

User Manual

SyncMaster TS190C TS220C TS240C

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

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

Before Using the Product

Icons used in this manual

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

Before Using the Product

Cleaning

Cleaning

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

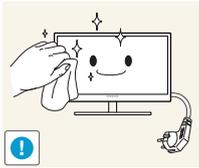
Take the following steps when cleaning.



1. Power off the monitor and computer.
2. Disconnect the power cable 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.



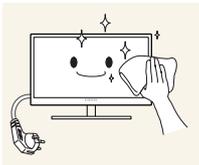
3. Wipe the monitor screen using a clean, soft and dry cloth.



- 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 cable to the product after cleaning the product.
6. Power on the monitor and computer.

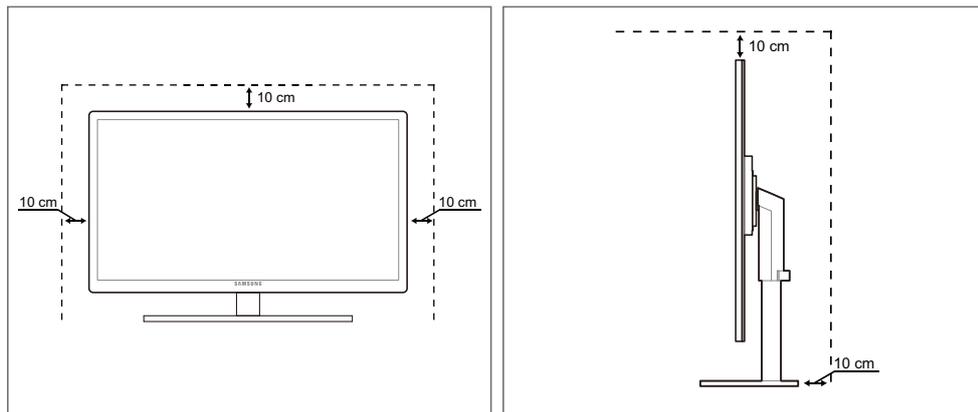
Before Using the Product

Securing the Installation Space

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



The exterior may differ depending on the product.



Precautions for storage

High-glossy models can develop white stains on the surface if an ultrasonic wave humidifier is used nearby.



Be sure to contact Samsung Customer Service Center (108page) if the inside of the monitor needs cleaning. (Service fee will be charged.)

Before Using the Product

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 cable 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 cable with wet hands.

- Otherwise, an electric shock may result.



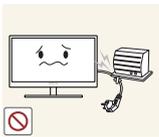
Insert the power cable all the way in so it is not loose.

- An unstable connection may cause a fire.



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

- An electric shock or injury may result.



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

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



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

- An electric shock or fire may result.



If the power cable pins or power outlet is covered with a foreign substance (dust, etc.), wipe it off using a dry cloth.

- Otherwise, a fire may result.

Before Using the Product

Caution



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

- The product may become damaged by an electric shock.



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

- An electric shock or fire may result.



Keep the power socket where the power cable 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 switch.



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

- An electric shock or fire may result.

Installation and Safety

Warning



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

- Otherwise, a fire may result.



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

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



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

- Children may suffocate.

Before Using the Product



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

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



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

- An electric shock or fire may result.



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

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



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

- The product may fall and injure children.



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

Caution



Take care not to drop the product when moving it.

- Otherwise, product failure or personal injury may result.



Do not set down the product on its front.

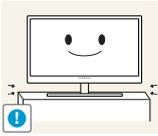
- The screen may become damaged.



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

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

Before Using the Product



Put down the product carefully.

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



Installing the product in an unusual place (a place exposed to a lot of fine 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 (108page) before installation if you want to install the product at such a place.

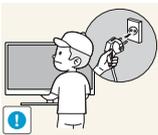
Operation and Safety

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 (108page) 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 cable immediately and contact Samsung Customer Service Center (108page).

- 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 cable, and contact Samsung Customer Service Center (108page).

- Otherwise, an electric shock or fire may result.



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

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

Before Using the Product



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.



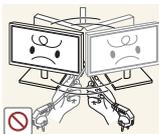
Do not move the product by pulling the power cable or any cable.

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



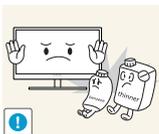
If a gas leakage is found, do not touch the product or power cable. Also, ventilate the area immediately.

- Sparks can cause an explosion or fire.
- During a lightning or thunderstorm, do not touch the power cable or antenna cable.



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

Before Using the Product



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.

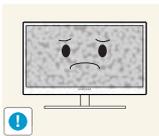
- If water or any foreign substance enters the product, be sure to power off the product, remove the power cable, and contact Samsung Customer Service Center (108page).
- Product failure, an electric shock or fire may result.



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

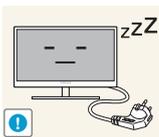
- If water or any foreign substance enters the product, be sure to power off the product, remove the power cable, and contact Samsung Customer Service Center (108page).
- Product failure, an electric shock or fire may result.

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 cable 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.



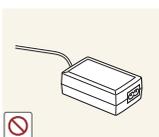
Use the product at the recommended resolution and frequency.

- Your eyesight may deteriorate.



Do not put DC power adapters together.

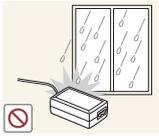
- Otherwise, a fire may result.



Remove the plastic bag from the DC power adapter before you use it.

- Otherwise, a fire may result.

Before Using the Product



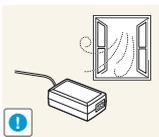
Do not let water enter the DC power adapter or get the adapter wet.

- 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.

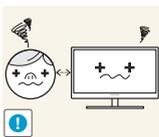


Do not put the DC power adapter near to any heating apparatus.

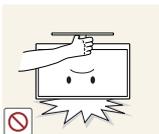
- Otherwise, a fire may result.



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.



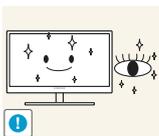
Do not hold the monitor upside-down or move it by holding the stand.

- 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.

Before Using the Product



Do not place heavy objects on the product.

- Product failure or personal injury may result.



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

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

Correct posture to use the product



Use the product in the correct posture as follows:

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

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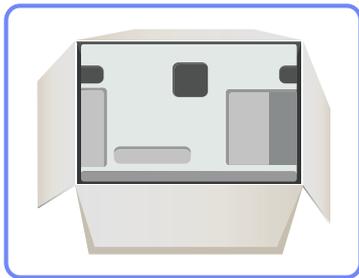
1.1 Checking the Contents

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.

1.1.2 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



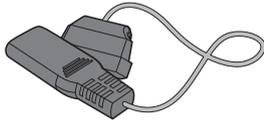
Quick setup guide



Warranty card
(Not available in all locations)



User manual



Power cable



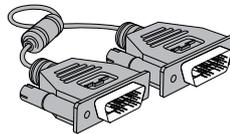
DC power adapter



Power extension cable
(DC 14V)



Stand base



DVI cable

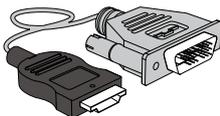


- Components may vary depending on the country.
- The stand base supplied with this product contains a circuit board. Care should be taken when handling the base.

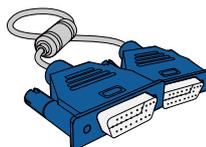
Items sold separately



The following items can be purchased at your nearest retailer.



HDMI-DVI cable



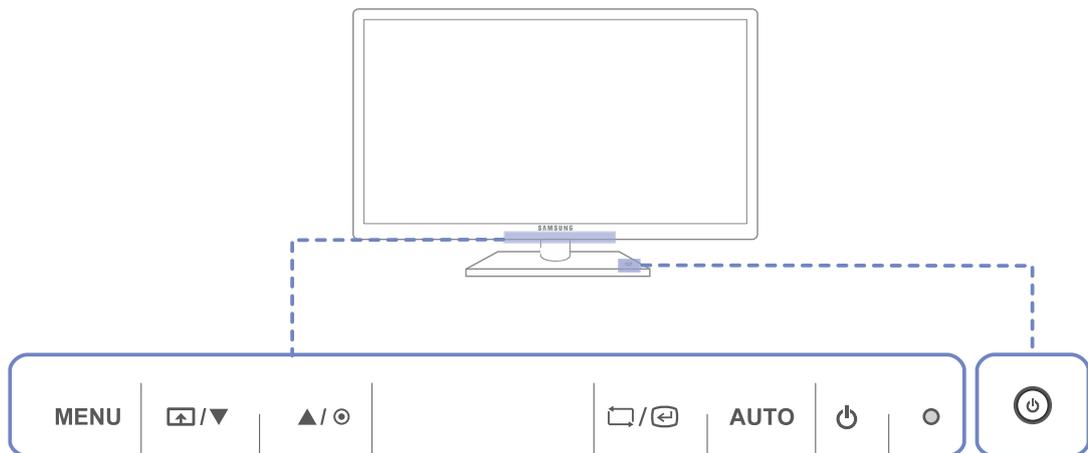
D-SUB cable

1.2 Parts

1.2.1 Frontal Buttons



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



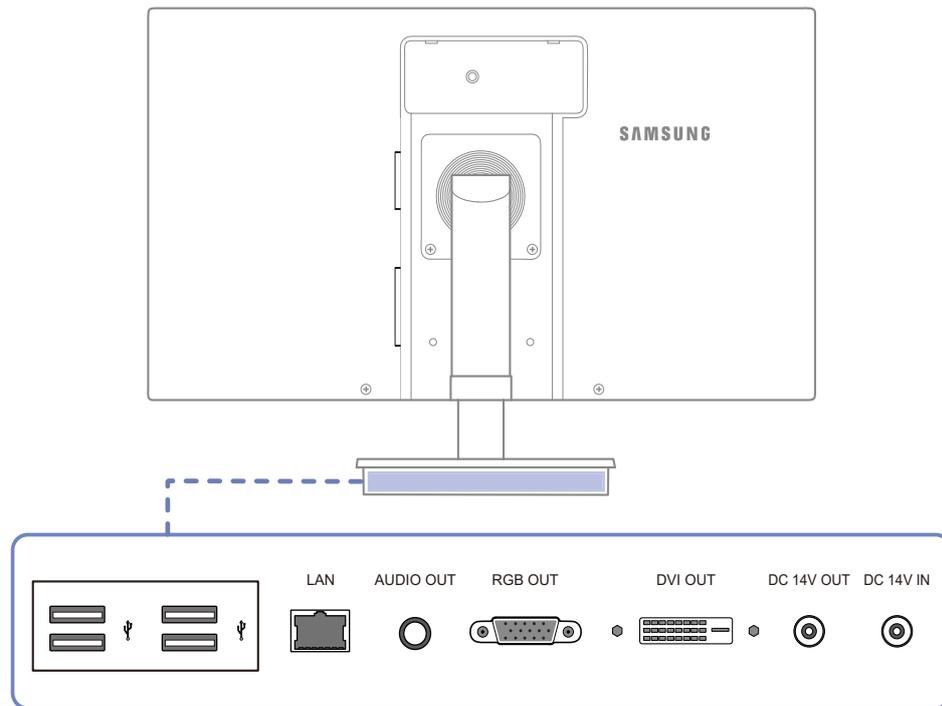
Icons	Description
<p>MENU</p>	<ul style="list-style-type: none"> • Open or close the onscreen display (OSD) menu, or return to the parent menu. • OSD control lock: Maintain the current settings, or lock the OSD control to prevent unintended changes to settings. <p>To lock the OSD control, press the MENU button [MENU] for five seconds.</p> <p>To unlock the locked OSD control, press the MENU button [MENU] for more than five seconds.</p> <p> If the OSD control is locked,</p> <ul style="list-style-type: none"> • 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.)

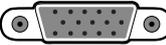
Icons	Description
	<p>Configure Customized Key and press []. The following options will be enabled.</p> <p>SAMSUNG MAGIC Angle - SAMSUNG MAGIC Bright - Image Size</p> <p> To configure Customized Key, go to SETUP&RESET → Customized Key and select the mode you want.</p>
	Move to the upper or lower menu or adjust the value for an option on the OSD menu.
	Adjust the screen brightness.
	<p>Confirm a menu selection.</p> <p>Pressing the [] button when the OSD menu is not displayed will change the input source (Digital/Analog). If you power on the product or change the input source by pressing the [] button, a message that shows the changed input source will appear at the top left corner of the screen.</p>
AUTO	<p>Press the [AUTO] button to automatically adjust the screen settings.</p> <p> <ul style="list-style-type: none"> Available only in Analog mode. Changing the resolution in Display Properties will activate the Auto Adjustment function. </p>
	Turn the screen on or off.
 (Power lamp)	<p>The power indicator will be lit when the product is operating normally.</p> <p> <ul style="list-style-type: none"> Refer to "11.2 PowerSaver" for details about the power-saving function. 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. </p>
	Power on or off the product.

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.

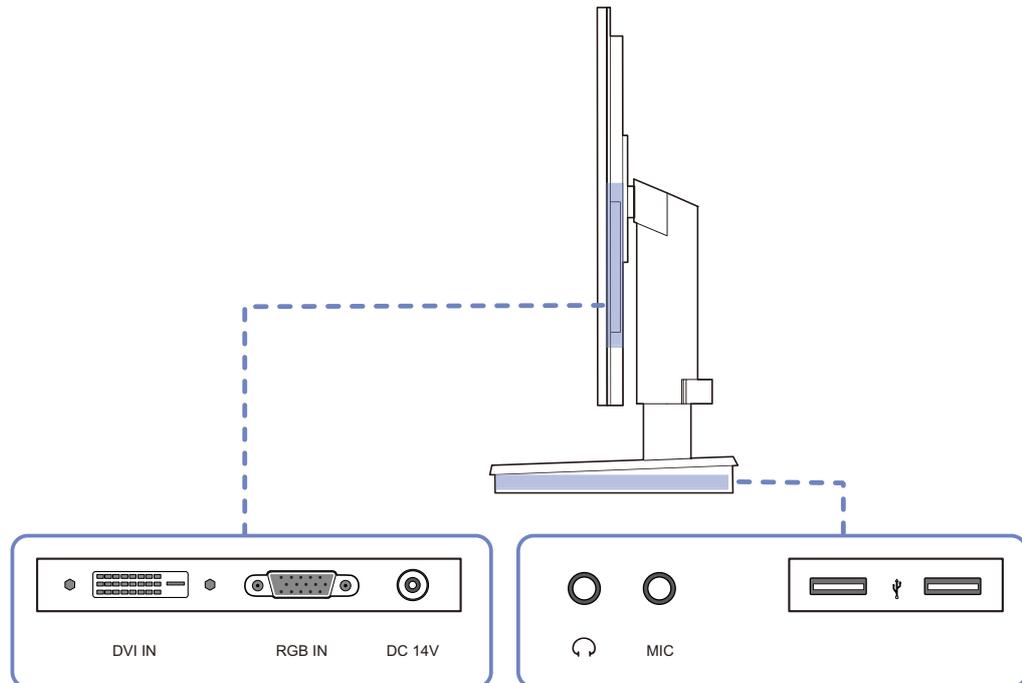


Port	Description
	Connect to a USB device.
	Connect to a network using the LAN cable.
	Connect to an audio output device such as headphones.
	Connect to the monitor using the D-SUB cable.
	Connect to the monitor using the DVI cable.
 [DC 14V OUT]	Connect to the  [DC 14V] port on the monitor using the power extension cable.
 [DC 14V IN]	Connect to the DC power adapter.

1.2.3 Right Side View



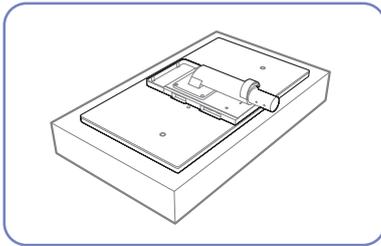
The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



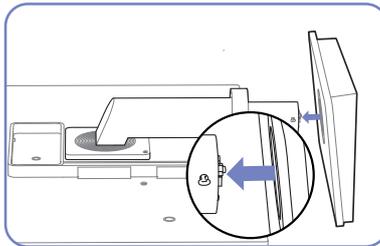
Port	Description
	Connect to a PC or the stand base using the DVI cable.
	Connect to a PC or the stand base using the D-SUB cable.
	Connect to [DC 14V OUT] on the stand base using a power extension cable.
[Headphones]	Connect to an audio output device such as headphones.
[MIC]	Connect to a microphone.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

1.3 Installation

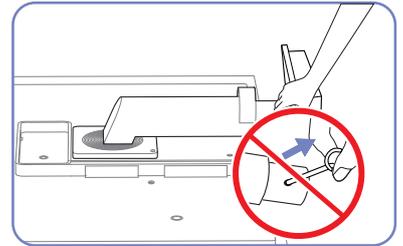
1.3.1 Attaching the Stand



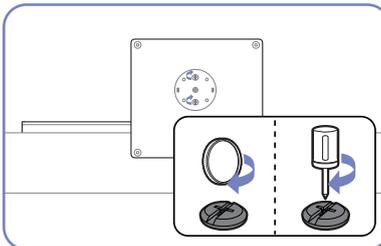
Place a protective cloth or cushion on a flat surface. Next, place the product with the face down on top of the cloth or cushion.



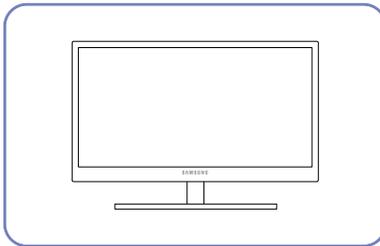
Insert the stand base into the stand in the direction of the arrow.



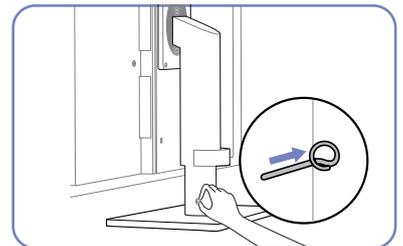
Do not remove the fixing pin until you are finished attaching the stand.



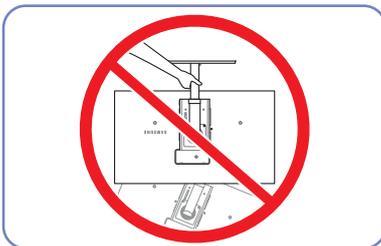
Fasten the screw tightly (using a screwdriver or coin) into the bottom of the stand base.



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.

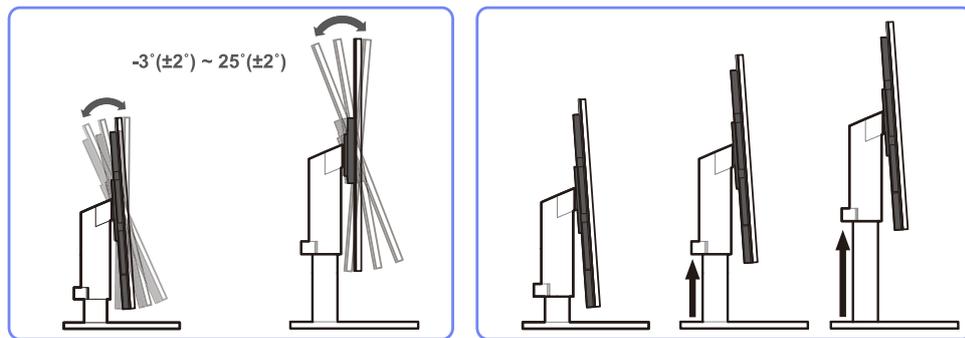


The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

1.3.2 Adjusting the Product Tilt and Height



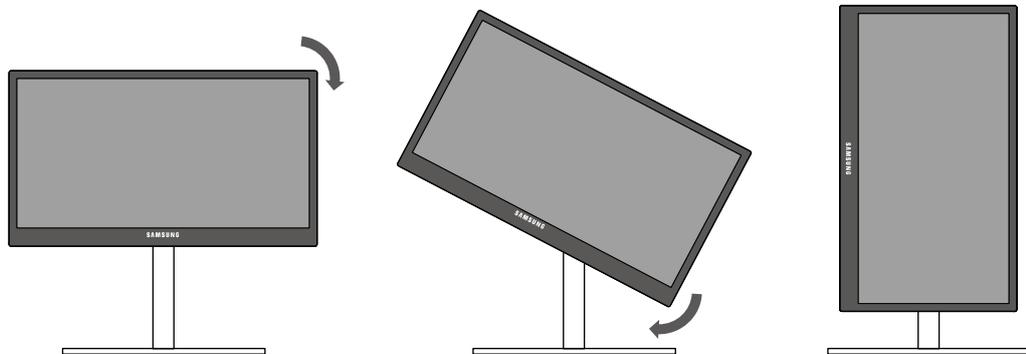
The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



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

1.3.3 Rotating the Monitor

You can rotate your monitor as shown below.



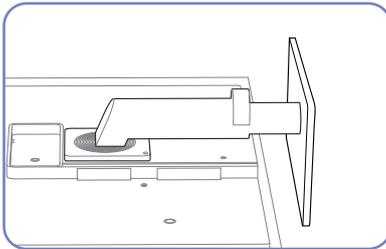
- Be sure to fully extend the stand before rotating the monitor.
- If you rotate the monitor without fully extending the stand, the corner of the monitor may hit the floor and get damaged.
- Do not rotate the monitor counterclockwise. The monitor may get damaged.

1.3.4 Installing a Wall-mount Kit or Desktop Stand

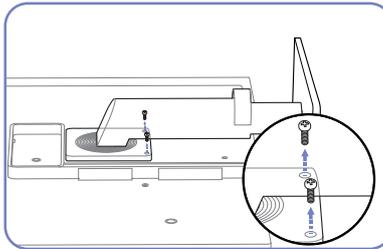
Before Installation



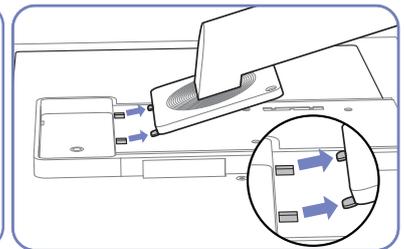
Power the product off and remove the power cable from the power socket.



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

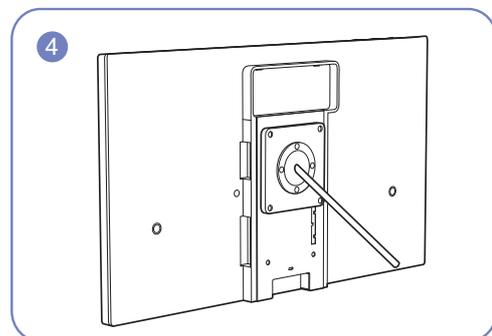
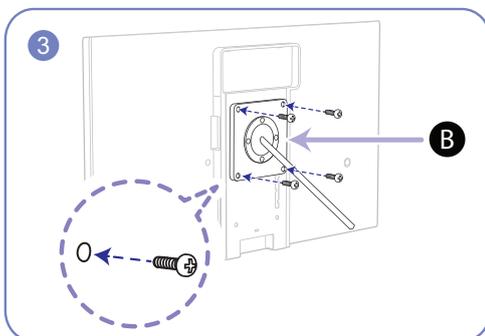
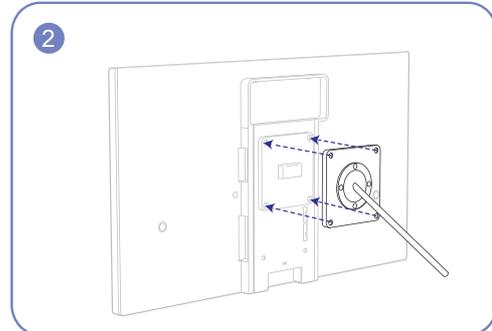
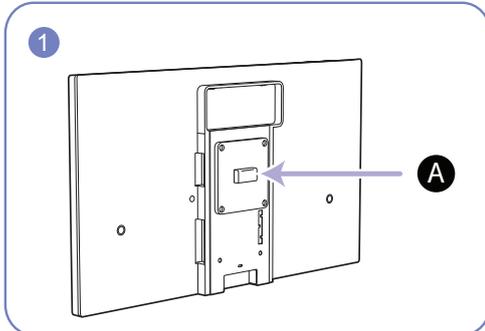


Unfasten the screw from the back of the product.



Lift and detach the stand.

Installing a Wall-mount Kit or Desktop Stand



A Attach the wall-mount kit or desktop stand here

B Bracket (sold separately)

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

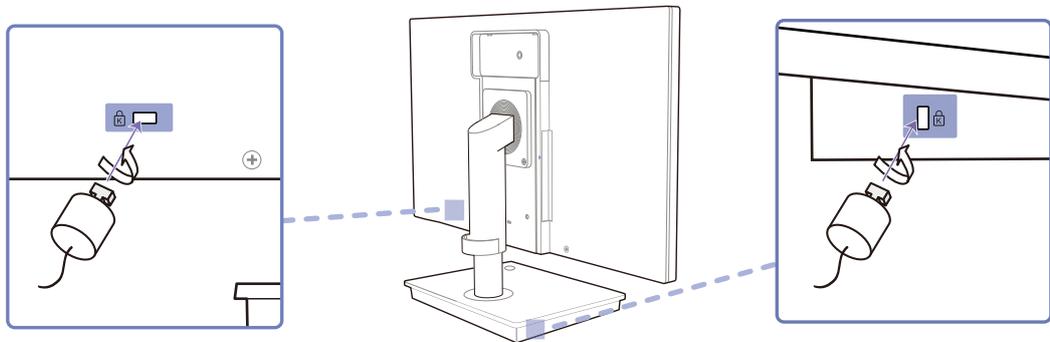


Notes

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

1.3.5 Anti-theft Lock

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



To lock an anti-theft locking device:

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



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

2.1 About "Zero Client"

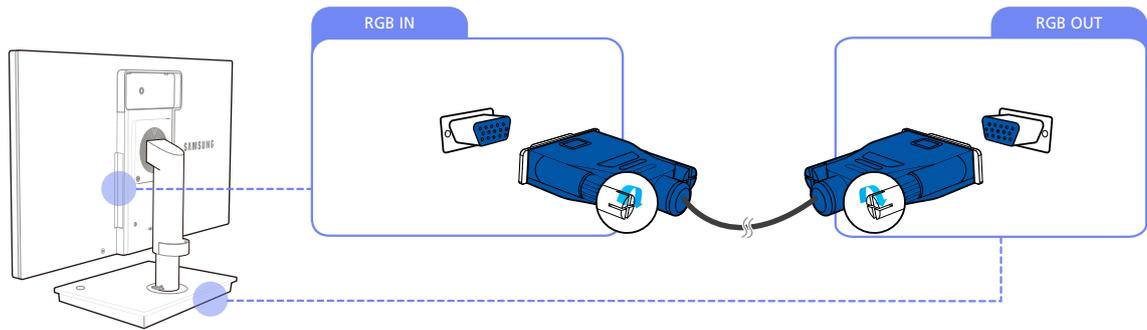
The "Zero Client" uses a Linux operating system. When the Client connects to a server where the Citrix XenDesktop/XenApp service is available, information relating to the keyboard, mouse, audio/video and display data is transmitted from the Client to the server over the network.

Compatible servers

- Citrix XenDesktop/XenApp server
 - Microsoft Windows 2000/2003/2008 server where the Terminal Service and Citrix XenServer are installed

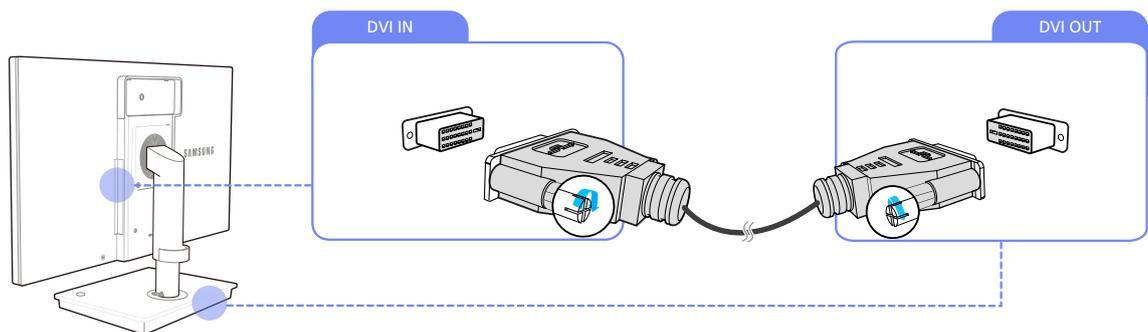
2.2 Connection to Use the "Zero Client"

2.2.1 Connection Using the D-SUB Cable (Analogue Type)



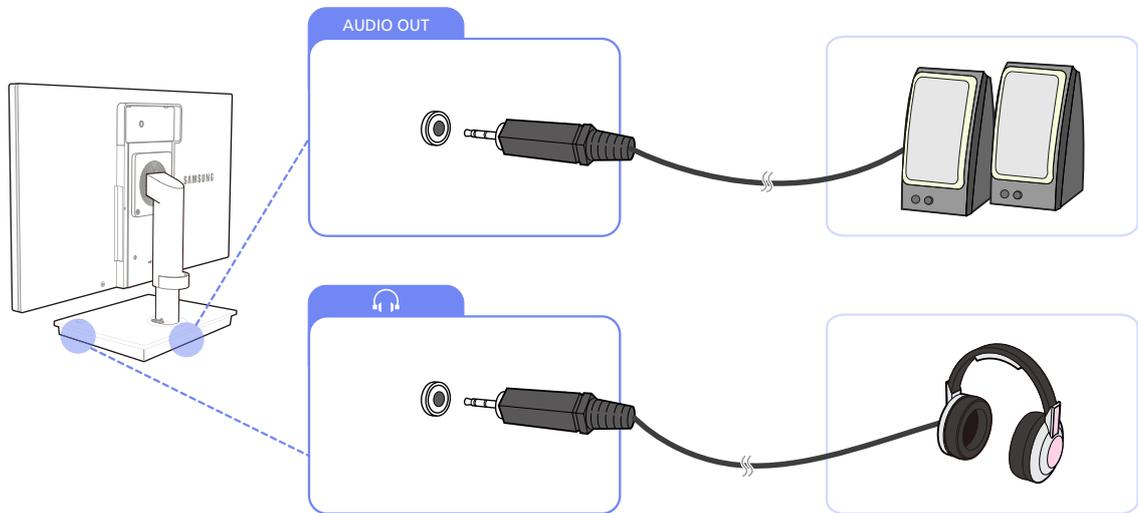
- 1 Connect the D-SUB cable to [RGB IN] on the back of the monitor and [RGB OUT] on the stand base.
- 2 Connect the DC power adapter to the product and a power outlet. Next, turn on the power switch on the stand base.
(For details, refer to "3.3 Connecting the Power".)
- 3 Press [⏏/⏻] to change the input source to **Analog**.

2.2.2 Connection Using the DVI Cable



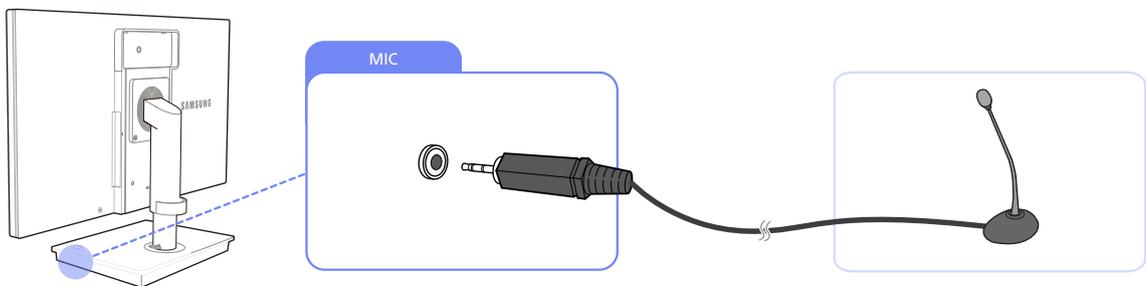
- 1 Connect the DVI cable to [DVI IN] on the back of the monitor and [DVI OUT] on the stand base.
- 2 Connect the DC power adapter to the product and a power outlet. Next, turn on the power switch on the stand base.
(For details, refer to "3.3 Connecting the Power".)
- 3 Press [⏏/⏻] to change the input source to **Digital**.

2.2.3 Connecting to Headphones or Speakers



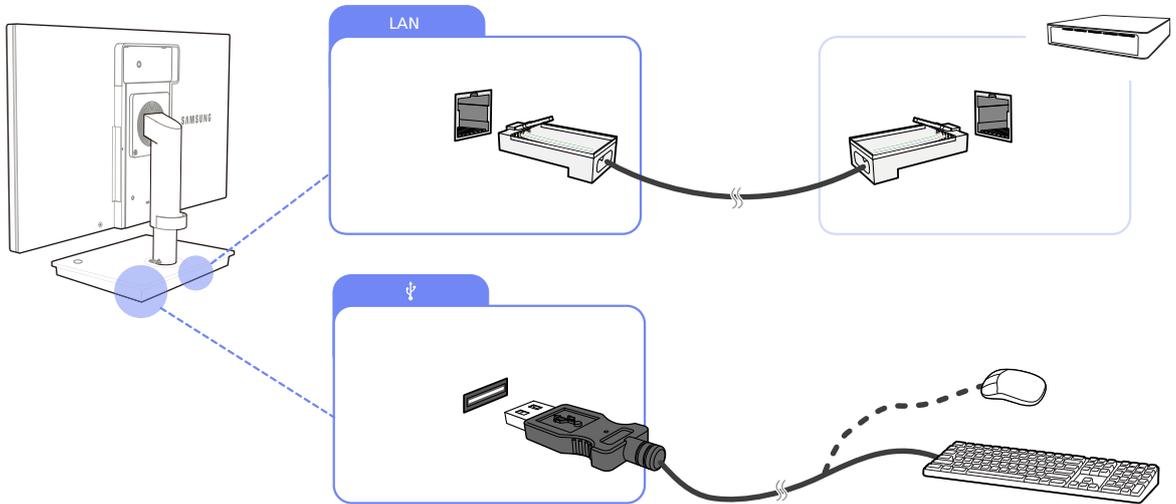
- 1 Connect an audio output device (headphones, speakers, etc.) to the [AUDIO OUT] port on the back or the [🎧] port on the side of the stand base.

2.2.4 Connecting a Microphone



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

2.2.5 Connecting to a Server (LAN/USB Connection)



- 1 Connect the [LAN] port on the back of the stand base to the server using the LAN cable.



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

- 2 Connect USB devices (keyboard, mouse, etc.) to [USB] on the back or right side of the stand base.

(To use the [USB] port, ensure the Client is connected to the server.)

2.3 Using the "Zero Client"

2.3.1 Login



- **Username** : Enter the user name that will be used to connect to the "Citrix" server.
- **Password** : Enter the password that will be used to connect to the "Citrix" server.
- **Domain** : Enter the domain that will be used to connect to the "Citrix" server.



Ensure **Broker Server** is enabled under **Network**.

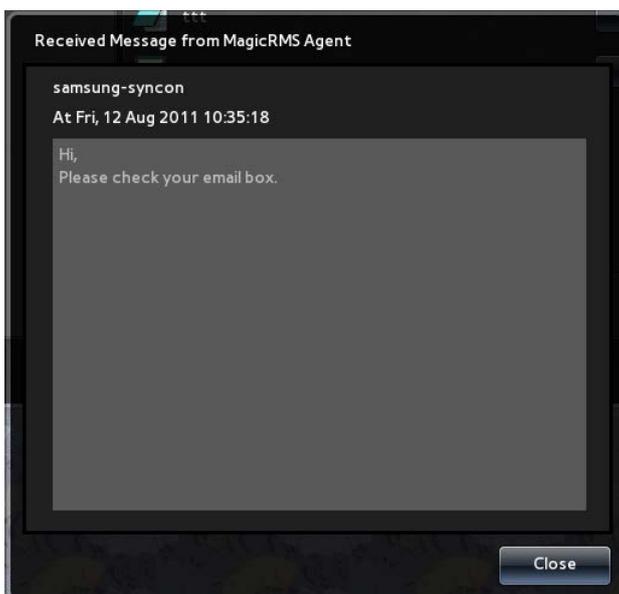
2.3.2 Message Box

MagicRMS

When the **MagicRMS** server is on, messages received from the server are displayed on the screen.

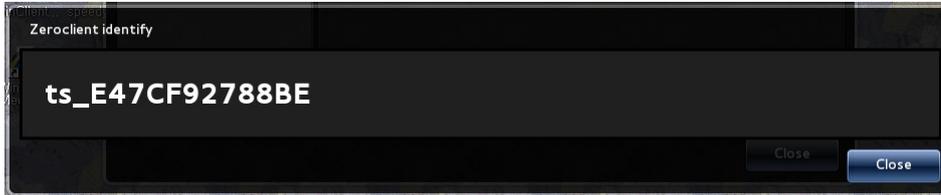
Message

The **Identity** function of **MagicRMS** allows you to check the host name of the Client.



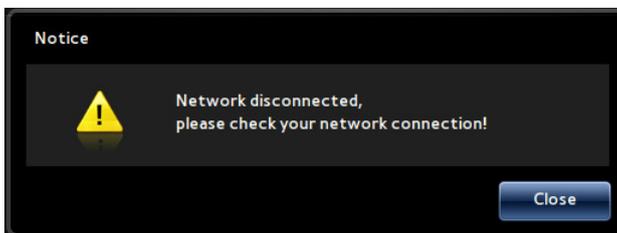
Identity

The **Identity** function of **MagicRMS** allows you to check the host name of the Client.



Disconnect Message

If the Client is disconnected from the network, a message will appear indicating the disconnection. In this case, if you are logged on, the desktops/applications connected will disconnect and log off.



2.3.3 Toolbar

Network

You can view or configure the network and server settings for the Client.



Local Network

You can configure the IP to connect the Client to a network.

- **Link Speed & Duplex** : Select a network connection type and speed.

Link Speed & Duplex:

- To use a static IP, deselect **Enable DHCP** and specify the IP.

IP Address:

Subnet Mask:

Default Gateway:

Enable DHCP

- To use DHCP, select **Enable DHCP**.

IP Address:

Subnet Mask:

Default Gateway:

Enable DHCP

Name Servers

Configure the **DNS Domain** and **DNS Server** information on the Client.

- Specify the **DNS Domain**.

DNS Domain:

- Specify the **DNS Servers**. More than one **DNS Server** can be entered using “,”. e.g.)
192.168.0.1,192.168.1.1

DNS Servers:

For example: 1.1.1.1,2.2.2.2

DHCP Options

DHCP Option IDs			
File Server:	<input type="text" value="161"/>	Citix Server:	<input type="text" value="165"/>
Root Path:	<input type="text" value="162"/>	Domain List:	<input type="text" value="166"/>
Ftp Username:	<input type="text" value="163"/>	RMS Server:	<input type="text" value="167"/>
Ftp Password:	<input type="text" value="164"/>	RMS Port:	<input type="text" value="168"/>

To automatically configure several settings for the Client all at once using DHCP upon boot up, configure the **DHCP Options IDs**.

- Ensure the setting is specified between 128 and 254.
- If this option is configured, the setting specified will replace the customized setting.



Requirements

- **Local Network** must be set to **Enable DHCP**.
- Information about the Options IDs must be configured on the DHCP server.

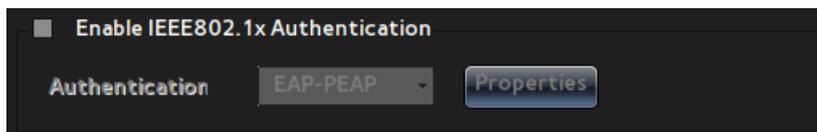
Security

Client provides a security function using IEEE802.1x authentication.

Available modes

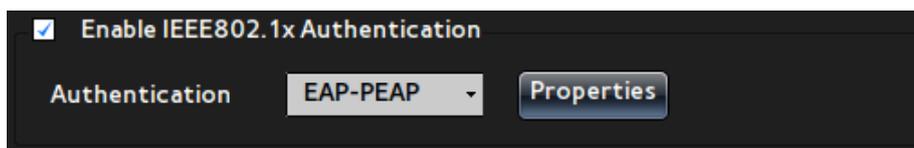
- EAP-PEAP (MSCHAPv2, PEAP version Automatic)
- EAP-TLS

To use this function, select **Enable IEEE802.1x Authentication** and specify the **Authentication** mode.



1 EAP-PEAP

To use **EAP-PEAP** mode, set the **Authentication** mode to **EAP-PEAP**.

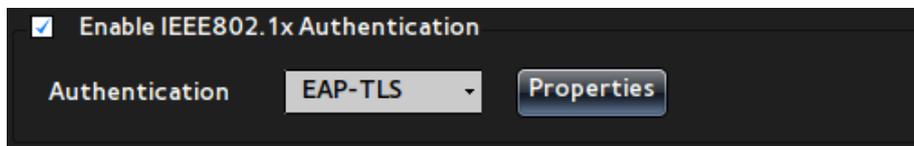


Click **Properties**, and enter the **Username** and **Password** for authentication.



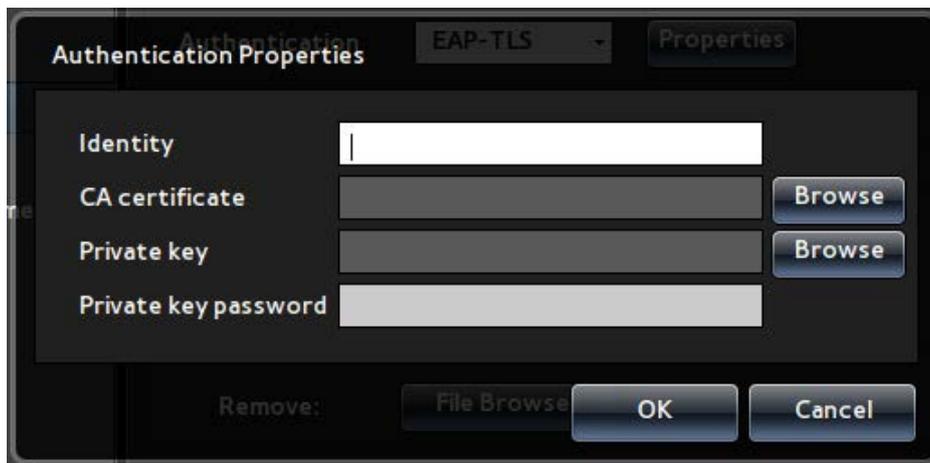
2 EAP-TLS

To use **EAP-TLS** mode, set the **Authentication** mode to **EAP-TLS**.



Click **Properties**, and configure the following settings for authentication. To select a certificate, ensure you copy the authentication file to the Client using **Certification Management**.

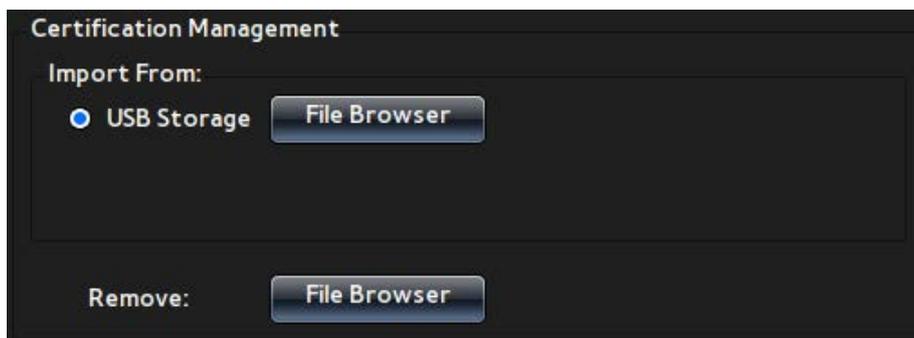
- Enter the **Identity** information.
- Select a **CA certificate** file (*.der, *.pem, *.crt, *.cer).
- Select a **Private key** file.
- Enter the **Private key password**.



3 Certification Management

For you to manage authentication files that are used in **EPA-TLS** mode, the following menu options are provided.

- An option for copying a file using several methods including **USB Storage** (The file will be copied to a specific directory on the Client.)
- An option for deleting a saved file



Broker Server

Enter information to connect to the Citrix server.

Using "Zero Client"

- Enter the IP address of the Citrix server.

XenDesktop Broker Server: 10.88.44.50

- Specify the **Default Username** and **Default Domain** that will be used to connect to the server.

Default Username: xendt05

Default Domain: xendt

Remote Management

You can configure the settings for servers that manage the Client, enter information about the servers, or view the status of the servers.

For details on the **MagicRMS** function, refer to the **MagicRMS** user manual.

1 File Server

Address:	ftp://	<input type="text"/>
Path:	<input type="text"/>	
Username:	<input type="text"/>	
Password:	<input type="text"/>	

Configure the FTP server to connect to in order to upgrade the firmware on the Client. The information configured will be used to upgrade the firmware when the Client boots up.

- **Address** : Enter the IP address of the FTP server.
- **Path** : Enter the **Path** of the FTP server where the new firmware is saved.
- **Username** : Enter the **Username** that will be used to connect to the FTP server.
- **Password** : Enter the **Password** that will be used to connect to the FTP server.



Requirements

- Ensure the FTP server is working properly.
- The new firmware must be in a compatible file format.

2 MagicRMS Connection

Connection	
<input checked="" type="radio"/>	Multicast
<input type="radio"/>	Server Assignment
Address:	<input type="text" value="239.5.6.7"/>
Port:	<input type="text" value="5015"/>

Enter the **Connection** information to connect to the **MagicRMS** server.

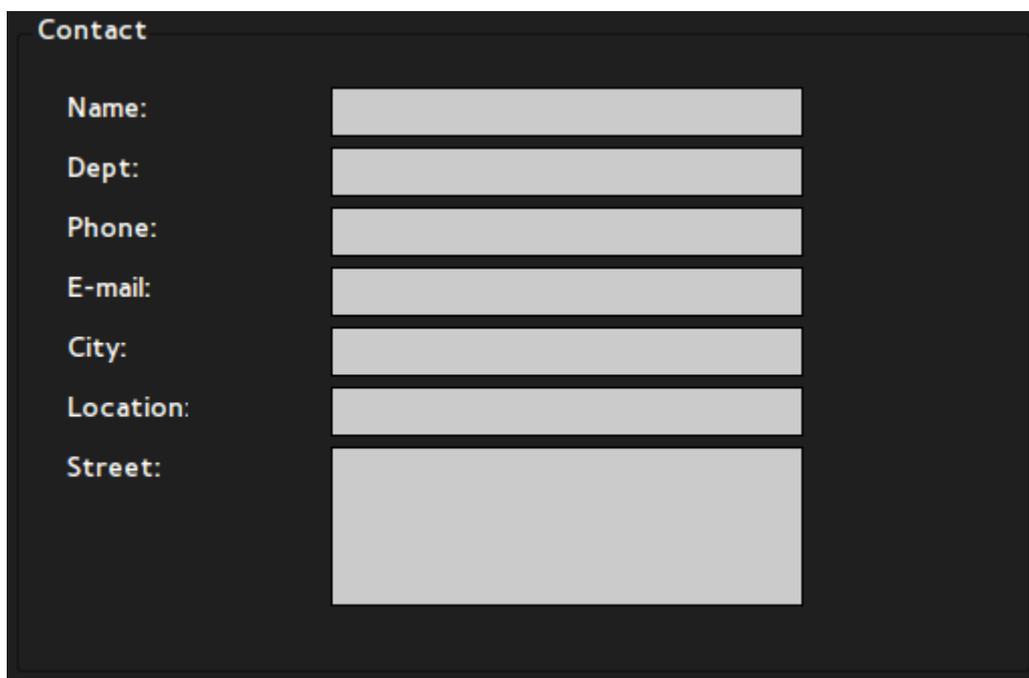
- **Multicast**

Enable this option if you want to automatically connect to the **MagicRMS** server. Specify the **IP Address** and **Port** number for **Multicast**. If the **MagicRMS** server is assigned with the same IP address and port number as the Client, it will automatically connect to the Client.

- **Server Assignment**

If you know the static IP address and port number of the **MagicRMS** server, you can manually enter them to connect to the server.

3 **MagicRMS Contact**



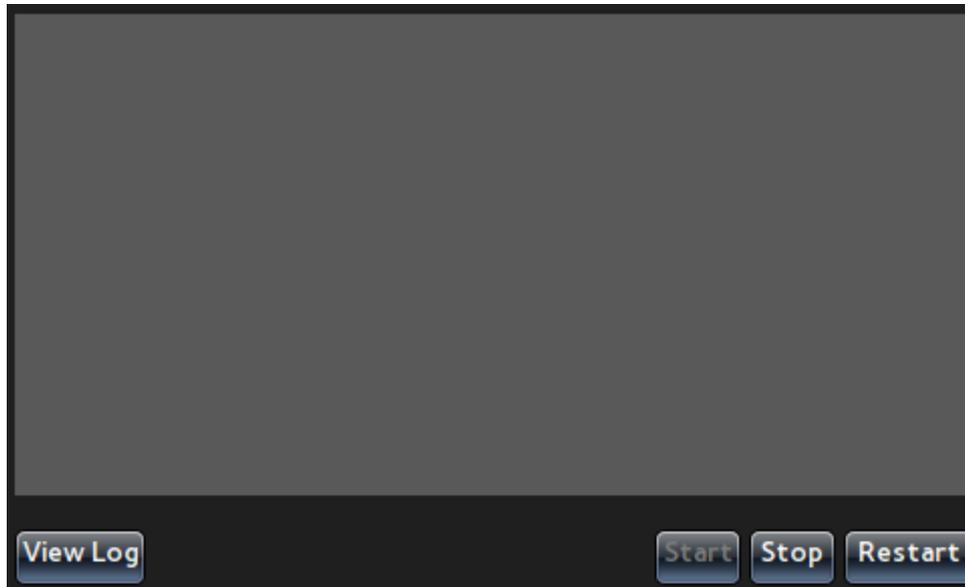
The image shows a dark-themed form titled "Contact" with several input fields. The fields are labeled as follows:

- Name:
- Dept:
- Phone:
- E-mail:
- City:
- Location:
- Street:

Each label is followed by a light gray rectangular input field. The "Street" field is significantly larger than the others, indicating it is for a multi-line address.

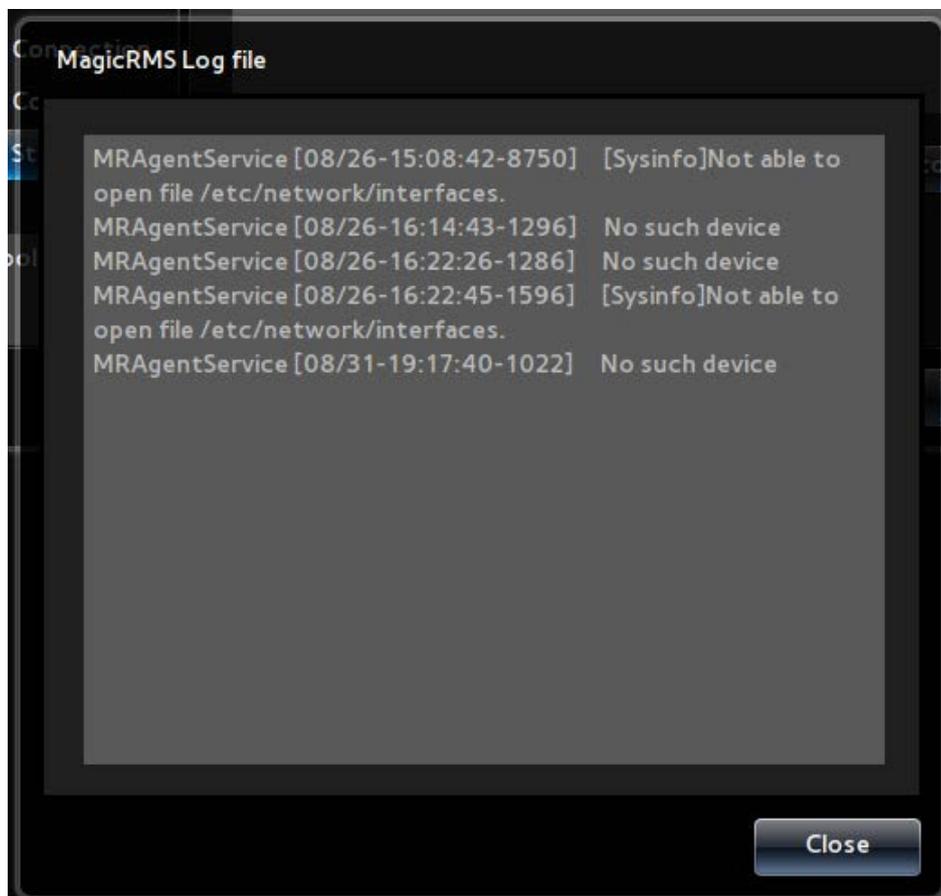
Enter information to identify the Client on the **MagicRMS** console.

4 MagicRMS Status



You can check the connection status of the **MagicRMS** server. If there are connection issues, check the server connection and select **Start**, **Stop**, or **Restart** to start the server.

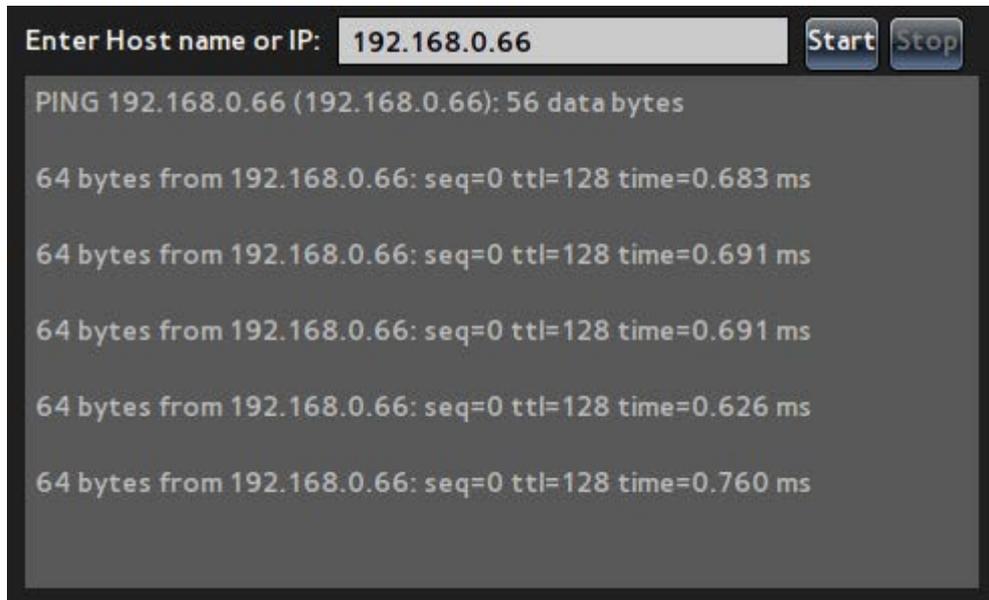
To view details of the **MagicRMS** server logs, click **View Log**.



5 Network Tools

Network Tools can be used to check the connection status between the Client and network.

- **Ping**



```
Enter Host name or IP: 192.168.0.66 Start Stop
PING 192.168.0.66 (192.168.0.66): 56 data bytes
64 bytes from 192.168.0.66: seq=0 ttl=128 time=0.683 ms
64 bytes from 192.168.0.66: seq=0 ttl=128 time=0.691 ms
64 bytes from 192.168.0.66: seq=0 ttl=128 time=0.691 ms
64 bytes from 192.168.0.66: seq=0 ttl=128 time=0.626 ms
64 bytes from 192.168.0.66: seq=0 ttl=128 time=0.760 ms
```

Using the Ping command, you can check the status of the network connection for the IPs entered.

- **Trace Route**

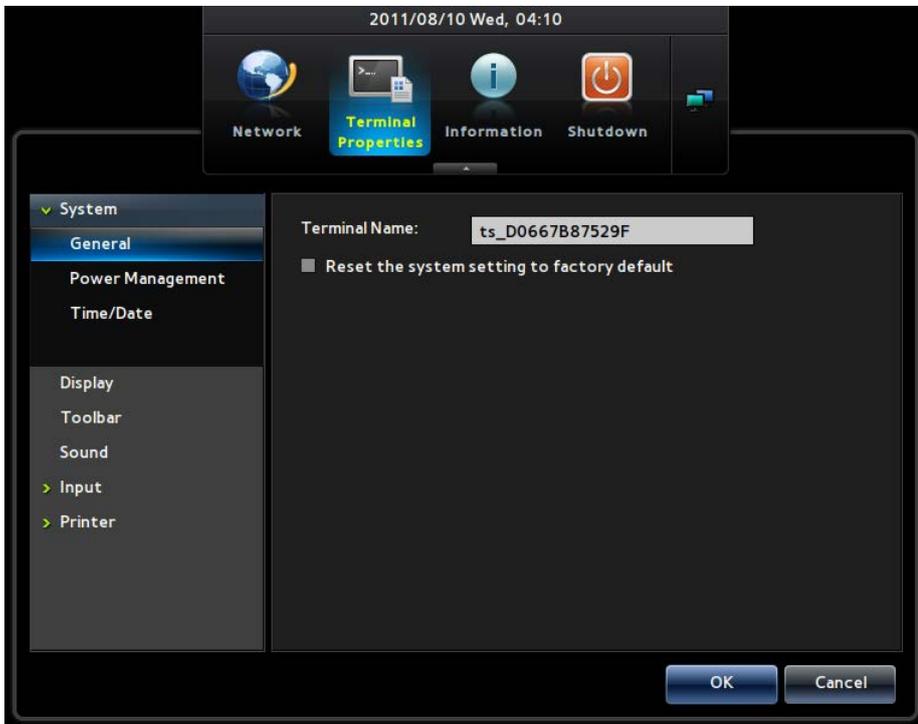


```
Enter Host name or IP: samsung.com Start Stop
traceroute to samsung.com (211.45.27.198), 30 hops max, 38 byte
packets
1 192.168.0.1 (192.168.0.1) 0.926 ms 0.659 ms 0.623 ms
```

Using the Route command, you can check the network connection status for the IPs entered.

Terminal Properties

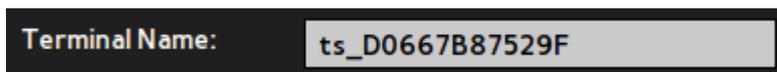
Configure the properties of the Client.



System

1 General

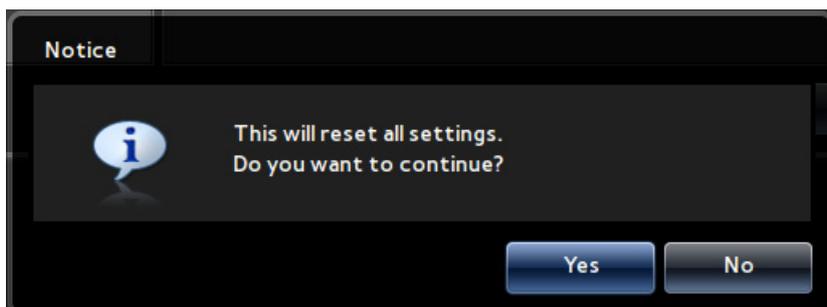
- **Terminal Name** : Change the Client name. The default name is "TS_ + MAC information."



- **Reset the system setting to factory default** : Reset the Client settings by selecting the checkbox.



Select **Yes** in the **Notice** window that appears after selecting the checkbox. The settings will be reset.



2 Power Management

- Control the power supply to the Client by changing the **Screen Off** setting. The Client will activate **Power Management** if it is left idle for a specified amount of time.

Screen Off: Never ▾

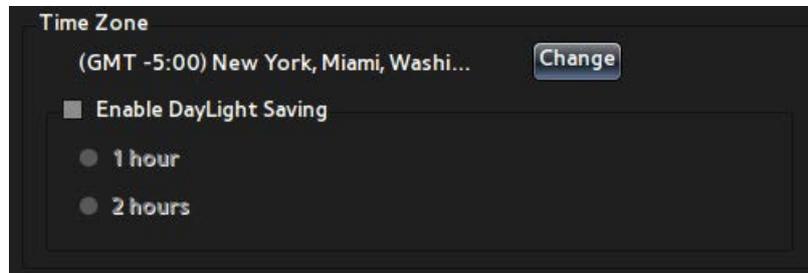
The following time settings are available to choose from.

- **Never**
- **5 minutes**
- **10 minutes**
- **30 minutes**
- **1 hour**
- **2 hours**

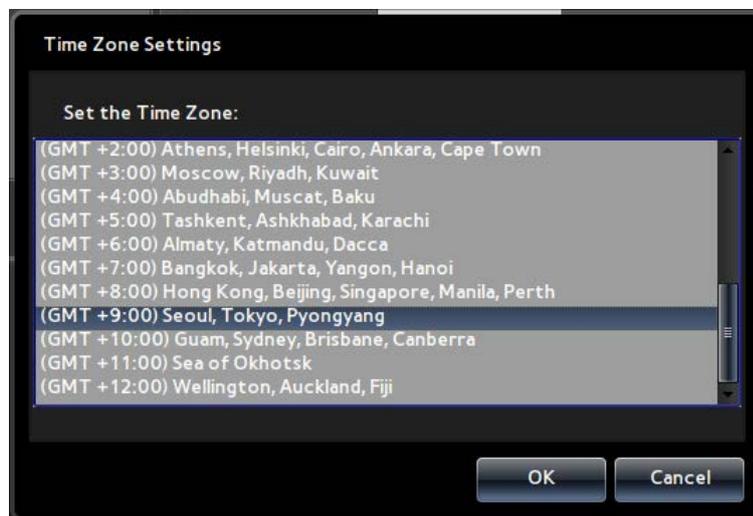
3 Time/Date

Set the clock on the Client.

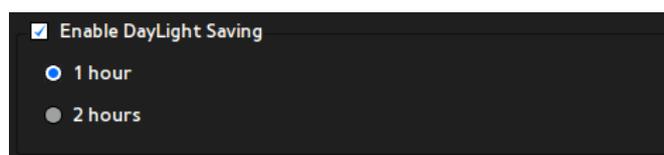
- **Time Zone**



Enter the **Time Zone** information to apply to the Client. Click **Change**, and select the time zone desired.

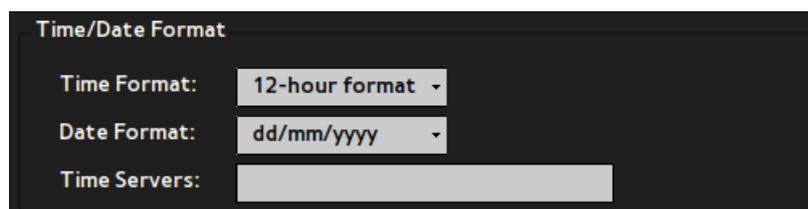


To enable DayLight Saving, select the **Enable DayLight Saving** checkbox and select the number of hours to apply.



- **Time/Date Format**

- **Time Format / Date Format** : Specify the format to display the time and date on the toolbar.
- **Time Servers** : Enter the **Time Server** information provided online. The time and date on the Client will automatically be set.



Display

Configure the settings for display devices connected to the Client.

1 Orientation

Orientation: Horizontal ▾

Configure the screen orientation of the selected display device.

You can select **Horizontal** or **Vertical**.

2 Resolution

Resolution: 1600x1200 ▾

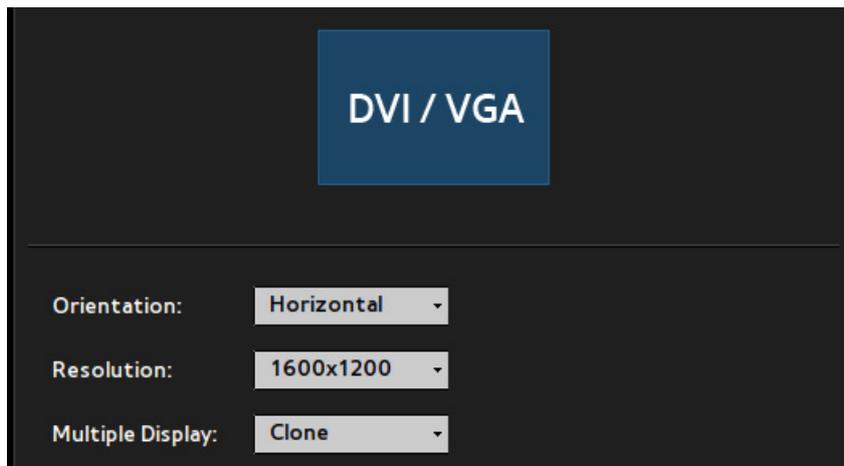
Set the resolution of the selected display device.

The resolutions available vary depending on the display device.

3 Multiple Display

When two display devices are connected to the Client, specify how you will use the screens.

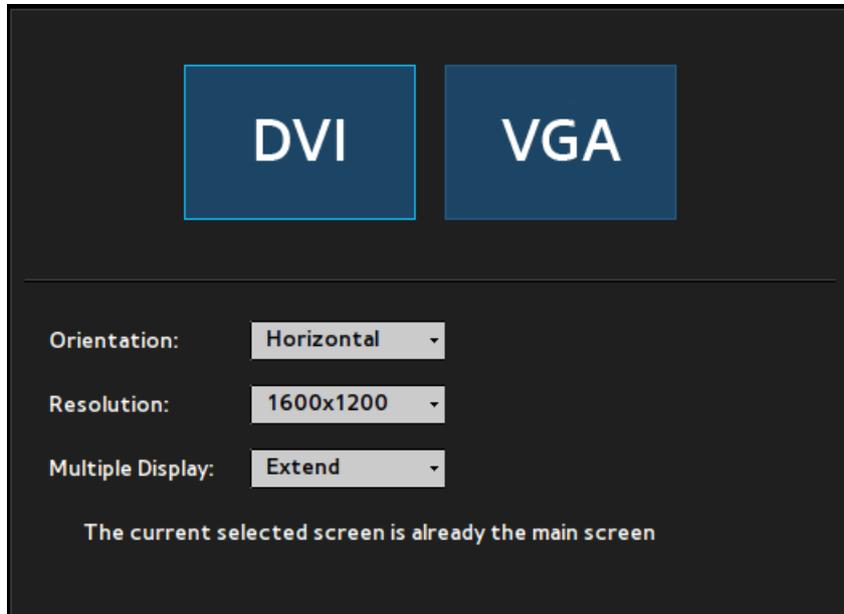
- To display the same desktop on the displays, select **Clone**. When **Clone** is selected, the same **Orientation** and **Resolution** will be applied to the displays.



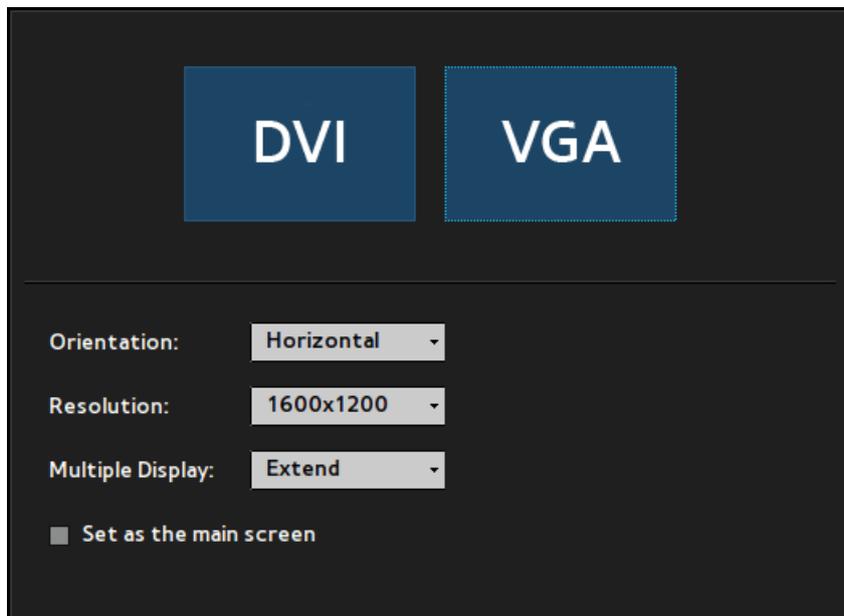
The screenshot shows a dark-themed configuration window for a Zero Client. At the top, there is a blue box labeled "DVI / VGA". Below this, there are three rows of settings, each with a label and a dropdown menu:

Orientation:	Horizontal ▾
Resolution:	1600x1200 ▾
Multiple Display:	Clone ▾

- To display an extended desktop on the two displays, select **Extend**.



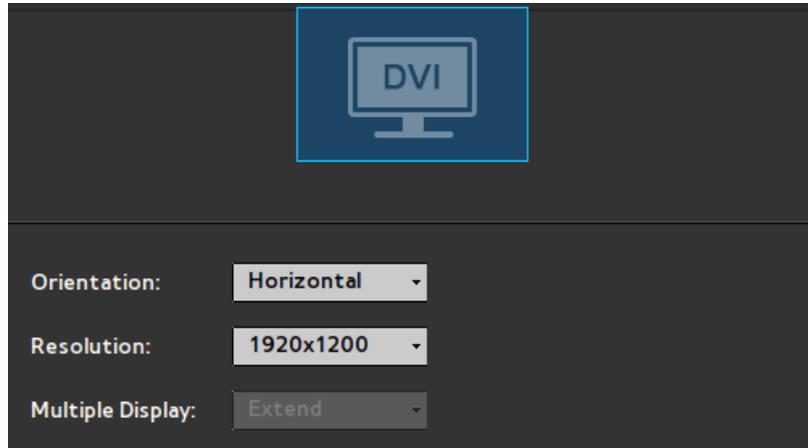
The display selected as the primary screen will be placed on the left.



To set the selected display as the primary screen, select the **Set as the main screen** checkbox.



When only one display device is connected, the **Multiple Display** option is disabled.

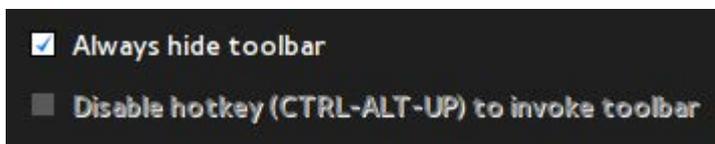


Toolbar

Select whether to display the toolbar or enable the shortcut keys on the Client.

- **Always hide toolbar**

Hide the toolbar on the screen: select the checkbox and minimize the toolbar. To unhide the toolbar, press the corresponding shortcut key.



- **Disable hotkey(CTRL-ALT-UP) to invoke toolbar**

Shrink the toolbar by pressing the corresponding shortcut key (CTRL-ALT-UP). To expand the toolbar, click the arrow button on the minimized toolbar.

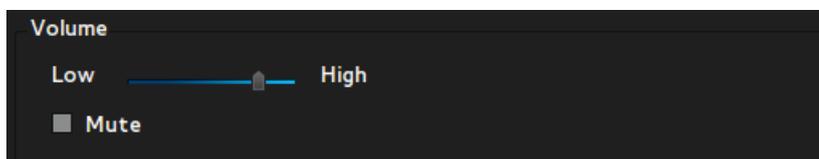


The two options above cannot be enabled at the same time.

Sound

Adjust the sound on the Client.

- **Volume** : Adjust the volume using the scrollbar.
- **Mute** : Mute the sound.

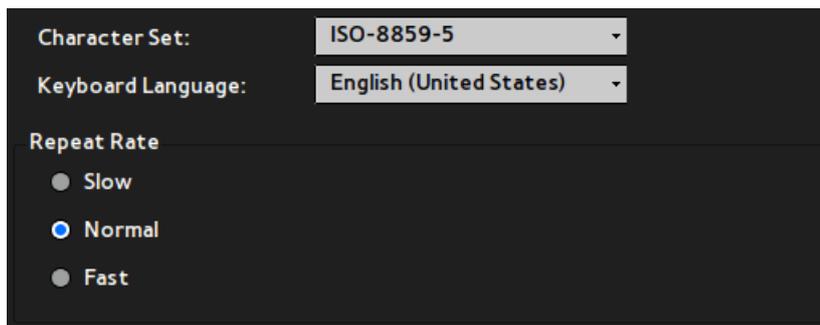


Input

1 Keyboard

You can configure the keyboard settings for the Client.

- **Character Set** : Specify the character encoding method to use on the Client.
- **Keyboard Language** : Specify the keyboard language.
- **Repeat Rate** : Specify the keyboard sensitivity.

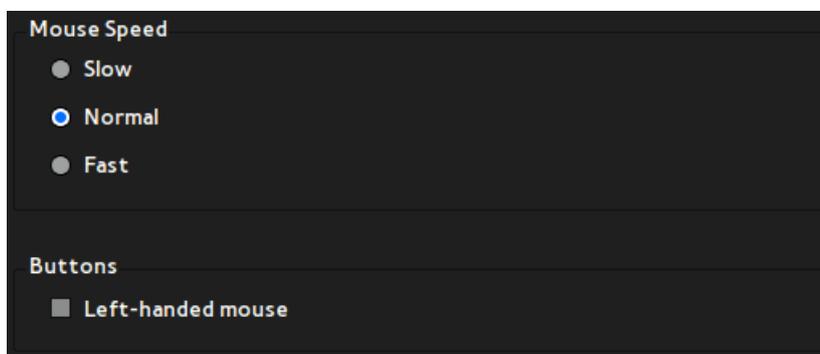


The screenshot shows a configuration panel for keyboard settings. It includes two dropdown menus: 'Character Set' set to 'ISO-8859-5' and 'Keyboard Language' set to 'English (United States)'. Below these is a 'Repeat Rate' section with three radio button options: 'Slow', 'Normal' (which is selected), and 'Fast'.

2 Mouse

You can configure the mouse settings for the Client.

- **Mouse Speed** : Configure the mouse movement sensitivity.
- **Buttons** : Activate the left-handed mouse mode.

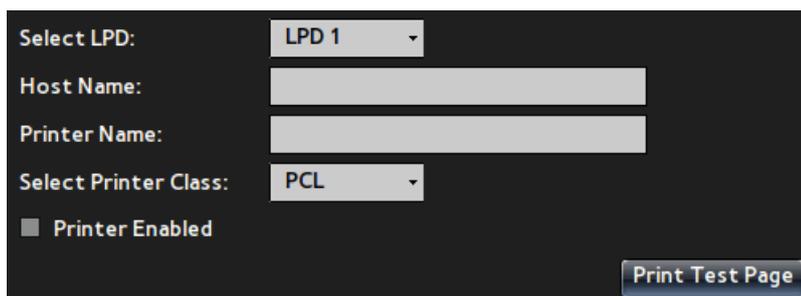


The screenshot shows a configuration panel for mouse settings. It features a 'Mouse Speed' section with three radio button options: 'Slow', 'Normal' (selected), and 'Fast'. Below this is a 'Buttons' section with a checkbox labeled 'Left-handed mouse' which is currently unchecked.

Printer

1 LPDs

Configure the LPD-type printer settings.



The screenshot shows a configuration panel for LPD-type printer settings. It includes four input fields: 'Select LPD' (dropdown menu set to 'LPD 1'), 'Host Name' (text input), 'Printer Name' (text input), and 'Select Printer Class' (dropdown menu set to 'PCL'). At the bottom left, there is a checkbox labeled 'Printer Enabled' which is unchecked. At the bottom right, there is a button labeled 'Print Test Page'.

2 SMBs

Configure the SMB-type printer settings.

Select SMBs: **SMB 1**

smb://

Authentication

Username:

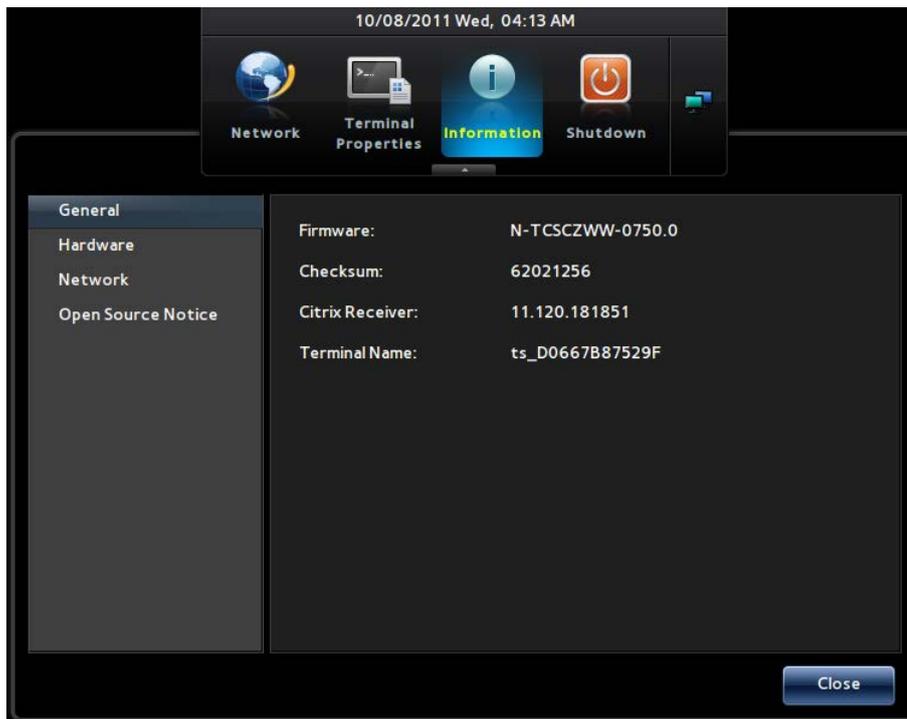
Password:

Printer Enabled

Print Test Page

Information

You can view the Client information.



General

- **Firmware** : View the version of the firmware on the Client.
- **Checksum** : View the checksum of the firmware on the Client.
- **Citrix Receiver** : View the version of the Citrix Receiver used on the Client.

- **Terminal Name** : View the **Terminal Name** of the Client.

Firmware:	N-TCSCZWW-0750.0
Checksum:	62021256
Citrix Receiver:	11.120.181851
Terminal Name:	ts_D0667B87529F

Hardware

- **CPU** : View information about the CPU on the Client.
- **CPU Busy** : View the current CPU usage on the Client.
- **Memory size** : View the total amount of memory on the Client.
- **Free Memory** : View the amount of memory currently available on the Client.
- **Resolution** : View the display resolution configured on the Client.
- **System up Time** : View the amount of time the Client has been running.

CPU:	AMD G-T44R Processor
CPU Busy:	17%
Memory size:	1650936 KB
Free Memory:	1416980 KB
Resolution:	1600x1200
System up Time	24 Min

Network

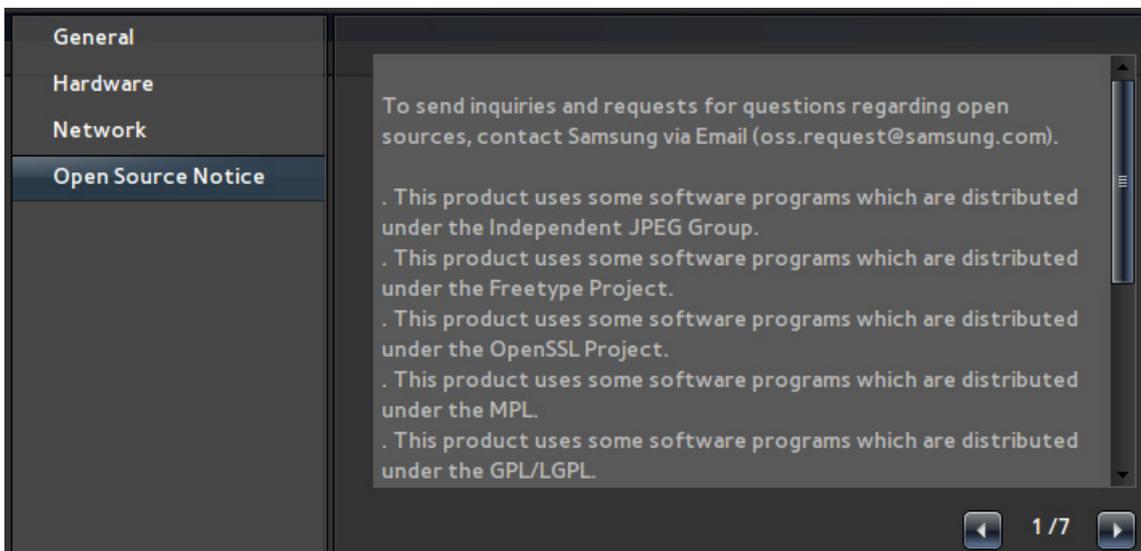
- **IP Address** : View the IP information configured on the Client.
- **Subnet Mask** : View the subnet mask configured on the Client.
- **Default Gateway** : View the **Default Gateway** configured on the Client.
- **DHCP Lease** : View the amount of time (in seconds) it takes for an IP address to be assigned when the Client uses DHCP.
- **Speed & Duplex** : View the speed and duplex information of the link that is used when the Client connects to a network.

- **Mac Address** : View the **Mac Address** of the network adapter on the Client.

IP Address :	192.168.0.67
Subnet Mask :	255.255.255.0
Default Gateway :	192.168.0.1
DHCP Lease :	N.A
Speed & Duplex :	100Mb/s & Full
Mac Address :	D0:66:7B:87:52:9F

Open Source Notice

You can view details of the **Open Source** components used on the Client.



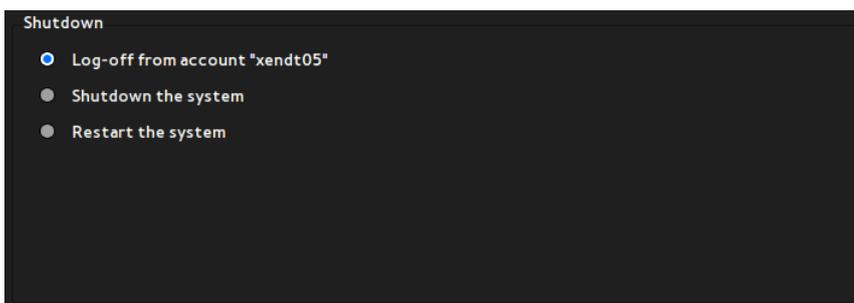
Open source license notice

In the case of using open source software, Open Source licenses are available on the product menu.

Open Source License Notice is written only English.

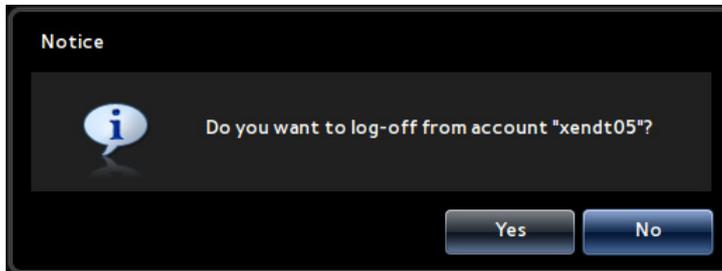
Shutdown

You can log off, close, or restart the Client.

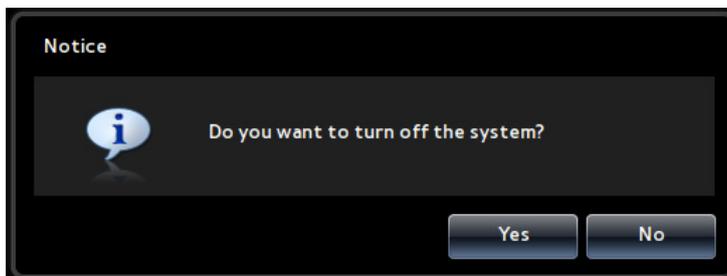


1 Log-off from account "**"**

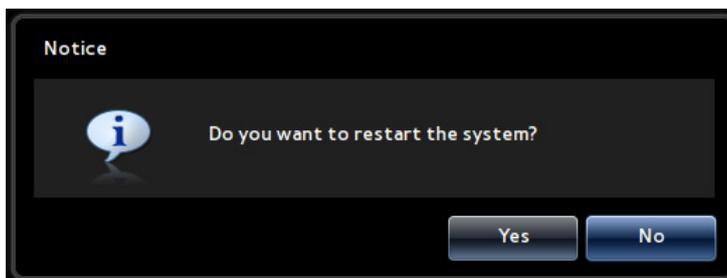
Log off from the Client if you are logged on. This option is enabled only when you are logged on to the Client. To log off, select **Yes** in the **Notice** window.

**2 Shutdown the system**

You can close the Client. To close the Client, select **Yes** in the **Notice** window.

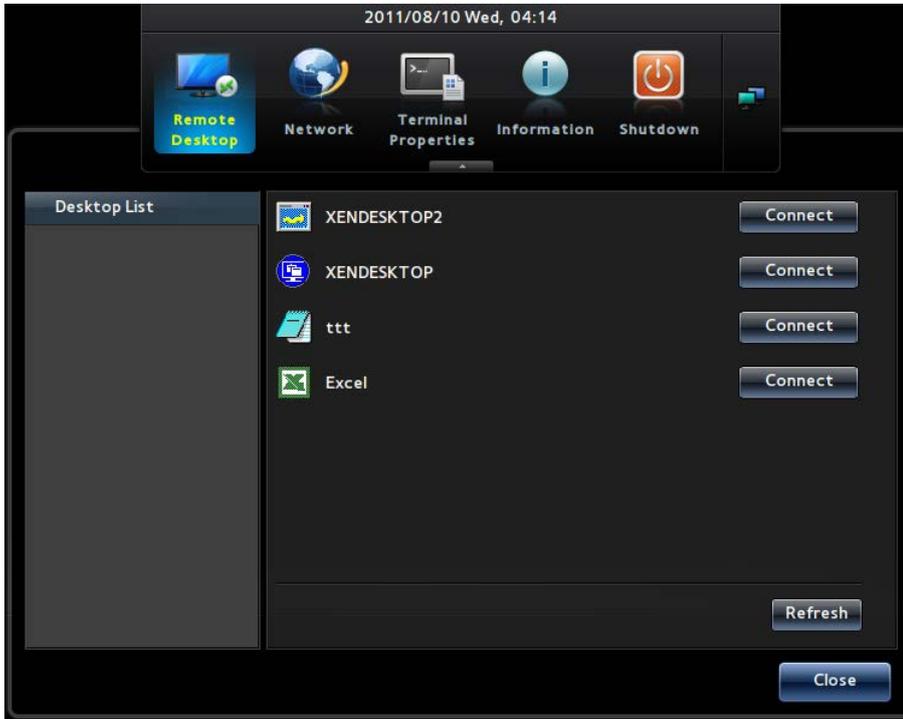
**3 Restart the system**

You can restart the Client. To restart the Client, select **Yes** in the **Notice** window.



Remote Desktop

You can view a list of desktops and applications (on the Citrix Server) the Client can connect to when logged on.



Desktop List

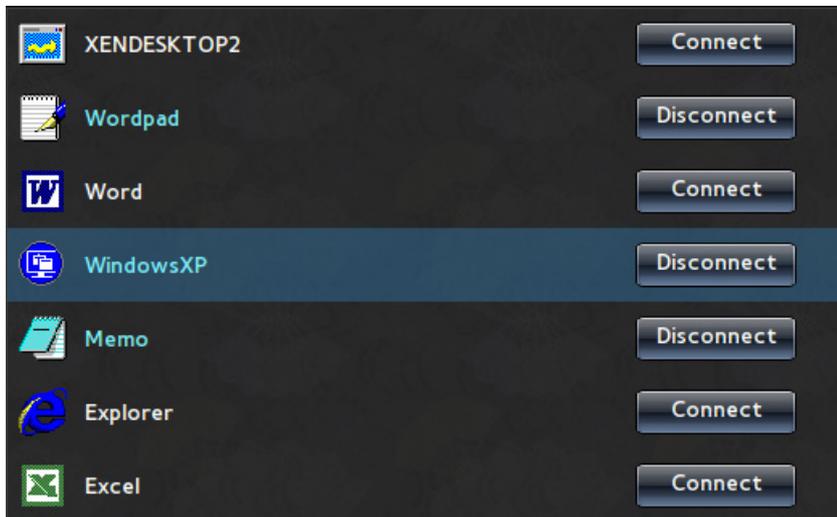
1 Connect

You can connect to a desktop or application on the list by clicking the corresponding **Connect** button or double-clicking the desktop or application desired.



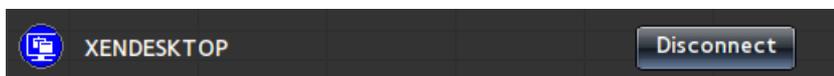
When a connection to a desktop or application is established, the Connect button for the desktop or application will be replaced by the **Disconnect** button in the **Desktop List**. The corresponding desktop or application row in the list will be highlighted as shown below.

You can connect to more than one desktop or application. The names of the desktops and applications connected will be highlighted.



2 Disconnect

The **Disconnect** button disconnects the corresponding desktop or application connected. When the desktop or application is disconnected, a list of connected desktops or applications will appear if there are any.

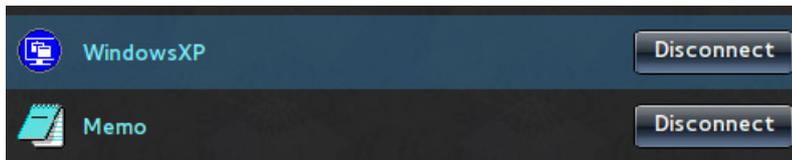


3 Refresh

To update the **Desktop List** that contains a list of desktops or applications on the Citrix Server, click **Refresh**.

4 Reconnect

You can display desktops and applications that are not displayed even though they are connected to the Client. Double-click the desktop or application desired. The corresponding desktop or application row in the list will be highlighted.



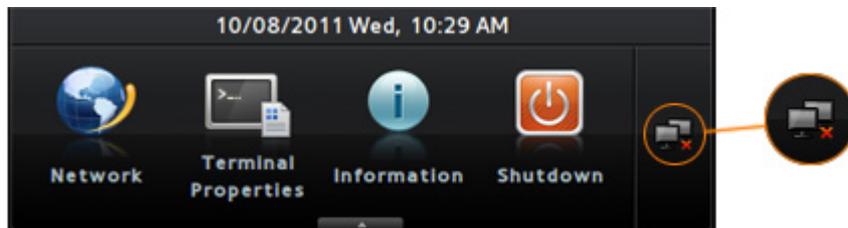
e.g.) Double-click **Memo**. A notepad window will be displayed.



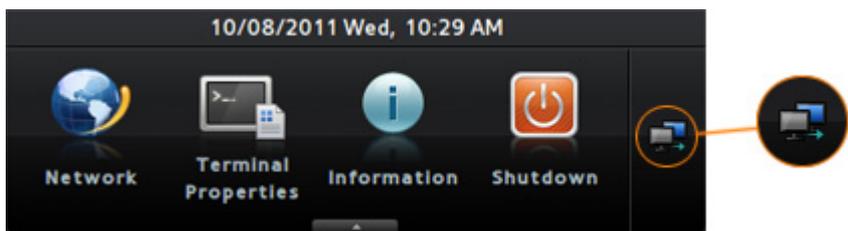
Status Icon

Network icon: Display the current network status using an icon.

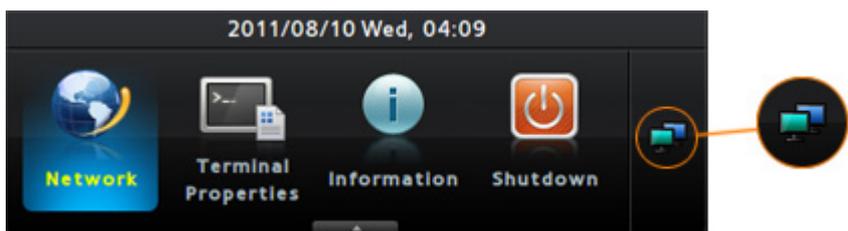
- 1 Not connected to the network.



- 2 Attempting to connect to the network.



- 3 Connected to the network.



Terminal Lock

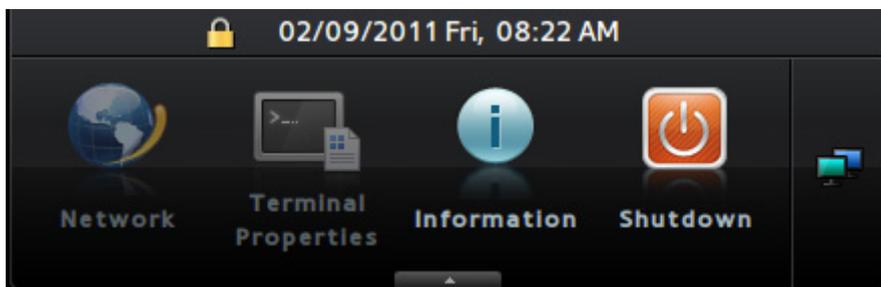
This menu locks the **Network** and **Terminal Properties** options so that their settings cannot be changed.

The corresponding shortcut key is **[CTRL + ALT + F6]**.

- How to lock the two options

Press and hold the shortcut key for a specified time (about 8 seconds).

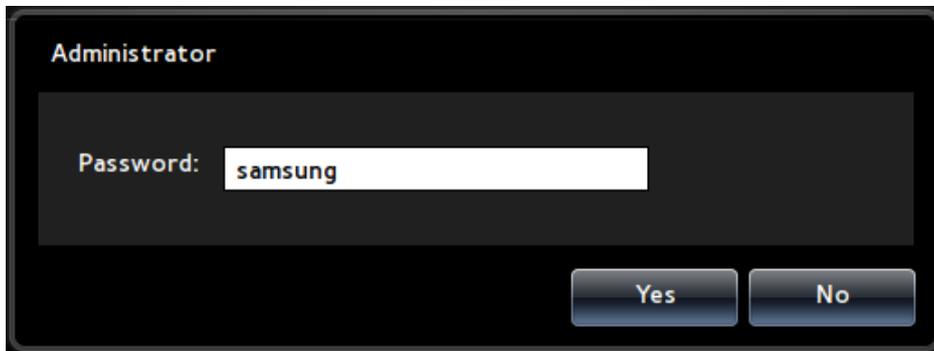
When the lock is on, the options locked will be indicated on the toolbar as shown below.



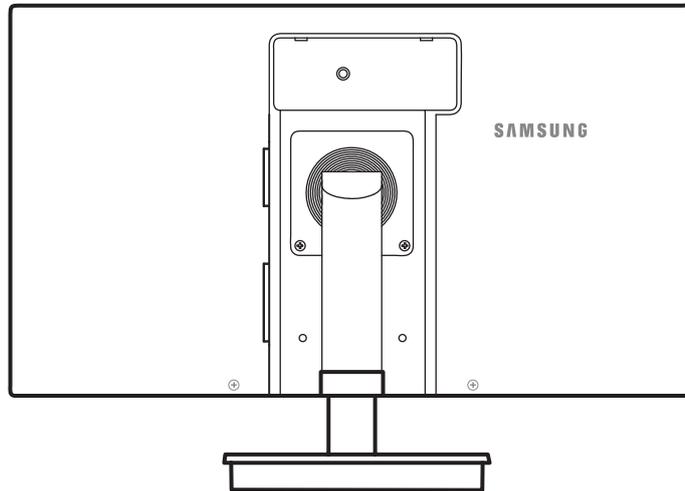
- How to unlock the two options

Press and hold the shortcut key for a specified time (about 8 seconds).

Note that you are prompted to enter the password in order to unlock the two options.



3.1 Before Connecting



3.1.1 Pre-connection Checkpoints

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

3.2 Connecting and Using a PC

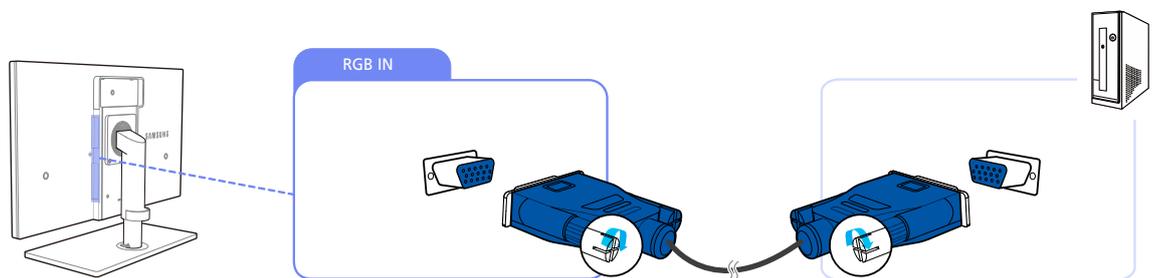
3.2.1 Connecting to a PC

- Select a connection method suitable for your PC.



Connecting parts may differ in different products.

Connection Using the D-SUB Cable (Analogue Type)

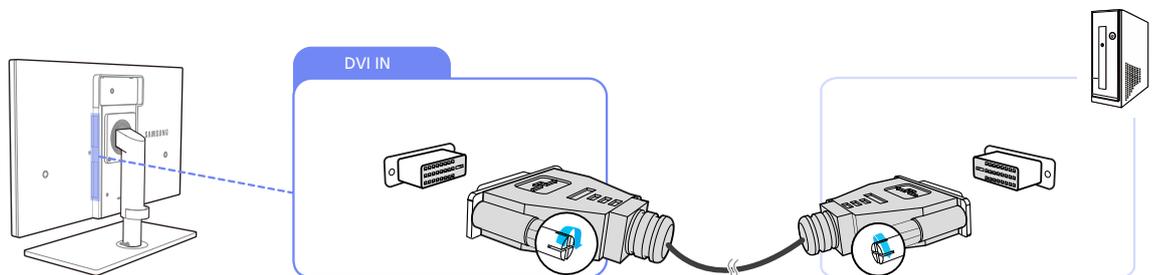


- 1 Connect the D-SUB cable to the [RGB IN] port on the back of the product and the RGB port on the PC.
- 2 Connect the DC power adapter to the product and a power socket. Next, turn on the power switch on the PC.
(For details, refer to "3.3 Connecting the Power".)
- 3 Press [/⊕] to change the input source to **Analog**.



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

Connection Using the DVI Cable

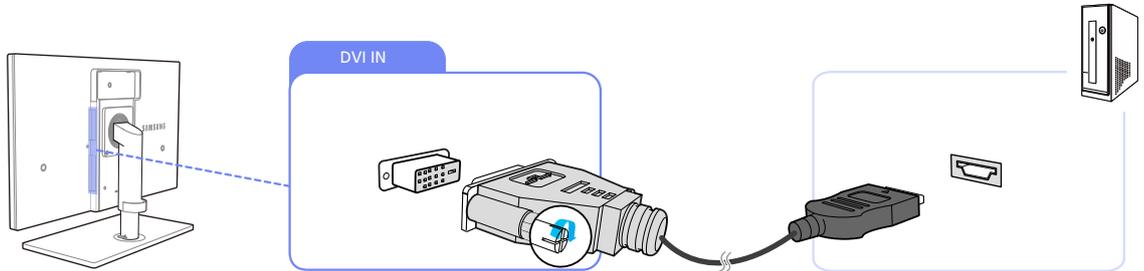


- 1 Connect the DVI cable to the [DVI IN] port on the back of the product and the DVI port on the PC.
- 2 Connect the DC power adapter to the product and a power socket. Next, turn on the power switch on the PC.
(For details, refer to "3.3 Connecting the Power".)
- 3 Press [/⊕] to change the input source to **Digital**.



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

Connection Using an HDMI-DVI Cable



- 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**.



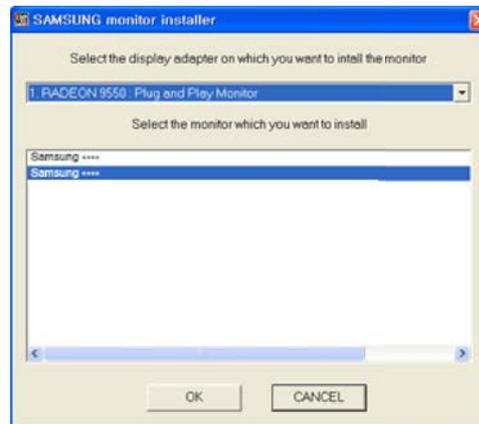
Audio is not available if the PC and product are connected via the [DVI] port.

3.2.2 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.
- If the file provided is faulty, visit the Samsung homepage (<http://www.samsung.com>) and download the file.

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



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

3.2.3 Setting Optimum Resolution

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

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



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



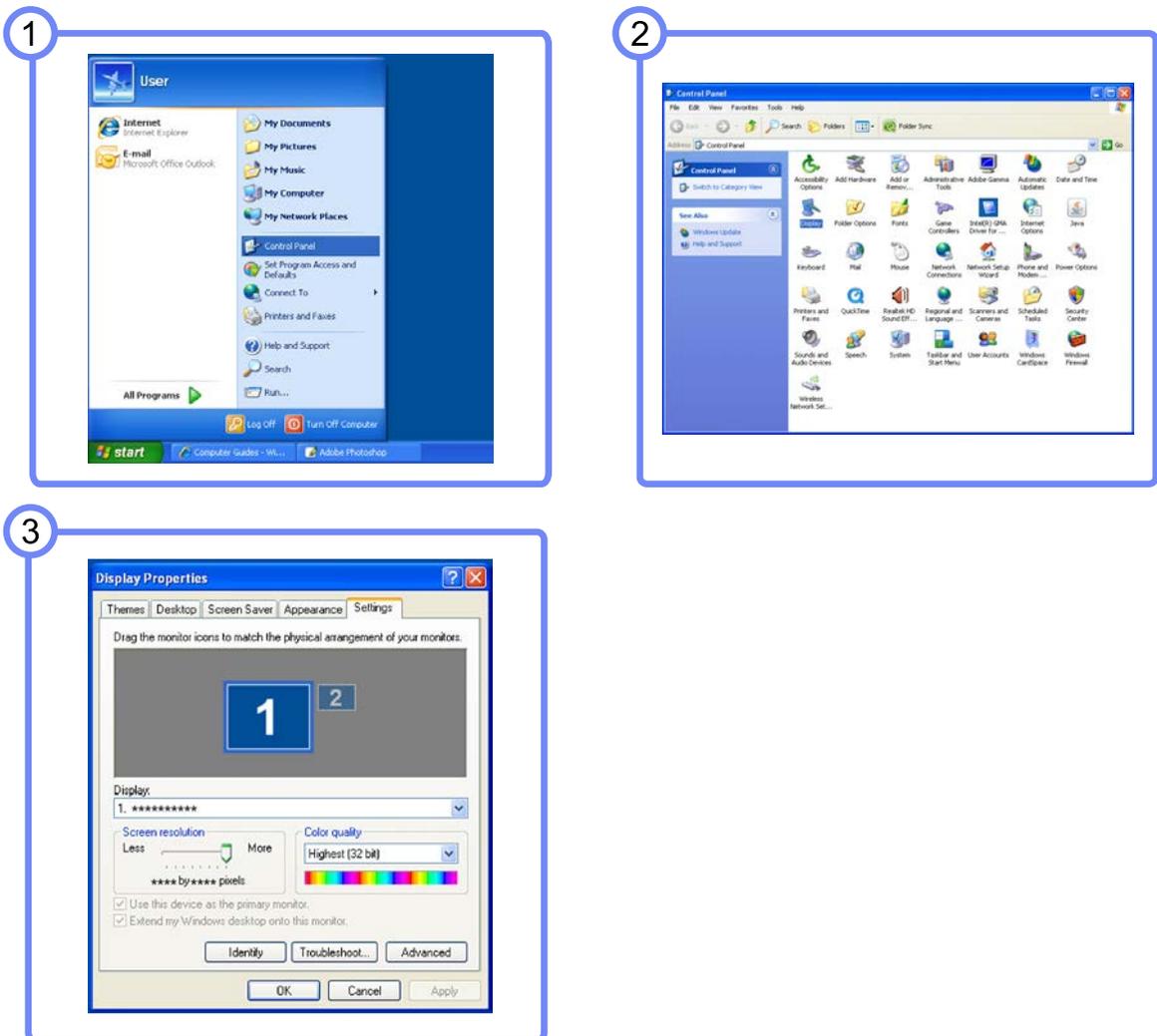
- If the optimum resolution is not selected, the message will appear up to three times for a specified time even when the product is turned off and on again.
- The optimum resolution can also be selected in **Control Panel** on your PC.

3.2.4 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.

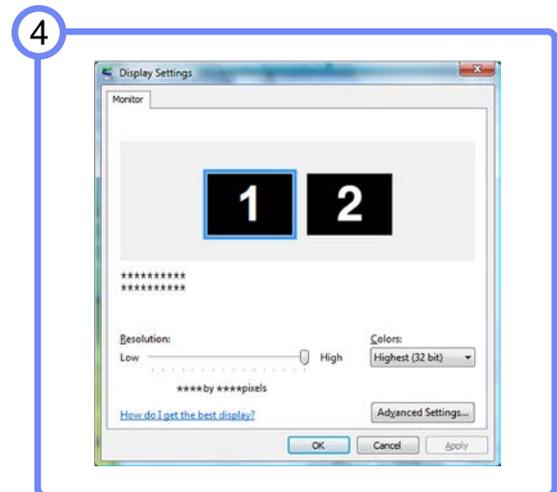
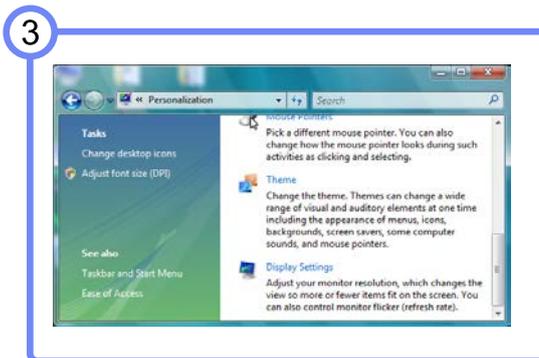
Changing the Resolution on Windows XP

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



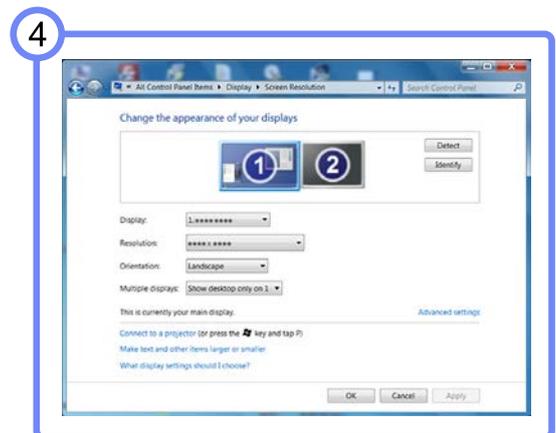
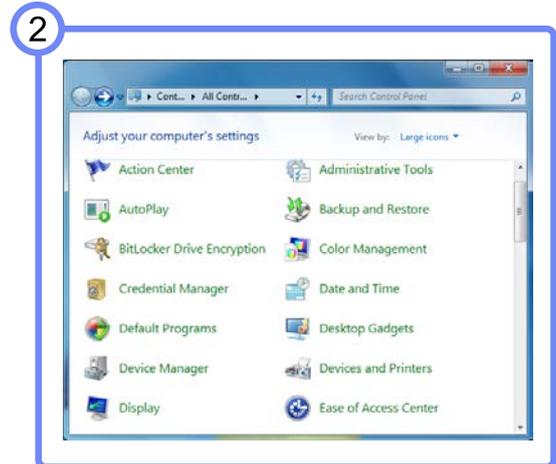
Changing the Resolution on Windows Vista

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

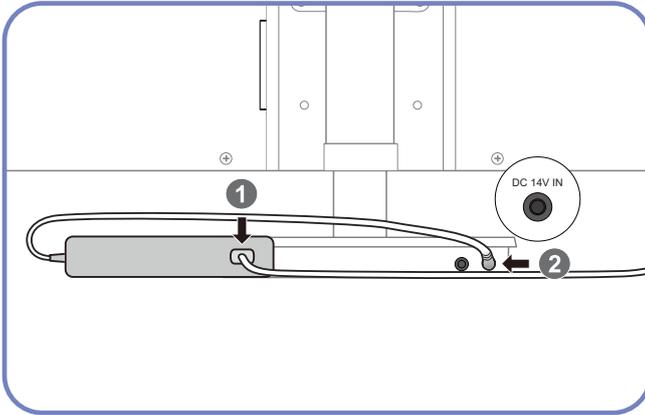


Changing the Resolution on Windows 7

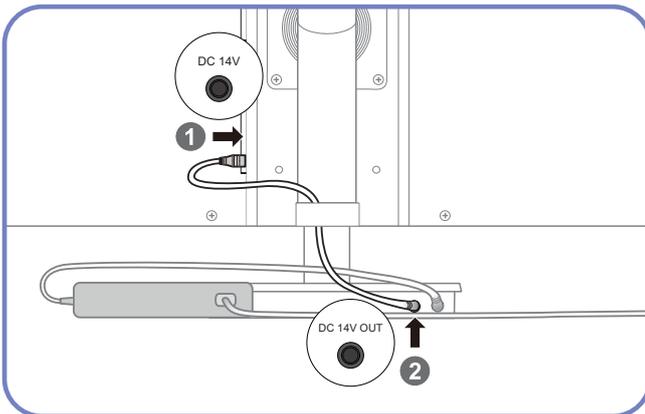
Go to **Control Panel** → **Display** → **Screen Resolution** and change the resolution.



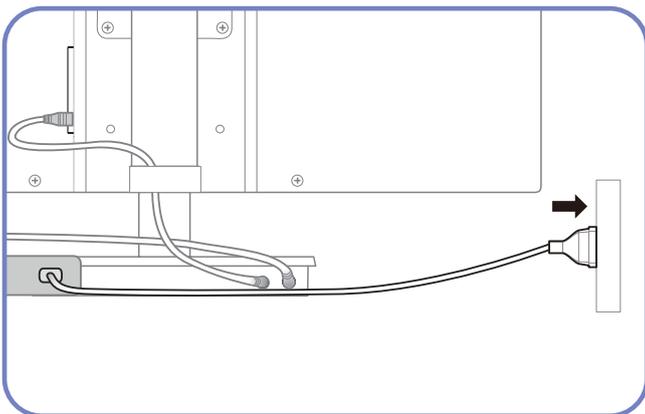
3.3 Connecting the Power



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)

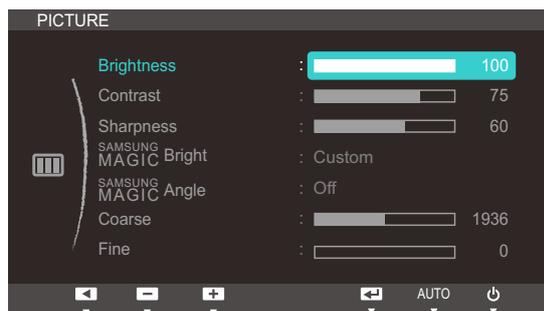
A higher value will make the picture appear brighter.



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.



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

4.2 Contrast

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

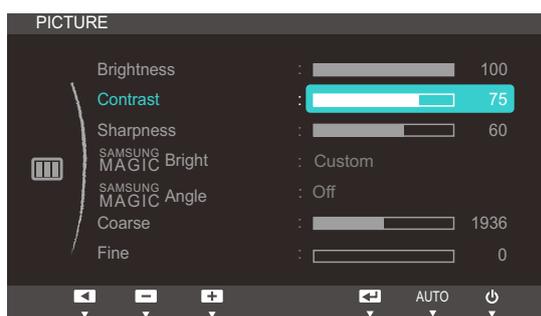
A higher value will increase the contrast to make the object appear clearer.



- 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.



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

4.3 Sharpness

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

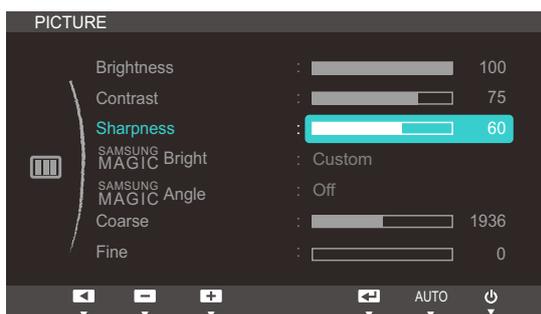
A higher value will make the outline of objects clearer.



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

4.3.1 Configuring Sharpness

- 1 Press [**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.



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

4.4 SAMSUNG MAGIC Bright

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

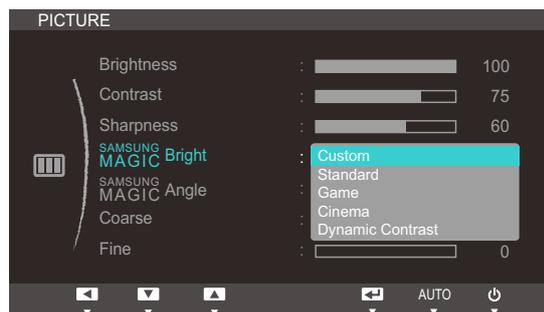


This menu is not available when **SAMSUNG MAGIC Angle** is enabled.

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 MAGIC Bright** and press [**□/⊞**] on the product. The following screen will appear.



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

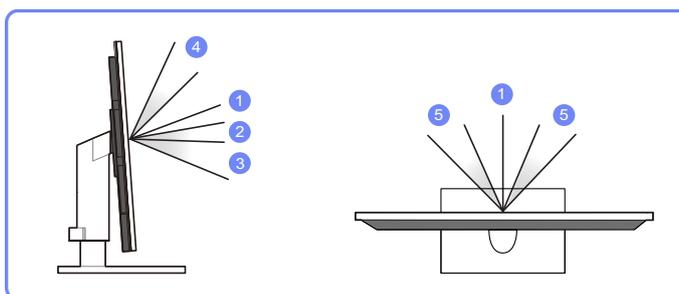


- This menu is not available when **SAMSUNG MAGIC Bright** is in **Cinema** or **Dynamic Contrast** mode.
- This menu is not available when **SAMSUNG MAGIC Color** is enabled.

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.



- **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.

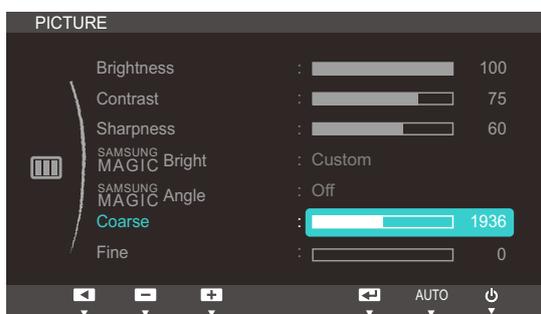
4.6 Coarse

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.



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

4.7 Fine

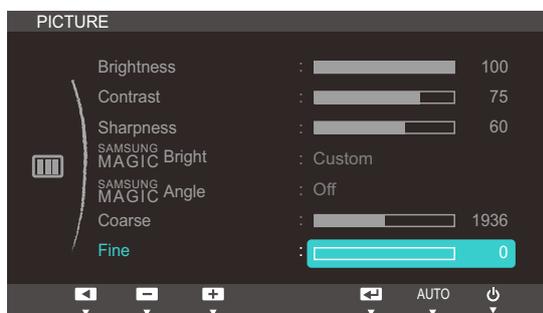
Fine-adjust the screen to obtain a vivid picture.



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.

Configuring Tint

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

5.1 SAMSUNG MAGIC Color

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



This menu is not available when **SAMSUNG MAGICAngle** is enabled.

5.1.1 Configuring SAMSUNG MAGIC Color

- 1 Press [**MENU**] on the product.
- 2 Press [**▲/▼**] to move to **COLOR** and press [**□/⊞**] on the product.
- 3 Press [**▲/▼**] to move to **SAMSUNG MAGICColor** and press [**□/⊞**] on the product. The following screen will appear.



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

5.2 Red

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

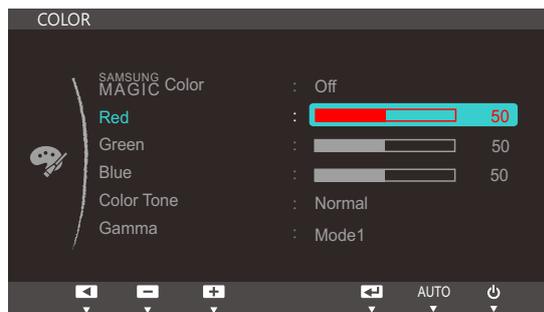
A higher value will increase the intensity of the color.



This menu is not available when **SAMSUNG 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)

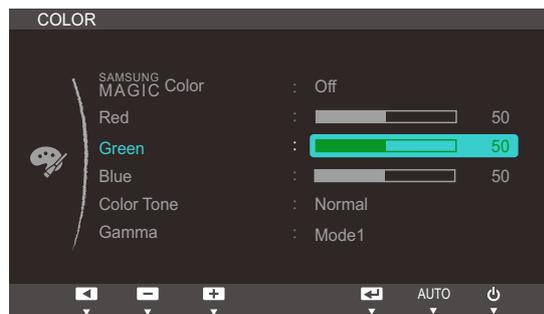
A higher value will increase the intensity of the color.



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.



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

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.



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

5.5 Color Tone

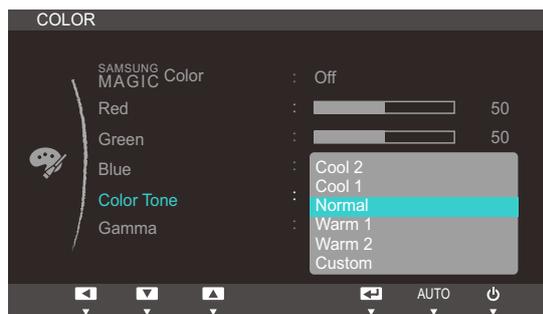
Adjust the general color tone of the picture.



- 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.



- **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.

5.6 Gamma

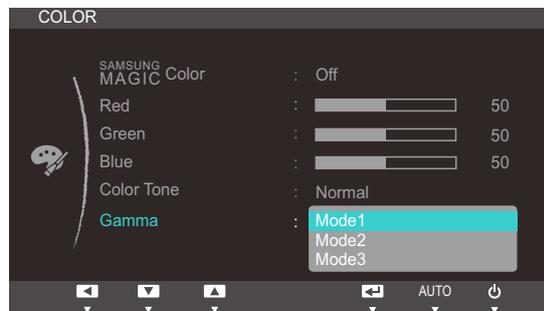
Adjust the mid-range brightness (Gamma) of the picture.



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.

6.1 H-Position & V-Position

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

V-Position: Move the screen up or down.



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

6.1.1 Configuring H-Position & V-Position

- 1 Press [**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.



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

6.2 Image Size

Change the picture size.

6.2.1 Changing the Image 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.



- **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.



- **4:3**: Display the picture with an aspect ratio of 4:3.
- **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.

6.3 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.



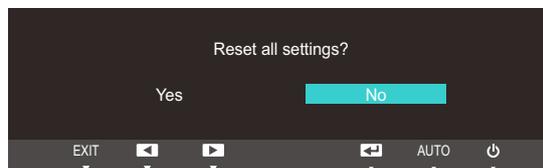
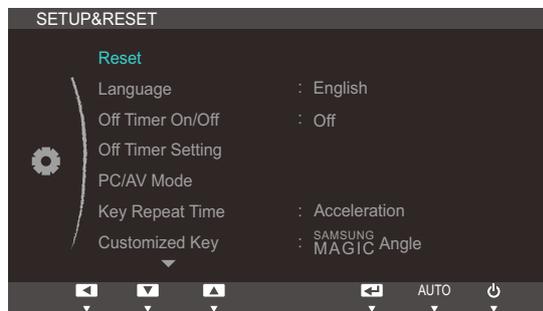
- 4 Press [**▲/▼**] to configure **Menu H-Position** or **Menu V-Position**.

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.



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

7.2 Language

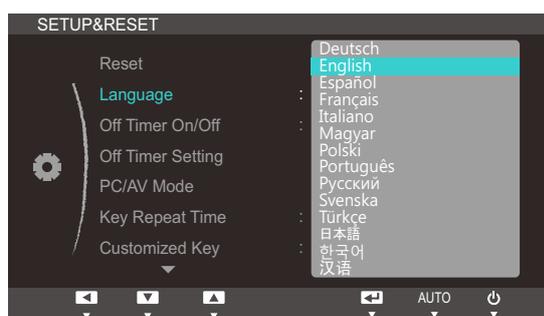
Set the menu language.



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

7.2.1 Changing the Language

- 1 Press [**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.



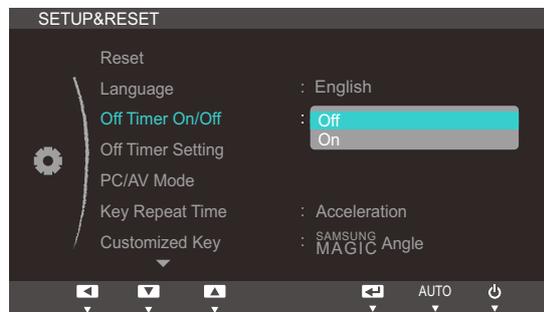
- 4 Press [**▲/▼**] to move to the language you want and press [**□/⊞**].
- 5 The selected option will be applied.

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.



- **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.

7.4 Off Timer Setting

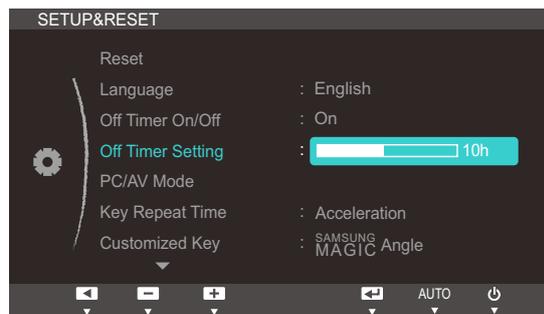
The off timer can be set within a range of 1 to 23 hours. The product will automatically power off after the specified number of hours.



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.



- 4 Press [**▲/▼**] to configure **Off Timer Setting**.

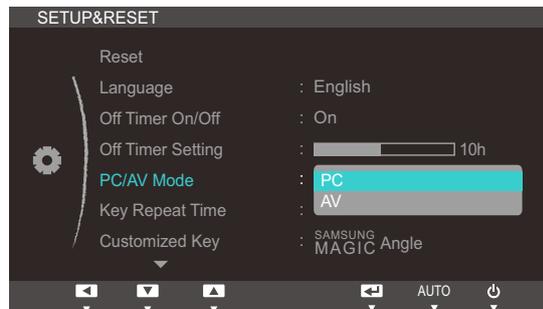
7.5 PC/AV Mode

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.



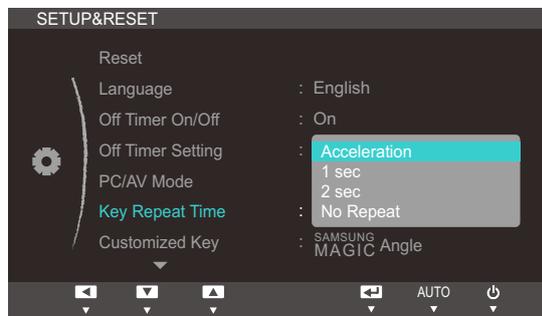
- 4 Press [**▲/▼**] to move to the option you want and press [**□/⊞**].
- 5 The selected option will be applied.

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.



- **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.

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.



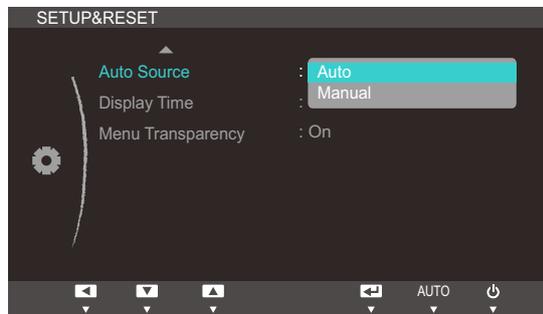
- **SAMSUNG MAGIC Angle** - **SAMSUNG MAGIC Bright** - **Image Size**
- 4 Press [**▲/▼**] to move to the option you want and press [**□/Ⓜ**].
 - 5 The selected option will be applied.

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.



- **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.

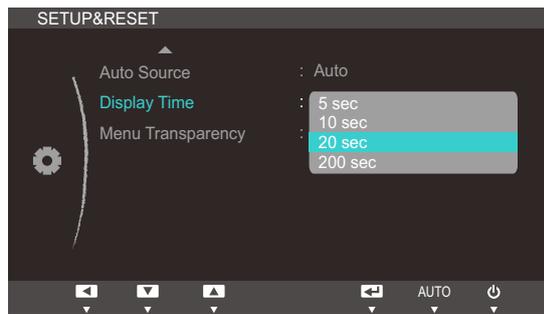
7.9 Display Time

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.



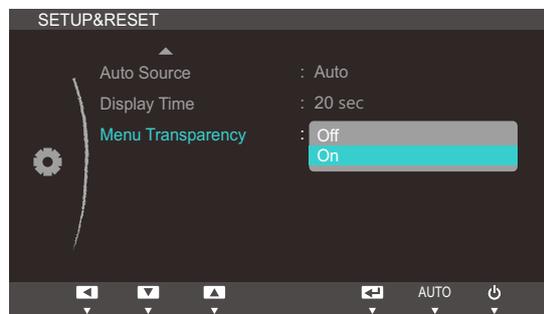
- 4 Press [**▲/▼**] to move to the option you want and press [**□/Ⓜ**].
- 5 The selected option will be applied.

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.



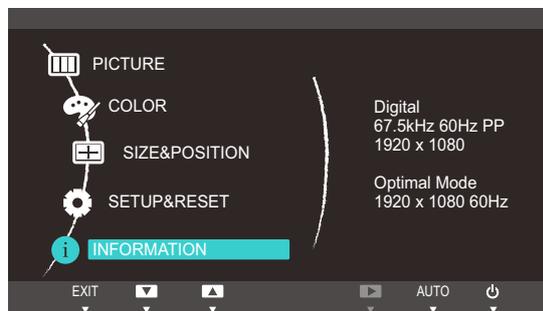
- 4 Press [**▲/▼**] to move to the option you want and press [**□/⊞**].
- 5 The selected option will be applied.

8.1 INFORMATION

View the current input source, frequency and resolution.

8.1.1 Displaying INFORMATION

- 1 Press [**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 Initial Screen

Adjust the **Brightness** using the [**⊙**] buttons when the initial screen (that displays no menu screen) is displayed.

- 1 Press [**⊙**] when the initial screen is displayed. The following screen will appear.



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

9.1 Natural Color

9.1.1 What is Natural Color?

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

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

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

9.2 MultiScreen



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

9.2.2 Removing the Software

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

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

10.1 Requirements Before Contacting Samsung Customer Service Center

10.1.1 Testing the Product



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

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

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

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



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

10.1.2 Checking the Resolution and Frequency

For a mode that exceeds the supported resolution (refer to "11.3 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 connectors are locked. (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.

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 (104page).
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 (71page) and Fine (72page).
	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 (104page) 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 (66page) and Contrast (67page).
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.
Sound issue	
There is no sound.	Check the connection of the audio cable or adjust the volume.
	Check the volume.

Sound issue	
The volume is too low.	Adjust the volume.
	If the volume is still low after turning it up to the maximum level, adjust the volume on your PC sound card or software program.
Source device issue	
A beeping sound is heard when my PC is booting.	If a beeping sound is heard when your PC is booting, have your PC serviced.

10.2 Q & A

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

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



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

11.1 General

Model Name		TS190C	TS220C	TS240C
Panel	Size	19 inches (48 cm)	21.5 inches (55 cm)	24 inches (61 cm)
	Display area	408.2 mm (H) x 255.2 mm (V) / 16.1 inches (H) x 10.0 inches (V)	476.6 mm (H) x 268.1 mm (V) / 18.9 inches (H) x 10.1 inches (V)	518.4 mm (H) x 324.0 mm (V) / 20.4 inches (H) x 12.8 inches (V)
Synchronization	Horizontal Frequency	30~81kHz		
	Vertical Frequency	56~75Hz		
Display Color		16.7M		
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 (Analog, Digital)	164MHz (Analog, Digital)	164MHz (Analog, Digital)
Power Supply		This product uses 100 to 240V. Refer to the label at the back of the product as the standard voltage can vary in different countries.		
Signal connectors		RGB IN (D-Sub) port, DVI port		
Server connector		LAN		
USB		USB 2.0 x 6 (Down stream)		
Dimensions (W x H x D) / Weight	With Stand	443.0 x 416.8 x 227.0 mm / 17.4 x 16.4 x 8.9 inches / 4.4 Kg / 9.7 lbs	513.0 x 424.1 x 227.0 mm / 20.2 x 16.7 x 8.9 inches / 4.9 Kg / 10.8 lbs	560.0 x 444.3 x 227.0 mm / 22.0 x 17.5 x 8.9 inches / 5.3 Kg / 11.7 lbs
	Without Stand	443.0 x 301.9 x 49.5 mm / 17.4 x 11.9 x 1.9 inches / 3.2 Kg / 7.1 lbs	513.0 x 317.0 x 50.0 mm / 20.2 x 12.5 x 2.0 inches / 3.6 Kg / 7.9 lbs	560.0 x 374.0 x 50.0 mm / 22.0 x 14.7 x 2.0 inches / 4.0 Kg / 8.8 lbs
Environmental considerations	Operating	Temperature : 50°F ~ 104°F (10°C ~ 40°C), Humidity : 10 % ~ 80 %, non-condensing		
	Storage	Temperature : -4°F ~ 113°F (-20°C ~ 45°C), Humidity : 5 % ~ 95 %, non-condensing		

Specifications

Model Name	TS190C	TS220C	TS240C
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 panel. This does not affect product performance.		
VESA (V x H)	100 x 100 mm / 3.9 x 3.9 inches		



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



This device is a Class B digital apparatus.

(USA only)

Dispose unwanted electronics through an approved recycler.

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

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

CALIFORNIA USA ONLY (Applicable for networking models only.)

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

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

11.2 PowerSaver

The power-saving function of this product reduces power consumption by switching off the screen and changing the color of the power LED if the product is not used for a specified period of time. The power is not turned off in power-saving mode. To switch the screen back on, press any key on the keyboard or move the mouse. Power-saving mode functions only when the product is connected to a PC that has a power-saving function.

PowerSaver	Normal Operation	Power saving mode	Power off (Power button off)	Power off (Power switch off)
Power Indicator	On	Off	Off	Off
Power Consumption	TS190C : Less than 45 W	Less than 1.8 W	Less than 1.8 W	0 W
	TS220C : Less than 50 W			
	TS240C : Less than 55 W			



- The 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.

11.3 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.

TS190C

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 720 x 400	31.469	70.087	28.322	-/+
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 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, 640 x 480	31.469	59.940	25.175	-/-



Specifications

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 800	62.795	74.934	106.500	-/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1440 x 900	70.635	74.984	136.750	-/+

TS220C

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 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, 1920 x 1080	67.500	60.000	148.500	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 800	62.795	74.934	106.500	-/+



Specifications

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
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	-/+

TS240C

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 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, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1440 x 900	70.635	74.984	136.750	-/+

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
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	+/-



- Horizontal Frequency

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

- Vertical Frequency

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

Contact SAMSUNG WORLDWIDE



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
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Correct Disposal

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



(Applicable in the European Union and other European 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 the European Union and other European countries with separate battery return systems.)

The marking on the battery, manual or packaging indicates that the battery in this product should not be disposed of with other household waste. 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.

The battery incorporated in this product is not user replaceable. For information on its replacement, please contact your service provider. Do not attempt to remove the battery or dispose it in a fire. Do not disassemble, crush, or puncture the battery. If you intend to discard the product, the waste collection site will take the appropriate measures for the recycling and treatment of the product, including the battery.

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.

Coarse

Coarse refers to the frequency of radio wave vibrations per second. A higher frequency transmits a larger amount of data and is reflected easier. A lower frequency traverses obstacles more easily and can travel farther, but it transmits a smaller amount of data. The Coarse menu allows you to manually adjust the frequency to obtain the optimum picture quality. Adjust Coarse referring to Standard Signal Mode Table (104page) according to the performance of your product and enjoy improved picture quality.

Gamma

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

Grey scale

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

Scanning rate

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

Horizontal Frequency

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

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