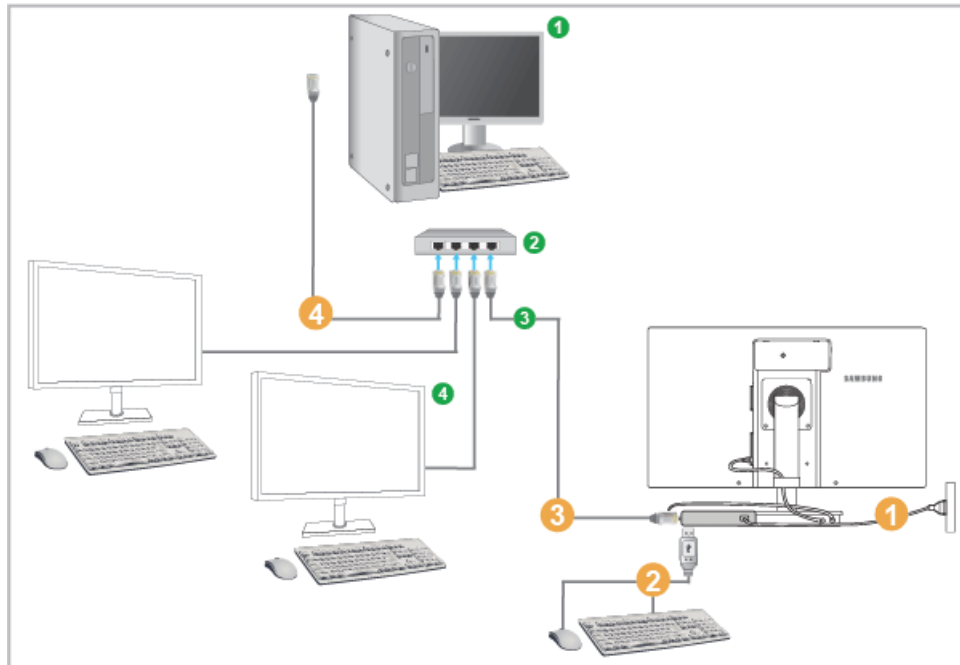
1 Host PC   **2** HUB   **3** LAN Cable   **4** Monitor

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.

3 Connecting and Using a Source Device

3.1 Before Connecting
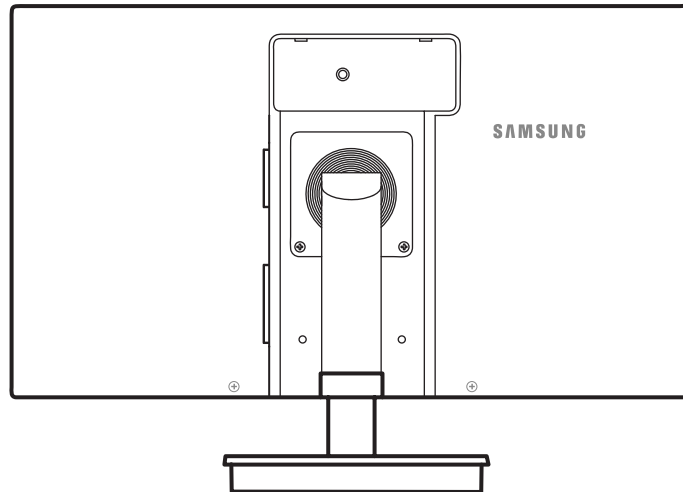
3.1.1 Pre-connection Checkpoints

- 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 **Connecting and Using a Source Device**

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 (Analog Type)
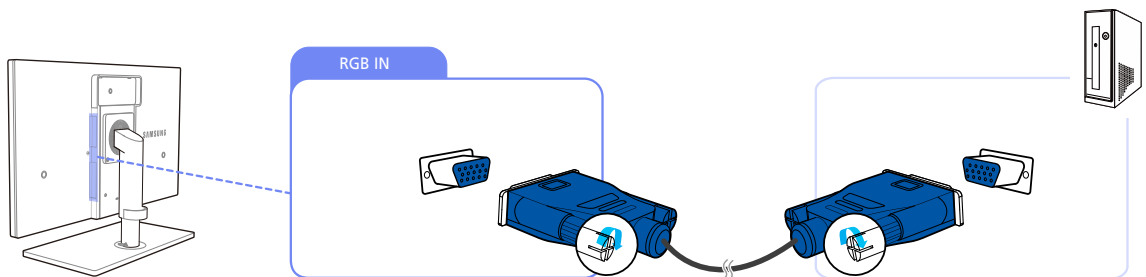
1 Connect the D-SUB cable to the [RGB IN] port on the back of the product and the RGB port on the PC.

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 "3.3 Connecting the Power".)

3 Press [/] to change the input source to **Analog**.

  Audio is not available if the PC and product are connected via the [D-SUB] port.

Connection Using the DVI Cable
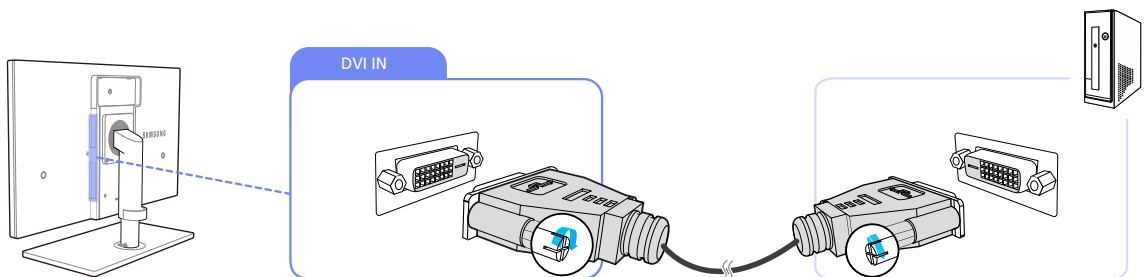
1 Connect the DVI cable to the [DVI IN] port on the back of the product and the DVI port on the PC.

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 "3.3 Connecting the Power".)

Connecting and Using a Source Device

3 Press [/] to change the input source to **Digital**.

 Audio is not available if the PC and product are connected via the [DVI] port.

Connection Using an HDMI-DVI Cable
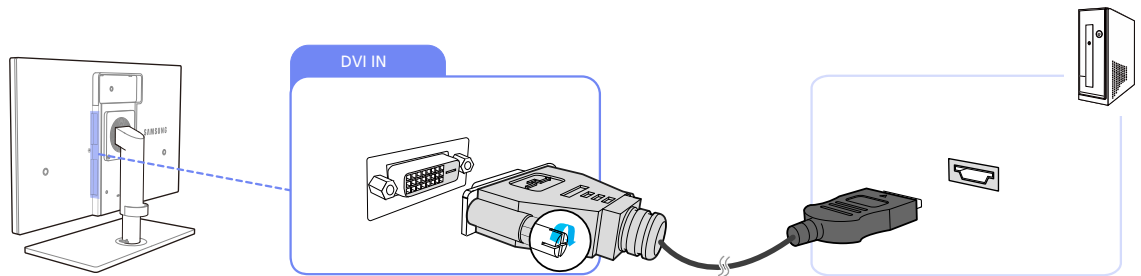
DVI IN

1 Connect the DVI cable to the [DVI IN] port on the back of the product and the HDMI 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 "3.3 Connecting the Power".)

3 Press [/] to change the input source to **Digital**.

 Audio is not available if the PC and product are connected via the [DVI] port.

Connection Using a Serial Cable
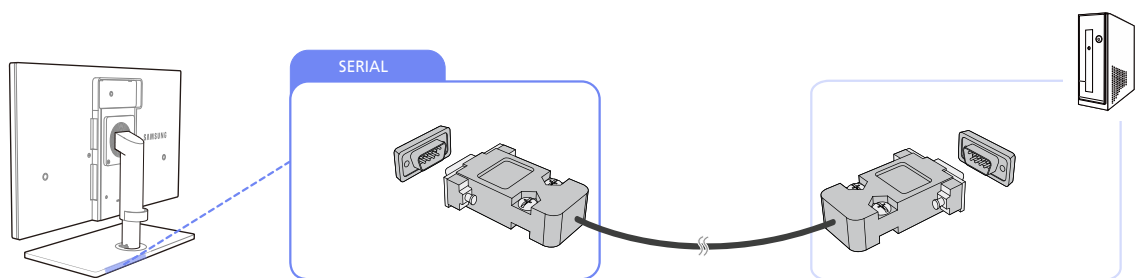
SERIAL

1 Connect the RS-232C cable to [SERIAL] on the back of the product and [SERIAL] 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 "3.3 Connecting the Power".)

 Device which support RS-232C connection (interface) can be connected.

3 **Connecting and Using a Source Device**

3.2.2   Remote Control (RS232C)

Cable connections

interface	RS232C(9 pin)
pin	TxD(No.2) RxD(No.3) GND(No.5)
Bits rate	9600 bps
Data Bits	8 bit
Parity	None
Stop Bits	1 bit
Flow control	None
Maximum length	15 m (only shielded type)

- Pin assignment
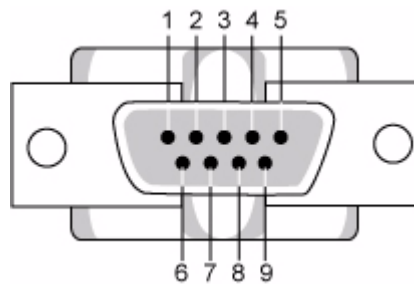
Pin	Signal
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

Connecting and Using a Source Device

- RS232C cable

  Connector : 9-pin D-Sub

  Cable : Cross cable

-P1-		-P1-		-P2-		-P2-
FEMALE	Rx	2	--------->	3	Tx	FEMALE
	Tx	3	<---------	2	Rx	
	Gnd	5	-----------	5	Gnd	

- Connecting method

Connecting and Using a Source Device
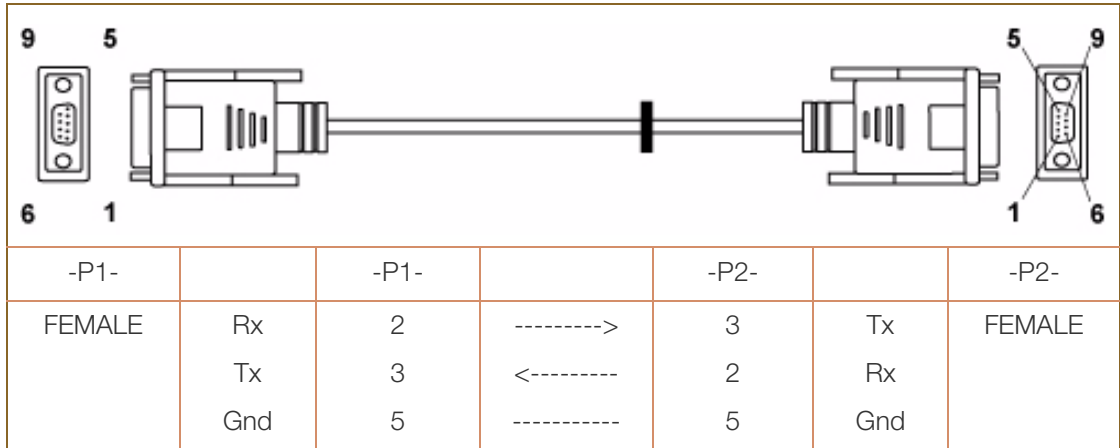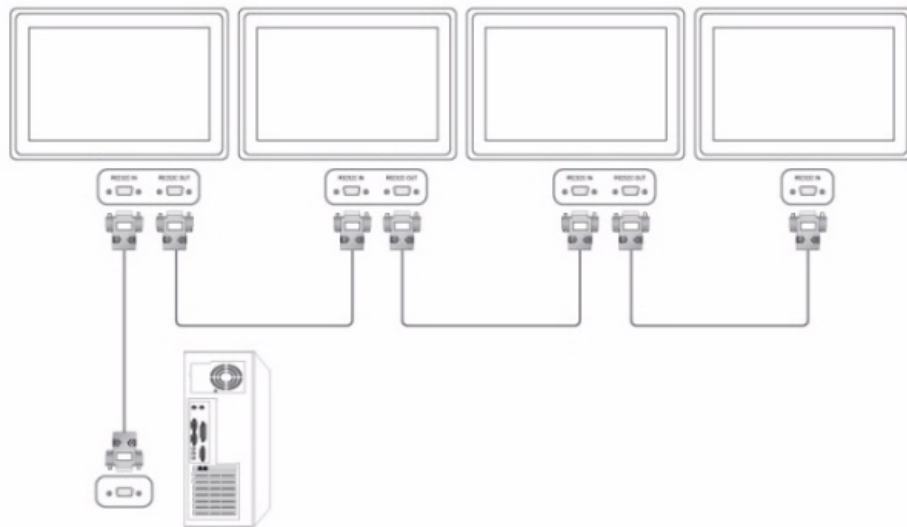
3.2.3 "Windows Driver" Installation

 - 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.
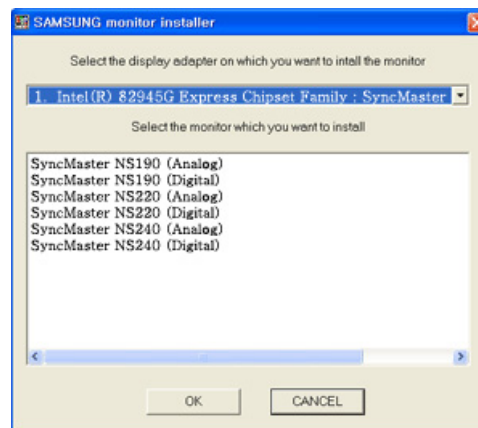
5 Go to Display Properties and check that the resolution and refresh rate are appropriate.

Refer to your Windows OS manual for further details.

Connecting and Using a Source Device

3.2.4 Installing a USB-to-Serial Driver

 Install the driver on the server PC.

1 Insert the driver installation CD-ROM into the CD-ROM drive.

2 Click on "USB-SERIAL Driver".

3 Click Next.
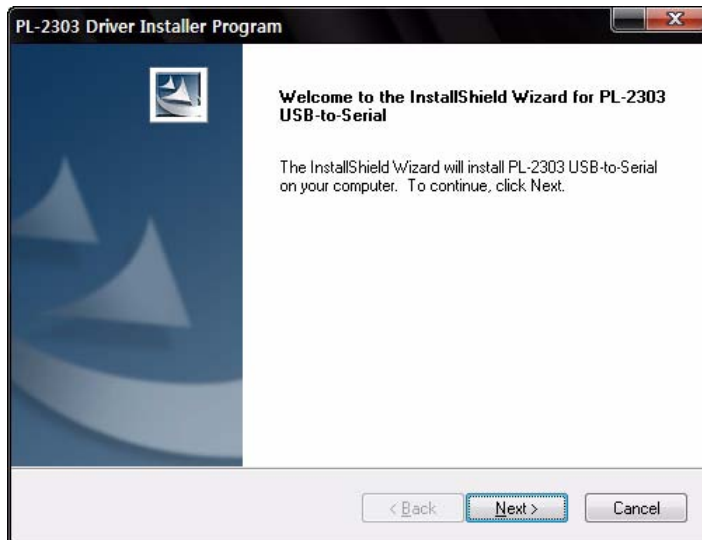
4 Click Finish.
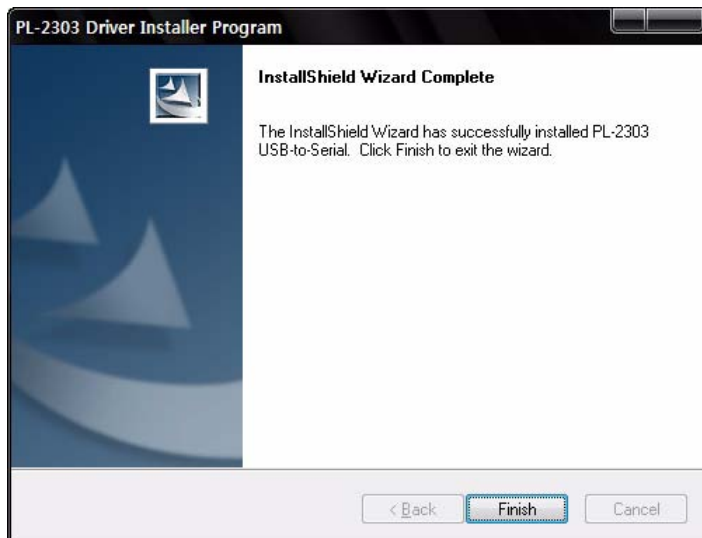
3.2.5 Setting Optimum Resolution

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.
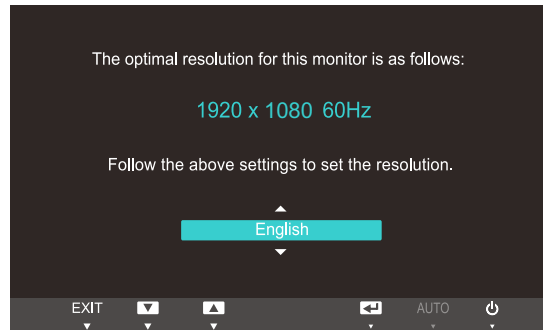
1 Press [/] to move to the language you want and press [/].

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.
 ● The optimum resolution can also be selected in **Control Panel** on your PC.

Connecting and Using a Source Device

3.2.6   Changing the Resolution Using a PC

- Adjust the resolution and refresh rate in Control Panel on your PC to obtain optimum picture quality.
- The picture quality of TFT-LCDs may degrade if the optimum resolution is not selected.

Changing the Resolution on Windows XP

Go to **Control Panel** → **Display** → **Settings** and change the resolution.

Connecting and Using a Source Device
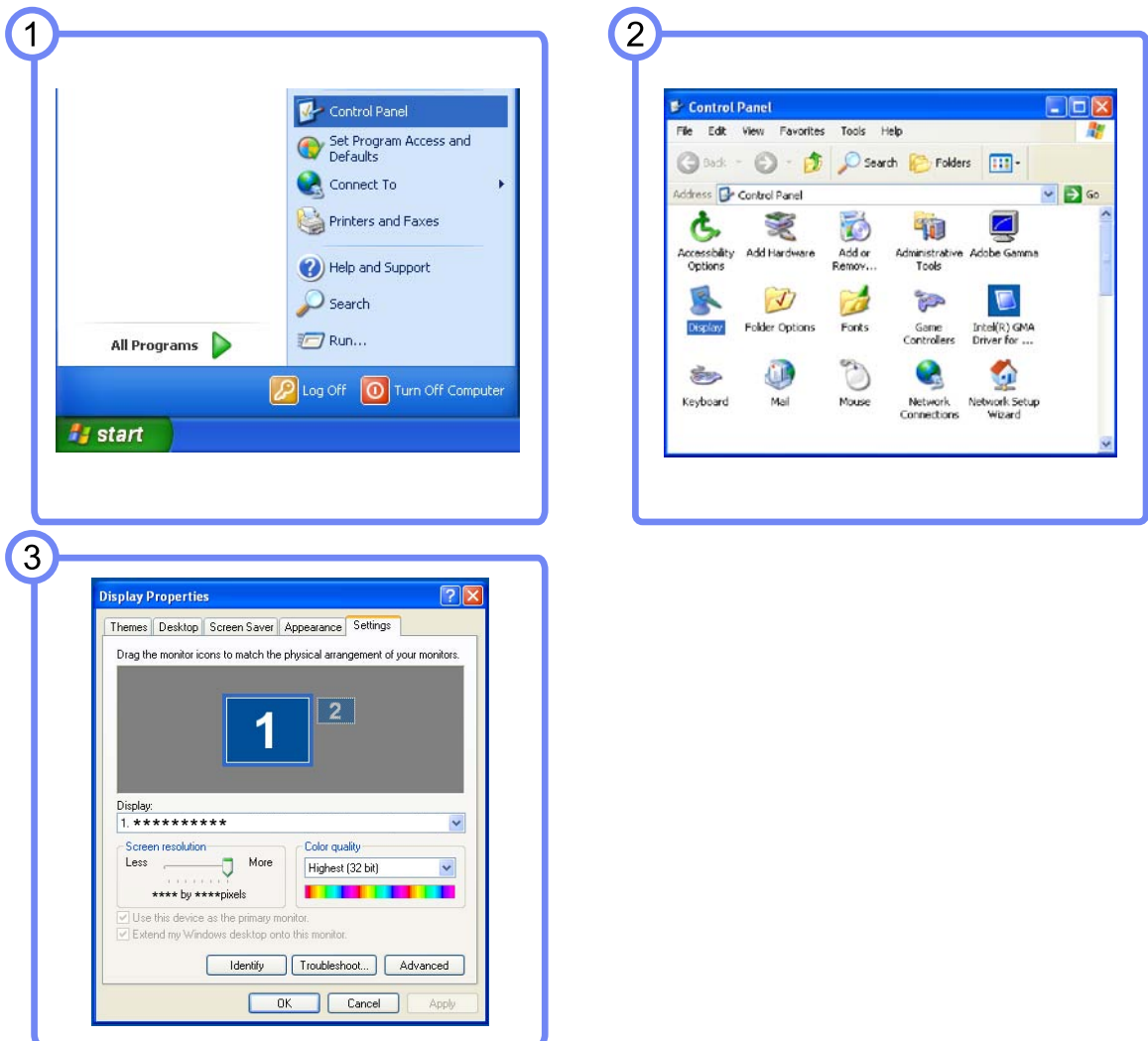
Changing the Resolution on Windows Vista

Go to **Control Panel** → **Personalization** → **Display Settings** and change the resolution.

Connecting and Using a Source Device
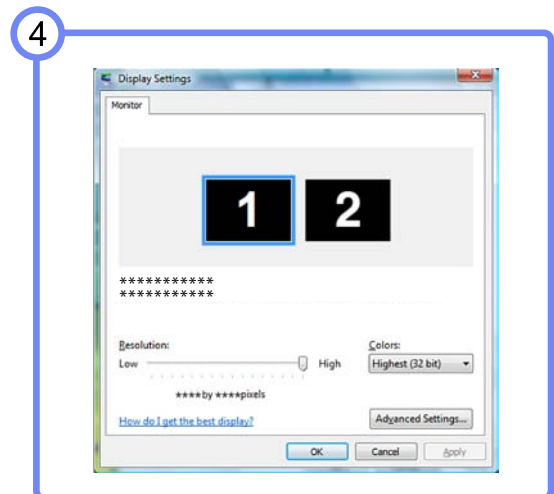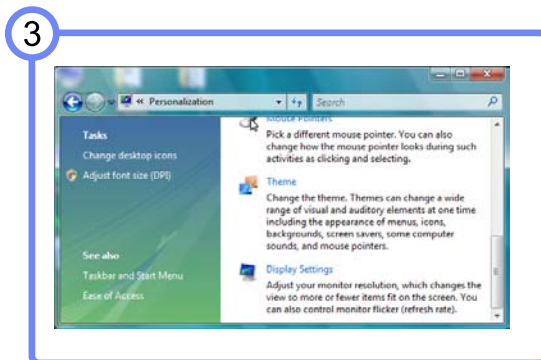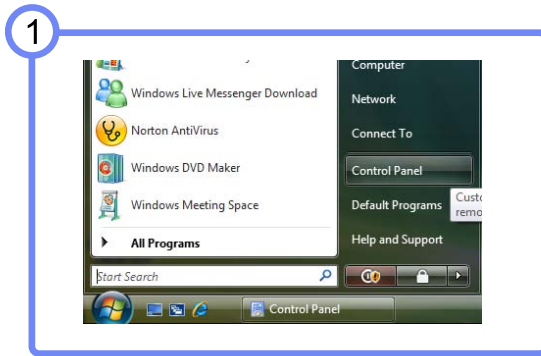
Changing the Resolution on Windows 7

Go to **Control Panel** → **Display** → **Screen Resolution** and change the resolution.

Connecting and Using a Source Device
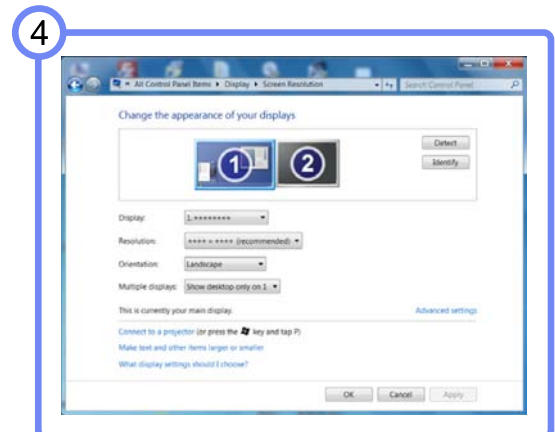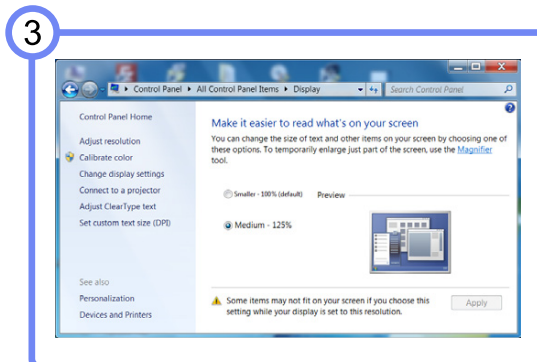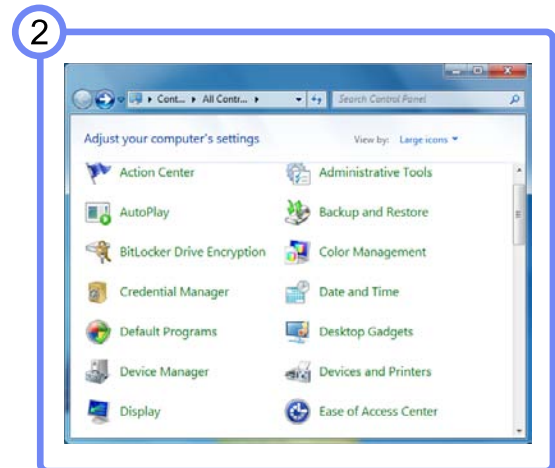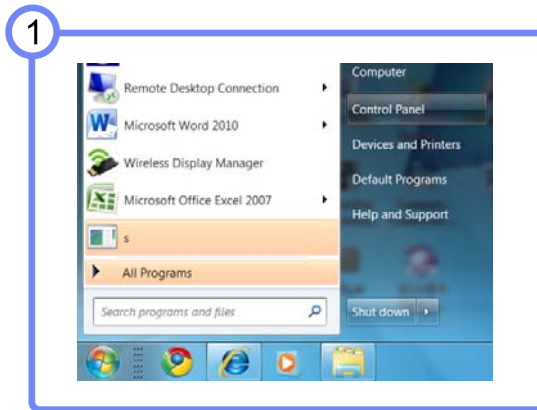
3.3   Connecting the Power
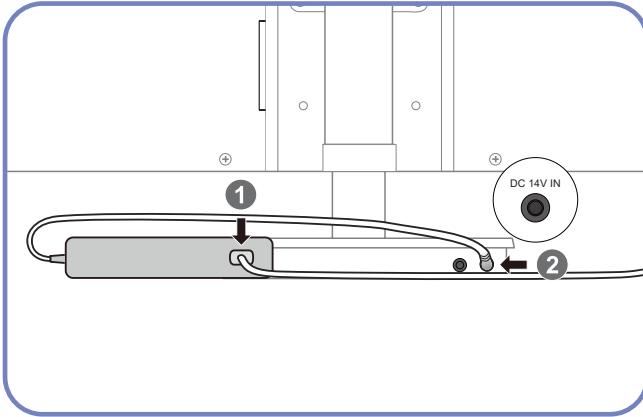
Connect the power cable to the DC power adapter. Next, connect the DC power adapter to [DC 14V IN] on the stand base.
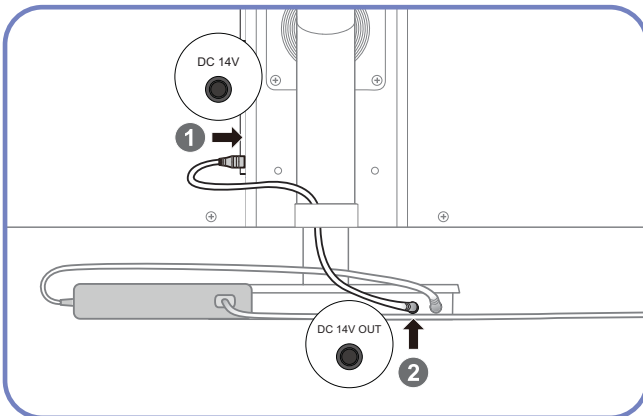
Connect the power extension cable to [DC 14V] on the monitor and [DC 14V OUT] on the stand base.
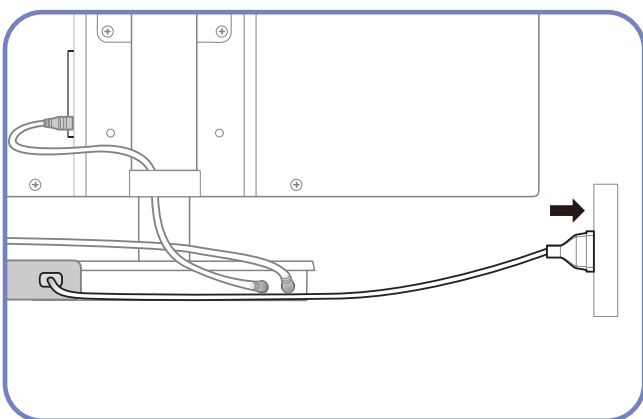
Plug in the power cable to the power socket.

 The DC power adapter cannot be attached to the back of the monitor.

4 Screen Setup

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 MAGIC Bright is set to **Dynamic Contrast** mode.

4.1.1 Configuring Brightness

1 Press [MENU] on the product.

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.

PICTURE		
Brightness	:	100
Contrast	:	75
Sharpness	:	60
SAMSUNG MAGIC Bright	: Custom	
SAMSUNG MAGIC Angle	: Off	
Coarse	:	1936
Fine	:	0
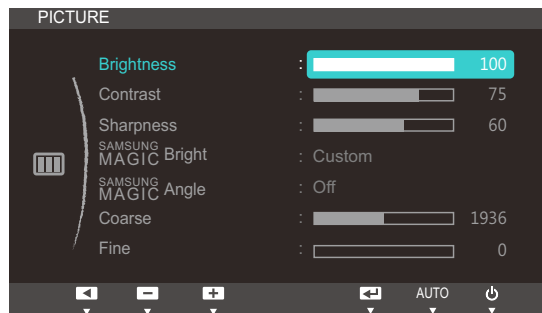
4 Adjust the **Brightness** using the [▲/▼] buttons.

4 **Screen Setup**

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 [MENU] on the product.

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.

```
PICTURE

Brightness              :  �_____  100
Contrast                :  ▮_____   75
Sharpness               :  ▮_____   60
SAMSUNG
MAGIC   Bright          :  Custom
SAMSUNG
MAGIC   Angle           :  Off
Coarse                  :  _____  1936
Fine                    :  ▯_____    0

◄        ▬        ✚              ↵    AUTO    ⏻
```
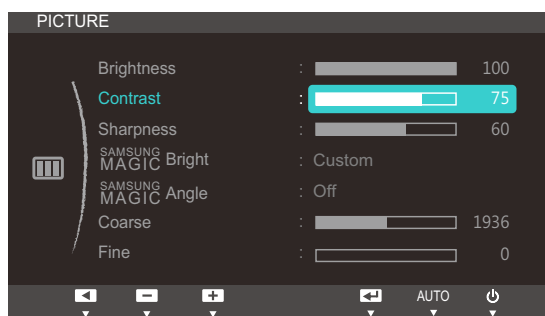
4 Adjust the **Contrast** using the [▲/▼] buttons.

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}MAGICBright is in **Cinema** or **Dynamic Contrast** mode.
> • This menu is not available when ^{SAMSUNG}MAGICColor is in **Full** or **Intelligent** mode.

4.3.1   Configuring Sharpness

1 Press [MENU] on the product.

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.

```
PICTURE

  Brightness            :  �          100
  Contrast              :  ▬▬▬▬▬            75
  Sharpness             :  ▬▬▬▬▬            60
  SAMSUNG
  MAGIC Bright          :  Custom
  SAMSUNG
  MAGIC Angle           :  Off
  Coarse                :  ▬▬▬▬▬          1936
  Fine                  :  ▬                 0

       ◄       ▬       ＋              ↵    AUTO    ⏻
```
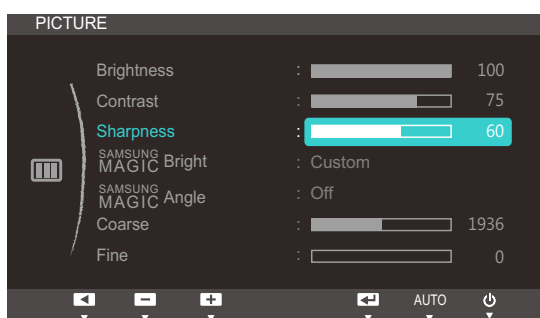
4 [Adjust the **Sharpness** using the [▲/▼] buttons.

Screen Setup

4.4 SAMSUNG MAGIC Bright

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

> This menu is not available when ^{SAMSUNG}MAGICAngle is enabled.

This feature provides the viewing angle, brightness, and tint to suit your preferences.

4.4.1 Configuring SAMSUNG MAGIC Bright

1 Press [MENU] on the product.

2 Press [▲/▼] to move to **Picture** and press [/] on the product.

3 Press [▲/▼] to move to ^{SAMSUNG}MAGICBright and press [/] on the product. The following screen will appear.

```
PICTURE
    Brightness        :                    100
    Contrast          :                     75
    Sharpness         :                     60
    SAMSUNG Bright    :   Custom
    MAGIC                 Standard
    SAMSUNG Angle     :   Game
    MAGIC                 Cinema
    Coarse            :   Dynamic Contrast
    Fine              :                      0

              AUTO
```
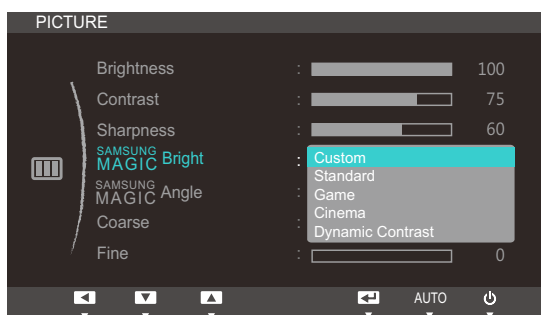
- **Custom**: Customize the contrast and brightness as required.
- **Standard**: Obtain a picture quality suitable for editing documents or using Internet.
- **Game**: Obtain a picture quality suitable for playing games that involve many graphic effects and dynamic movements.
- **Cinema**: Obtain the 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 [/].

5 The selected option will be applied.

4.5   SAMSUNG MAGIC Angle

SAMSUNG MAGIC Angle allows you to configure the settings to obtain the optimum picture quality according to your viewing angle.

- This menu is not available when **SAMSUNG MAGIC Bright** is in **Cinema** or **Dynamic Contrast** mode.
- This menu is not available when **SAMSUNG MAGIC Angle** is enabled.

This feature provides the viewing angle, brightness, and tint to suit your preferences.

4.5.1   Configuring SAMSUNG MAGIC Angle

1 Press [MENU] on the product.

2 Press [▲/▼] to move to **Picture** and press [▢/ ◙] on the product.

3 Press [▲/▼] to move to **SAMSUNG MAGIC Angle** and press [▢/ ◙] on the product. The following screen will appear.

```
PICTURE

    Brightness              :  ▭▭▭▭▭▭▭         100
    Contrast                :  ▭▭▭▭▭▭          75
    Sharpness               :  ▭▭▭▭▭           60
    SAMSUNG Bright          :  Off
    MAGIC                      Lean Back Mode 1
    SAMSUNG Angle           :  Lean Back Mode 2
    MAGIC                      Standing Mode
    Coarse                  :  Side Mode
    Fine                    :  Group View
                               Custom

    ◀       ▼       ▲                ↵   AUTO    ⏻
```
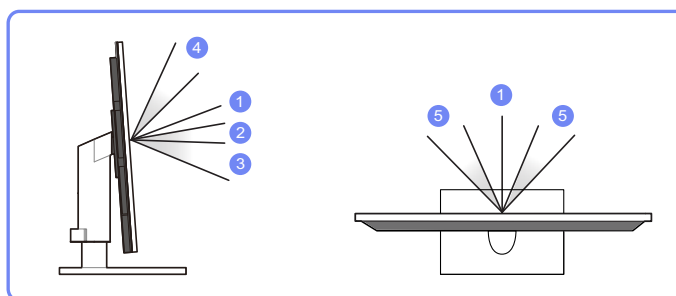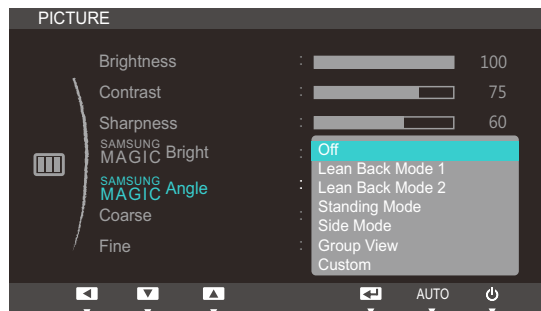
- **Off** ①: Select this option to view directly in front of the product.
- **Lean Back Mode 1** ②: Select this option to view from a place slightly lower than the product.
- **Lean Back Mode 2** ③: Select this option to view from a place lower than Lean Back Mode 1.
- **Standing Mode** ④: Select this option to view from a place higher than the product.
- **Side Mode** ⑤: Select this option to view from either side of the product.
- **Group View**: Select this option for more than one viewer to view from places ①, ④, and ⑤.
- **Custom**: **Lean Back Mode 1** will be applied by default if **Custom** is selected.

4 Press [▲/▼] to move to the option you want and press [▢/ ◙].

5 The selected option will be applied.

Screen Setup

4.6   Coarse

Adjust the screen frequency.

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

4.6.1   Adjusting Coarse

1   Press [**MENU**] on the product.

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.

PICTURE		
Brightness	:	100
Contrast	:	75
Sharpness	:	60
SAMSUNG MAGIC Bright	: Custom	
SAMSUNG MAGIC Angle	: Off	
Coarse	:	1936
Fine	:	0
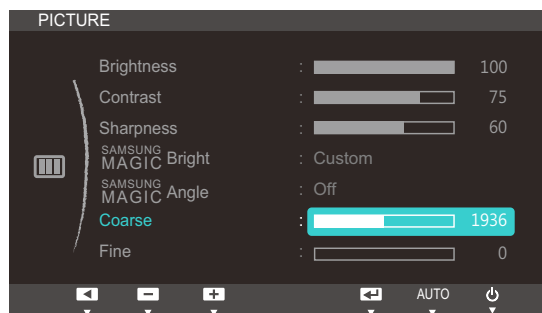
4   Adjust the **Coarse** using the [▲ / ▼] buttons.

4.7 Fine

Fine-adjust the screen to obtain a vivid picture.

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

4.7.1 Adjusting Fine

1 Press [**MENU**] on the product.

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.
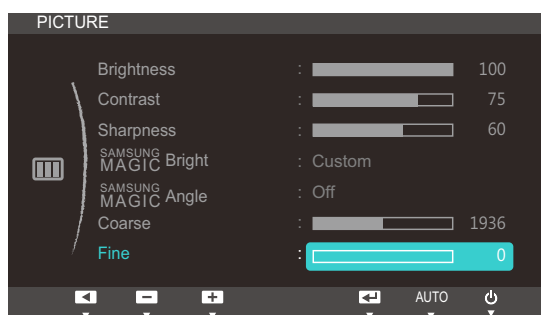
4 Adjust the **Fine** using the [/] buttons.

5 Configuring Tint

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

5.1   SAMSUNG MAGIC Color

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

> This menu is not available when ᴹᴬᴳᴵᶜAngle is enabled.

5.1.1   Configuring Color

1 Press [MENU] on the product.

2 Press [▲/▼] to move to **COLOR** and press [/] on the product.

3 Press [▲/▼] to move to ᴹᴬᴳᴵᶜColor and press [/] on the product. The following screen will appear.
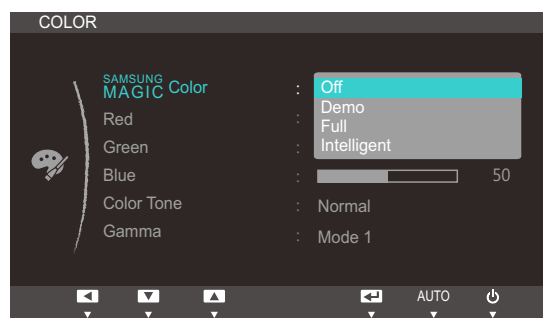
- **Off**: Disable ᴹᴬᴳᴵᶜColor.
- **Demo**: Compare normal screen mode with ᴹᴬᴳᴵᶜColor mode.
- **Full**: Obtain a vivid picture quality for all areas including the flesh colors in the picture.
- **Intelligent**: Improve the chroma for all areas except the flesh colors in the picture.

4 Press [▲/▼] to move to the option you want and press [/].

5 The selected option will be applied.

Configuring Tint

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}_{MAGIC}Color is in **Full** or **Intelligent** mode.

5.2.1   Configuring Red

1 Press [**MENU**] on the product.

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.
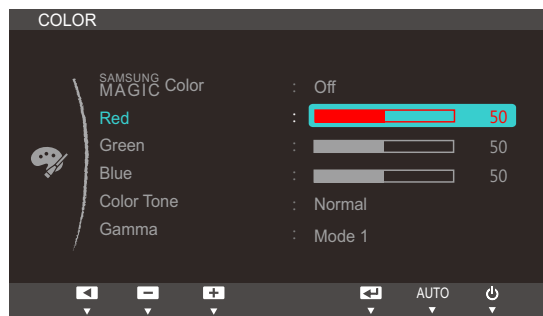
4 Adjust the **Red** using the [▲ / ▼] buttons.

5.3   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 [MENU] on the product.

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.

COLOR		
SAMSUNG MAGIC Color	:	Off
Red	:	50
Green	:	50
Blue	:	50
Color Tone	:	Normal
Gamma	:	Mode 1
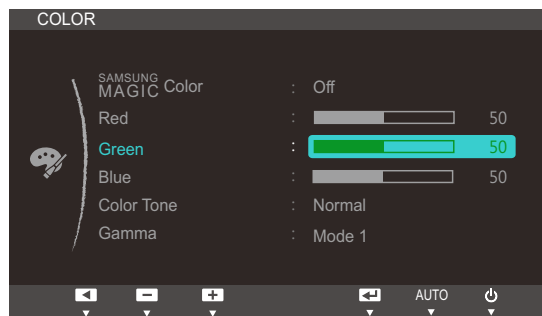
4 Adjust the **Green** using the [/] buttons.

5 **Configuring Tint**

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}_{MAGIC}Color is in **Full** or **Intelligent** mode.

5.4.1 Configuring Blue

1 Press [MENU] on the product.

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.

COLOR

SAMSUNG MAGIC Color	:	Off
Red	:	50
Green	:	50
Blue	:	50
Color Tone	:	Normal
Gamma	:	Mode 1

AUTO
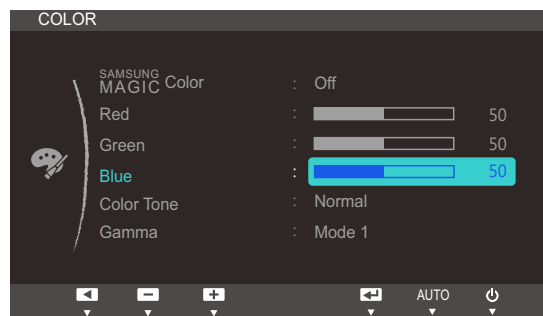
4 Adjust the **Blue** using the [/] buttons.

Configuring Tint

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.
- This menu is not available when $^{SAMSUNG}_{MAGIC}$Angle is enabled.

5.5.1   Configuring the Color Tone Settings

1 Press [MENU] on the product.

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.

```
COLOR

SAMSUNG
MAGIC  Color          :   Off
Red                   :  ▭▭▭▭       50
Green                 :  ▭▭▭▭       50
Blue                  :   Cool 2
Color Tone            :   Cool 1
Gamma                 :   Normal
                          Warm 1
                          Warm 2
                          Custom

◄   ▼   ▲              ↵   AUTO   ⏻
```
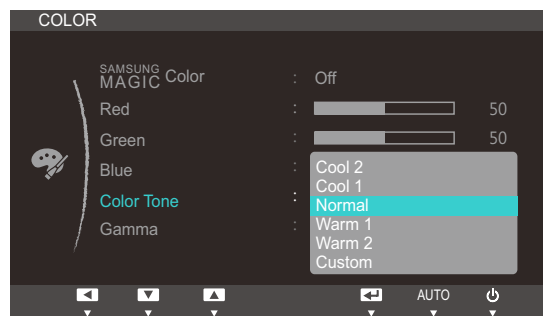
- **Cool 2**: Set the color temperature to be cooler than **Cool 1**.
- **Cool 1**: Set the color temperature to be cooler than **Normal** mode.
- **Normal**: Display the standard color tone.
- **Warm 1**: Set the color temperature to be warmer than **Normal** mode.
- **Warm 2**: Set the color temperature to be warmer than **Warm 1**.
- **Custom**: Customize the color tone.

4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

5 Configuring Tint

5.6 Gamma

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

 This menu is not available when SAMSUNG MAGIC **Angle** is enabled.

5.6.1 Configuring Gamma

1 Press [MENU] on the product.

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.
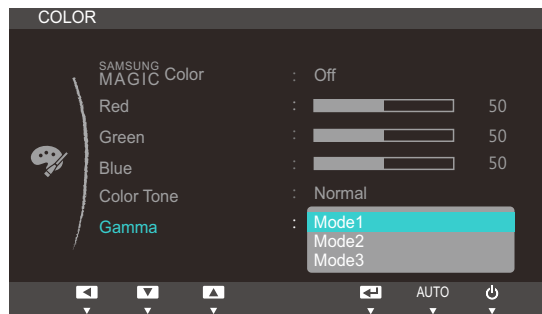
4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

6 Resizing or Relocating the Screen

6.1 H-Position & V-Position

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

V-Position: Move the screen up or down.

> ![note icon] This menu is available in **Analog** mode only.

6.1.1 Configuring H-Position & V-Position

1 Press [MENU] on the product.

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.

SIZE&POSITION			SIZE&POSITION		
H-Position	:	50	H-Position	:	50
V-Position	:	50	V-Position	:	50
Image Size	: Wide		Image Size	: Wide	
Menu H-Position	:	50	Menu H-Position	:	50
Menu V-Position	:	1	Menu V-Position	:	1
	AUTO			AUTO	
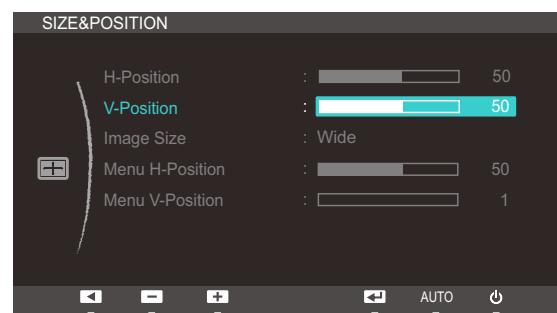
4 Press [▲/▼] to configure **H-Position** or **V-Position**.

Resizing or Relocating the Screen

6.2 Image Size

Change the picture size.

6.2.1 Changing the Picture Size

1 Press [**MENU**] on the product.

2 Press [▲ / ▼] to move to **SIZE&POSITION** and press [/] on the product.

3 Press [▲ / ▼] to move to **Image Size** and press [/] on the product. The following screen will appear.

SIZE&POSITION

H-Position	:	50
V-Position	:	50
Image Size	:	Auto
		Wide
Menu H-Position	:	
Menu V-Position	:	1

AUTO

- **Auto**: Display the picture according to the aspect ratio of the input source.
- **Wide**: Display the picture in full screen regardless of the aspect ratio of the input source.

SIZE&POSITION

H-Position	:	50
V-Position	:	50
Image Size	:	4 : 3
		Wide
Menu H-Position	:	Screen Fit
Menu V-Position	:	1

AUTO

- **4:3**: Display the picture with an aspect ratio of 4:3. Suitable for videos and standard broadcasts.
- **Wide**: Display the picture in full screen regardless of the aspect ratio of the input source.
- **Screen Fit**: Display the picture with the original aspect ratio without cutting off.

> Changing the screen size is available when the following conditions are satisfied.
> - A digital output device is connected using the DVI/DP cable.
> - The input signal is 480p, 576p, 720p, 1080i, or 1080p.

4 Press [▲ / ▼] to move to the option you want and press [/].

5 The selected option will be applied.

6   Resizing or Relocating the Screen

6.3   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.

6.3.1   Configuring Menu H-Position & Menu V-Position

1 Press [**MENU**] on the product.

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.

SIZE&POSITION		
H-Position	:	50
V-Position	:	50
Image Size	: Wide	
Menu H-Position	:	50
Menu V-Position	:	1
◀ ━ ✚	↵ AUTO ⏻	

SIZE&POSITION		
H-Position	:	50
V-Position	:	50
Image Size	: Wide	
Menu H-Position	:	50
Menu V-Position	:	1
◀ ━ ✚	↵ AUTO ⏻	

4 Press [/] to configure **Menu H-Position** or **Menu V-Position**.

7 Setup and Reset

7.1 Reset

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

7.1.1 Initializing Settings (Reset)

1 Press [MENU] on the product.

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.

SETUP&RESET

Reset

Language	: English
Off Timer On/Off	: Off
Off Timer Setting	
PC/AV Mode	
Key Repeat Time	: Acceleration
Customized Key	: SAMSUNG MAGIC Angle

AUTO

Reset all settings?

Yes   No

EXIT   AUTO

4 Press [▲ / ▼] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

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 [MENU] on the product.

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.
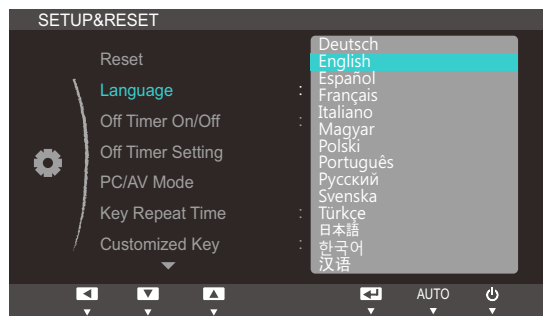
SETUP&RESET

Reset		Deutsch
Language	:	**English**
Off Timer On/Off	:	Español
Off Timer Setting		Français
		Italiano
		Magyar
		Polski
PC/AV Mode		Português
		Русский
		Svenska
Key Repeat Time	:	Türkçe
		日本語
Customized Key	:	한국어
		汉语

◄   ▼   ▲   ↵   AUTO

4 Press [▲/▼] to move to the language you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.3   Off Timer On/Off

Enable or disable the off timer that automatically powers off the product.

7.3.1   Configuring Off Timer On/Off

1 Press [MENU] on the product.

2 Press [▲ / ▼] to move to **SETUP&RESET** and press [/] on the product.

3 Press [▲ / ▼] to move to **Off Timer On/Off** and press [/] on the product. The following screen will appear.

```
SETUP&RESET

       Reset
       Language          :  English
       Off Timer On/Off  :  Off
       Off Timer Setting     On
       PC/AV Mode
       Key Repeat Time   :  Acceleration
       Customized Key    :  SAMSUNG MAGIC Angle

                                    AUTO
```
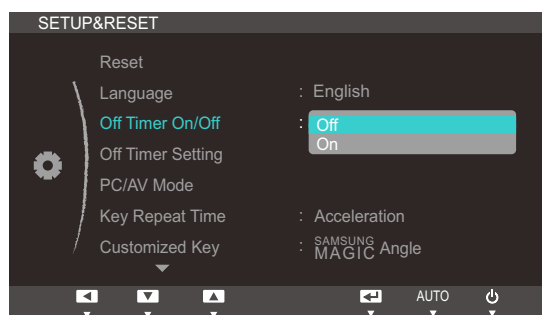
- **Off**: Deactivate the off timer so that the product does not power off automatically.

- **On**: Activate the off timer so that the product powers off automatically.

4 Press [▲ / ▼] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.4   Off Timer Setting

The off timer can be set within a range of 1 to 23 hours. The product will automatically power off after the specified number of hours.

> 📝 This menu is available only when **Off Timer On/Off** is set to **On**.

7.4.1   Configuring Off Timer Setting

1 Press [MENU] on the product.

2 Press [▲ / ▼] to move to **SETUP&RESET** and press [/] on the product.

3 Press [▲ / ▼] to move to **Off Timer Setting** and press [/] on the product. The following screen will appear.

```
SETUP&RESET

        Reset
        Language              : English
        Off Timer On/Off       : On
        Off Timer Setting       : [        ] 10h
        PC/AV Mode
        Key Repeat Time        : Acceleration
        Customized Key         : SAMSUNG
                                 MAGIC Angle
        ▼
   ◄          ▬          ╋              ↵    AUTO    ⏻
   ▼          ▼          ▼              ▼      ▼      ▼
```
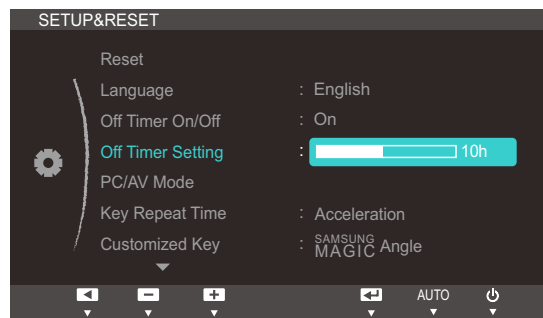
4 Press [▲ / ▼] to configure **Off Timer Setting**.

Setup and Reset

7.5   PC/AV Mode

Set **PC/AV Mode** to **AV**. The picture size will be enlarged. This option is useful when you view a movie.

> PC/AV Mode is only available in **Digital** mode.

7.5.1   Configuring PC/AV Mode

1 Press [**MENU**] on the product.

2 Press [/] to move to **SETUP&RESET** and press [/] on the product.

3 Press [/] to move to **PC/AV Mode** and press [/] on the product. The following screen will
appear.
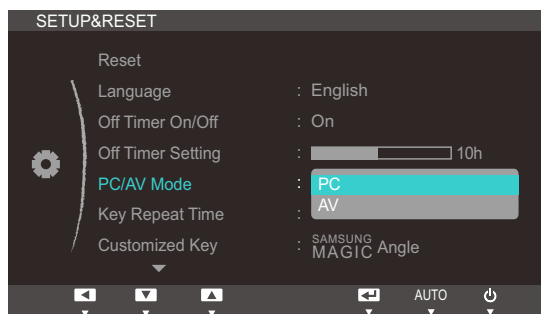
      SETUP&RESET

         Reset
         Language   : English
         Off Timer On/Off   : On
         Off Timer Setting   : [   ] 10h
         PC/AV Mode   : PC
                                  AV
         Key Repeat Time   :
         Customized Key   : SAMSUNG
                                  MAGIC Angle

4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.6 Key Repeat Time

Control the response rate of a button when the button is pressed.

7.6.1 Configuring Key Repeat Time

1 Press [MENU] on the product.

2 Press [/] to move to **SETUP&RESET** and press [/] on the product.

3 Press [/] to move to **Key Repeat Time** and press [/] on the product. The following screen will appear.

```
SETUP&RESET

     Reset
     Language            :  English
     Off Timer On/Off    :  On
     Off Timer Setting   :  Acceleration
     PC/AV Mode             1 sec
     Key Repeat Time     :  2 sec
     Customized Key         No Repeat
                         :  SAMSUNG
                            MAGIC Angle

                                    AUTO
```
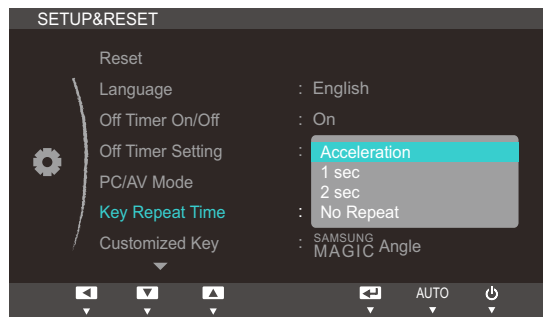
- **Acceleration**, **1 sec**, or **2 sec** can be selected. If **No Repeat** is selected, a command responds only once when a button is pressed.

4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.7   Customized Key

You can customize Customized Key as follows.

7.7.1   Configuring Customized Key

1 Press [MENU] on the product.

2 Press [▲ / ▼] to move to **SETUP&RESET** and press [/] on the product.

3 Press [▲ / ▼] to move to **Customized Key** and press [/] on the product. The following screen will appear.

```
SETUP&RESET

        Reset
        Language              :  English
        Off Timer On/Off      :  Off
        Off Timer Setting
        PC/AV Mode               SAMSUNG
                                 MAGIC Angle
        Key Repeat Time       :  SAMSUNG
                                 MAGIC Bright
        Customized Key        :  Image Size

                                        AUTO
```
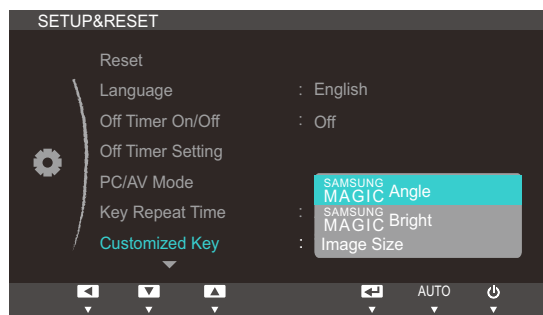
- • ᔢᴬᴹˢᵁᴺᴳMAGICAngle - ˢᴬᴹˢᵁᴺᴳMAGICBright - Image Size

4 Press [▲ / ▼] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.8   Auto Source

You can activate **Auto Source**.

7.8.1   Configuring Auto Source

1 Press [MENU] on the product.

2 Press [/] to move to **SETUP&RESET** and press [/] on the product.

3 Press [/] to move to **Auto Source** and press [/] on the product. The following screen will appear.

```
  SETUP&RESET

         ▲
   Auto Source          :  Auto
   Display Time         :  Manual
   Menu Transparency    :  On


   ◀     ▼     ▲              ◀┘   AUTO    
```
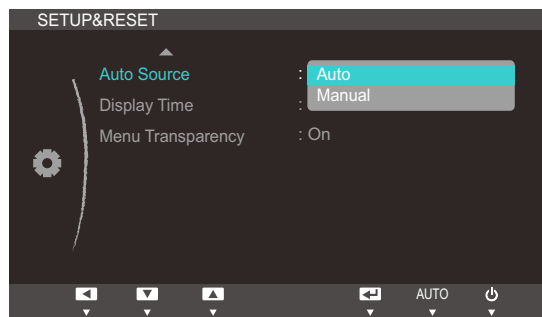
- ● **Auto**: The input source is automatically recognized.
- ● **Manual**: Manually select an input source.

4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

Setup and Reset

7.9   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.

7.9.1   Configuring Display Time

1   Press [MENU] on the product.

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.
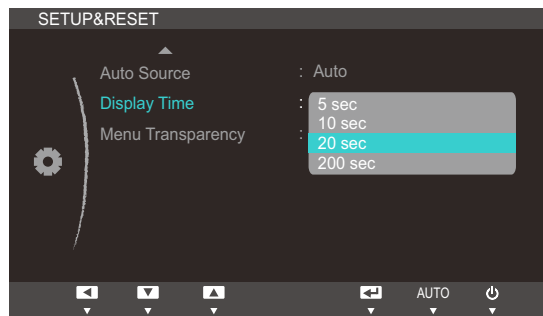
    SETUP&RESET

        Auto Source   : Auto
        Display Time   :   5 sec
        Menu Transparency   :   10 sec
                                  20 sec
                                 200 sec

        ◄   ▼   ▲   AUTO   ⏻

4   Press [▲/▼] to move to the option you want and press [/].

5   The selected option will be applied.

Setup and Reset

7.10   Menu Transparency

Set the transparency for the menu windows:

7.10.1   Changing Menu Transparency

1 Press [**MENU**] on the product.

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.
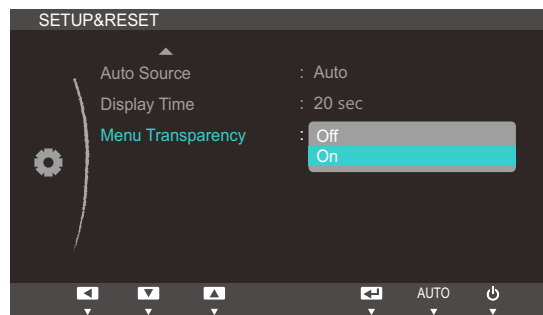

```
SETUP&RESET

        Auto Source          :  Auto
        Display Time         :  20 sec
        Menu Transparency    :  Off
                                 On

                                                  AUTO
```

4 Press [/] to move to the option you want and press [/].

5 The selected option will be applied.

8 INFORMATION Menu and Others

8.1 INFORMATION

View the current input source, frequency and resolution.

8.1.1 Displaying INFORMATION

1 Press [**MENU**] on the product.

2 Press [▲/▼] to move to **INFORMATION**. The current input source, frequency and resolution will appear.
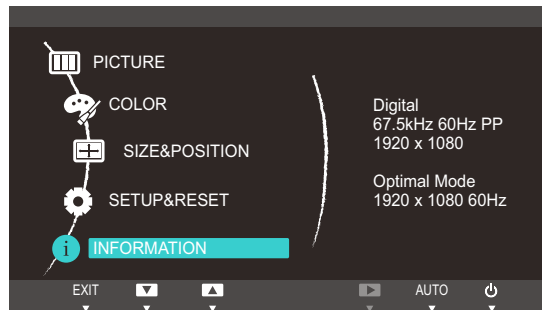
> The displayed image may differ depending on the model.

8.2 Configuring Brightness in the Startup Screen

Adjust the **Brightness** 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 [●]. The following screen will appear.

2 Adjust the **Brightness** using the [▲/▼] buttons.

9   Installing the Software

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   Installing the Software

9.2   MultiScreen

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"

> 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 Installing the Software

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 Troubleshooting Guide

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)	
The screen keeps switching on and off.	Check the cable connection between the product and PC, and ensure the connection is secure. (Refer to "3.2 Connecting and Using a PC")

Screen issue	
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.

Troubleshooting Guide

Screen issue	
"**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 108).
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 77) and **Fine**(page 78).
	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 108) 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")
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.

Source device issue	
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?	Set the frequency on your graphics card. • 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**.

Troubleshooting Guide

Question	Answer
How can I change the resolution?	• 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.
How do I set power-saving mode?	• 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.

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

11 Specifications

11.1 General

Model Name		NS190	NS220	NS240
Panel	Size	19 Inches (48cm)	21.5 Inches (54cm)	24 Inches (61cm)
	Display area	408.24 mm (H) x 255.15 mm (V) 16.1 inches (H) x 10.0 inches (V)	476.64 mm (H) x 268.1 mm (V) 18.8 inches (H) x 10.6 inches (V)	518.4 mm (H) x 324.0 mm (V) 20.4 inches (H) x 12.8 inches (V)
Synchronization	Horizontal Frequency	30 ~ 81 kHz		
	Vertical Frequency	56 ~ 75 kHz		
Display Color		16.7 M		
Resolution	Optimum Resolution	1440 x 900 @ 60Hz	1920 x 1080 @ 60Hz	1920 x 1200 @ 60Hz
	Maximum Resolution	1440 x 900 @ 60Hz	1920 x 1080 @ 60Hz	1920 x 1200 @ 60Hz
Maximum Pixel Clock		137MHz	164MHz	164MHz
Power Consumption	Normal Operation	Less than 50 W	Less then 55 W	Less than 60 W
	Power off (Power button)	Less than 1.5 W		
	Power off (Power-Switch off)	0 W		
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		D-Sub, DVI		
Server connector		LAN port		
USB		USB 2.0 x 4 (Down Stream)		
Dimensions (W x H x D) / Weight (with the stand)		443.0 x 566.8 x 227.0 mm / 4.4 kg 17.4 x 22.3 x 8.9 Inches / 9.7 lbs	513.0 x 574.1 x 227.0 mm / 4.9 kg 20.2 x 22.6 x 8.9 Inches / 10.8 lbs	560.0 x 594.3 x 227.0 mm / 5.3 kg 22.0 x 23.4 x 8.9 Inches / 11.7 lbs
Environmental considerations	Operating	Temperature : 50℉ ~ 104℉ (10℃ ~ 40℃) Humidity : 10 % ~ 80 %, non-condensing		
	Storage	Temperature : -4℉ ~ 113℉ (-20℃ ~ 45℃) Humidity : 5 % ~ 95 %, non-condensing		

Model Name	NS190	NS220	NS240
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 appear 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.

Class B device (broadcast communications device for home use)

This Class B device designed for home use is registered for EMC requirements and can be used in all regions.

- The displayed power consumption level can vary in different operating conditions or when settings are changed.
- To reduce the power consumption to 0 watts, turn off the switch on the adapter or disconnect the power cable. Be sure to disconnect the power cable when you will not be using the product for an extended period of time. To reduce the power consumption to 0 watts when the power switch is not available, disconnect the power cable.

(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

11 Specifications

Specifications

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.

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.

NS190

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 720 X 400	31.469	70.087	28.322	-/+
VESA, 640 x 480	31.469	59.940	25.175	-/-
MAC, 640 x 480	35.000	66.667	30.240	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
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	-/-
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 800	62.795	74.934	106.500	-/+
VESA, 1280 x 960	60.000	60.000	108.000	+/+

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
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, 1440 x 900	70.635	74.984	136.750	-/+

NS220

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 720 X 400	31.469	70.087	28.322	-/+
IBM, 640 x 480	31.469	59.940	25.175	-/-
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
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	+/+
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	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 800	62.795	74.934	106.500	-/+
VESA, 1280 x 960	60.000	60.000	108.000	+/+
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, 1440 x 900	70.635	74.984	136.750	-/+
VESA, 1600 X 1200	75.000	60.000	162.000	+/+

Specifications

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 1680 X 1050	65.290	59.954	146.250	-/+
VESA, 1920 X 1080	67.500	60.000	148.500	+/+

NS240

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 720 X 400	31.469	70.087	28.322	-/+
IBM, 640 x 480	31.469	59.940	25.175	-/-
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
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	+/+
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	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 960	60.000	60.000	108.000	+/+
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, 1440 x 900	70.635	74.984	136.750	-/+
VESA, 1600 X 1200	75.000	60.000	162.000	+/+
VESA, 1680 X 1050	65.290	59.954	146.250	-/+
VESA, 1920 x 1200 (RB)	74.038	59.950	154.000	+/-

Specifications

- 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.

Appendix

Contact SAMSUNG WORLD WIDE

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

NORTH AMERICA		
U.S.A	1-800-SAMSUNG (726-7864)	http://www.samsung.com
CANADA	1-800-SAMSUNG (726-7864)	http://www.samsung.com/ca (English) http://www.samsung.com/ca_fr (French)
MEXICO	01-800-SAMSUNG (726-7864)	http://www.samsung.com

LATIN AMERICA		
ARGENTINE	0800-333-3733	http://www.samsung.com
BOLIVIA	800-10-7260	http://www.samsung.com
BRAZIL	0800-124-421 4004-0000	http://www.samsung.com
CHILE	800-SAMSUNG (726-7864) From mobile 02-482 82 00	http://www.samsung.com
COLOMBIA	01-8000112112	http://www.samsung.com
COSTA RICA	0-800-507-7267	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
DOMINICA	1-800-751-2676	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
ECUADOR	1-800-10-7267	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
EL SALVADOR	800-6225	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)

LATIN AMERICA		
GUATEMALA	1-800-299-0013	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
HONDURAS	800-27919267	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
JAMAICA	1-800-234-7267	http://www.samsung.com
NICARAGUA	00-1800-5077267	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
PANAMA	800-7267	http://www.samsung.com/latin (Spanish) http://www.samsung.com/latin_en (English)
PERU	0-800-777-08	http://www.samsung.com
PUERTO RICO	1-800-682-3180	http://www.samsung.com
TRINIDAD & TOBAGO	1-800-SAMSUNG (726-7864)	http://www.samsung.com
VENEZUELA	0-800-100-5303	http://www.samsung.com

EUROPE		
AUSTRIA	0810 - SAMSUNG (7267864, € 0.07/min)	http://www.samsung.com
BELGIUM	02-201-24-18	http://www.samsung.com/be (Dutch) http://www.samsung.com/be_fr (French)
BOSNIA	05 133 1999	http://www.samsung.com
BULGARIA	07001 33 11 , normal tariff	http://www.samsung.com
CROATIA	062 SAMSUNG (062 726 7864)	http://www.samsung.com
CYPRUS	8009 4000 only from landline (+30) 210 6897691 from mobile and land line	http://www.samsung.com

Appendix

EUROPE		
CZECH	800 - SAMSUNG (800-726786)	http://www.samsung.com
	Samsung Electronics Czech and Slovak, s.r.o., Oasis Florenc, Sokolovská 394/17, 180 00, Praha 8	
DENMARK	70 70 19 70	http://www.samsung.com
EIRE	0818 717100	http://www.samsung.com
ESTONIA	800-7267	http://www.samsung.com
FINLAND	09 85635050	http://www.samsung.com
FRANCE	01 48 63 00 00	http://www.samsung.com
GERMANY	0180 5 SAMSUNG bzw. 0180 5 7267864* (*0,14 €/Min. aus dem dt. Festnetz, aus dem Mobilfunk max. 0,42 €/Min.)	http://www.samsung.com
GREECE	80111-SAMSUNG (80111 726 7864) only from land line (+30) 210 6897691 from mobile and land line	http://www.samsung.com
HUNGARY	06-80-SAMSUNG (726-7864)	http://www.samsung.com
ITALIA	800-SAMSUNG (726-7864)	http://www.samsung.com
LATVIA	8000-7267	http://www.samsung.com
LITHUANIA	8-800-77777	http://www.samsung.com
LUXEMBURG	261 03 710	http://www.samsung.com
MACEDONIA	023 207 777	http://www.samsung.com
MONTENEGRO	020 405 888	http://www.samsung.com
NETHERLANDS	0900 - SAMSUNG (0900-7267864) (€ 0,10/Min)	http://www.samsung.com
NORWAY	815 56480	http://www.samsung.com
POLAND	0 801-1SAMSUNG (172-678) +48 22 607-93-33	http://www.samsung.com
PORTUGAL	808 20 - SAMSUNG (808 20 7267)	http://www.samsung.com
RUMANIA	08008 SAMSUNG (08008 726 7864) TOLL FREE No.	http://www.samsung.com
SERBIA	0700 SAMSUNG (0700 726 7864)	http://www.samsung.com
SLOVAKIA	0800 - SAMSUNG (0800-726 786)	http://www.samsung.com
SPAIN	902 - 1 - SAMSUNG (902 172 678)	http://www.samsung.com

Appendix

EUROPE		
SWEDEN	0771 726 7864 (SAMSUNG)	http://www.samsung.com
SWITZERLAND	0848-SAMSUNG (7267864, CHF 0.08/min)	http://www.samsung.com/ch (German) http://www.samsung.com/ch_fr (French)
U.K	0330 SAMSUNG (7267864)	http://www.samsung.com

CIS		
ARMENIA	0-800-05-555	http://www.samsung.com
AZERBAIJAN	088-55-55-555	http://www.samsung.com
BELARUS	810-800-500-55-500	http://www.samsung.com
GEORGIA	0-800-555-555	http://www.samsung.com
KAZAKHSTAN	8-10-800-500-55-500 (GSM: 7799)	http://www.samsung.com
KYRGYZSTAN	00-800-500-55-500	http://www.samsung.com
MOLDOVA	0-800-614-40	http://www.samsung.com
MONGOLIA	+7-800-555-55-55	http://www.samsung.com
RUSSIA	8-800-555-55-55	http://www.samsung.com
TADJIKISTAN	8-10-800-500-55-500	http://www.samsung.com
UKRAINE	0-800-502-000	http://www.samsung.com/ua (Ukrainian) http://www.samsung.com/ua_ru (Russian)
UZBEKISTAN	8-10-800-500-55-500	http://www.samsung.com

ASIA PACIFIC		
AUSTRALIA	1300 362 603	http://www.samsung.com
CHINA	400-810-5858	http://www.samsung.com
HONG KONG	(852) 3698 - 4698	http://www.samsung.com/hk (Chinese) http://www.samsung.com/hk_en (English)

Appendix

ASIA PACIFIC		
INDIA	1800 1100 11 3030 8282 1800 3000 8282 1800 266 8282	http://www.samsung.com
INDONESIA	0800-112-8888 021-5699-7777	http://www.samsung.com
JAPAN	0120-327-527	http://www.samsung.com
MALAYSIA	1800-88-9999	http://www.samsung.com
NEW ZEALAND	0800 SAMSUNG (0800 726 786)	http://www.samsung.com
PHILIPPINES	1-800-10-SAMSUNG (726-7864) for PLDT 1-800-3-SAMSUNG (726-7864) for Digitel 1-800-8-SAMSUNG (726-7864) for Globe 02-5805777	http://www.samsung.com
SINGAPORE	1800-SAMSUNG (726-7864)	http://www.samsung.com
TAIWAN	0800-329-999 0266-026-066	http://www.samsung.com
THAILAND	1800-29-3232 02-689-3232	http://www.samsung.com
VIETNAM	1 800 588 889	http://www.samsung.com

MIDDIE EAST		
BAHRAIN	8000-4726	http://www.samsung.com/ae (English) http://www.samsung.com/ae_ar (Arabic)
EGYPT	08000-726786	http://www.samsung.com
IRAN	021-8255	http://www.samsung.com
JORDAN	800-22273 065777444	http://www.samsung.com
KUWAIT	183-2255	http://www.samsung.com/ae (English) http://www.samsung.com/ae_ar (Arabic)

Appendix

MIDDIE EAST		
MOROCCO	080 100 2255	http://www.samsung.com
OMAN	800-SAMSUNG (726-7864)	http://www.samsung.com/ae (English) http://www.samsung.com/ae_ar (Arabic)
SAUDI ARABIA	9200-21230	http://www.samsung.com/ae (English) http://www.samsung.com/ae_ar (Arabic)
TURKEY	444 77 11	http://www.samsung.com
U.A.E	800-SAMSUNG (726-7864)	http://www.samsung.com

AFRICA		
ANGOLA	91-726-7864	http://www.samsung.com
BOTSWANA	0800-726-000	http://www.samsung.com
CAMEROON	7095- 0077	http://www.samsung.com
COTE D' IVOIRE	8000 0077	http://www.samsung.com
GHANA	0800-10077 0302-200077	http://www.samsung.com
KENYA	0800 724 000	http://www.samsung.com
NAMIBIA	8197267864	http://www.samsung.com
NIGERIA	0800-726-7864	http://www.samsung.com
SENEGAL	800-00-0077	http://www.samsung.com
SOUTH AFRICA	0860-SAMSUNG (726-7864)	http://www.samsung.com
TANZANIA	0685 88 99 00	http://www.samsung.com
UGANDA	0800 300 300	http://www.samsung.com
ZAMBIA	211350370	http://www.samsung.com

Appendix

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 configure on-screen settings to optimize the picture quality as required. It allows you to change the screen brightness, tint, size and many other settings using menus displayed on the screen.

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 85 000 times per second, and 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 1,920 horizontal pixels (horizontal frequency) and 1,080 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.

Index

Index