



User Manual

UD22B

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

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Before Using the Product

Copyright

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Ownership of all other trademarks is attributed to their due owner.

- 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 center 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.



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The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

Before Using the Product

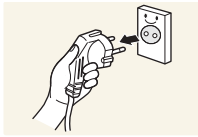
Cleaning

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

Take the following steps when cleaning.



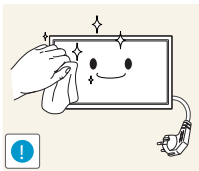
The following images are for reference only. Real-life situations may differ from what is shown in the images.



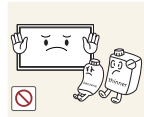
1. Power off the product and computer.
2. Disconnect the power cord from the product.



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



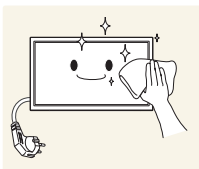
3. Wipe the product with a clean, soft and dry cloth.



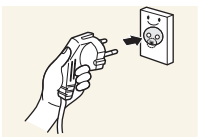
- Do not use detergents that contain alcohol, solvent or surface-active agents.



- 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 product.



5. Connect the power cord to the product when cleaning is finished.
6. Power on the product and computer.

Storage

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





Contact Customer Service Center if the inside of the product needs cleaning (service fee will be charged).





Before Using the Product

Safety Precautions

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

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

Symbols

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

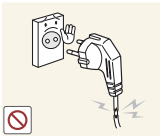
Before Using the Product

Electricity and Safety



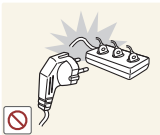
The following images are for reference only. Real-life situations may differ from what is shown in the images.

Warning



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

- An electric shock or fire may result.



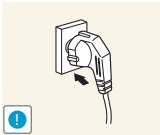
Do not use multiple products with a single power socket.

- Overheated power sockets may cause a fire.



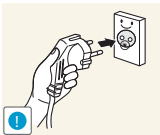
Do not touch the power plug with wet hands.

- Otherwise, an electric shock may result.



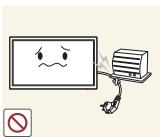
Insert the power plug all the way in so it is not loose.

- An unsecure connection may cause a fire.



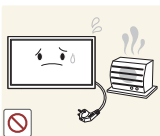
Connect the power plug to a grounded power socket (type 1 insulated devices only).

- An electric shock or injury may result.



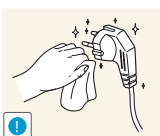
Do not bend or pull the power cord with force. Be careful not to leave the power cord under a heavy object.

- Damage to the cord may result in a fire or electric shock.



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

- A fire or electric shock may result.

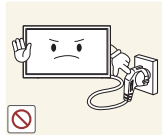


Clean any dust around the pins of the power plug or the power socket with a dry cloth.

- A fire may result.

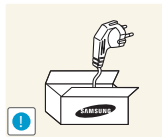
Before Using the Product

Caution



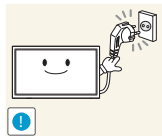
Do not disconnect the power cord while the product is being used.

- The product may become damaged by an electric shock.



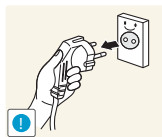
Only use the power cord provided with your product by Samsung. Do not use the power cord with other products.

- A fire or electric shock may result.



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

- The power cord must be disconnected to cut off power to the product when an issue occurs.
- Note that the product is not completely powered down by using only the power button on the remote.



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

- An electric shock or fire may result.

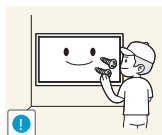
Installation

Warning



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

- A fire may result.



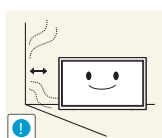
Have a technician install the wall-mount hanger.

- Installation by an unqualified person can result in an injury.
- Only use approved cabinets.



Do not install the product in poorly ventilated spaces such as a bookcase or closet.

- An increased internal temperature may cause a fire.



Install the product at least 10cm away from the wall to allow ventilation.

- An increased internal temperature may cause a fire.

Before Using the Product



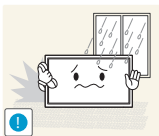
Keep the plastic packaging out of the reach of children.

- Children may suffocate.



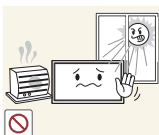
Do not install the product on an unstable or vibrating surface (insecure shelf, sloped surface, etc.)

- The product may fall and become damaged and/or cause an 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.

- A fire or electric shock may result.



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

- The product lifespan may be reduced or a fire may result.



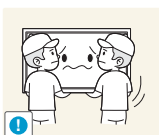
Do not install the product within the reach of young children.

- The product may fall and injure children.
- As the front is heavy, install the product on a flat and stable surface.



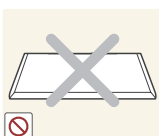
Edible oil, such as soybean oil, can damage or deform the product. Do not install the product in a kitchen or near a kitchen counter.

Caution



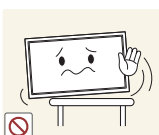
Do not drop the product while moving.

- Product failure or personal injury may result.



Do not set down the product on its front.

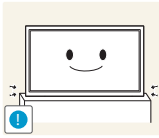
- The screen may become damaged.



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 become damaged and/or cause an injury.
- Install the product only on cabinets or shelves of the right size.

Before Using the Product



Set down the product gently

- Product failure or personal injury may result.

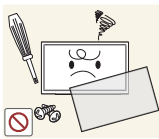


Installing the product in an unusual place (a place exposed to a lot of fine particles, chemical substances or extreme temperatures, or an airport or train station where the product should operate continuously for an extended period of time) may seriously affect its performance.

- Be sure to consult Samsung Customer Service Center if you want to install the product at such a place.

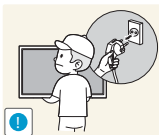
Operation

Warning



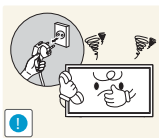
There is a high voltage inside the product. Never disassemble, repair or modify the product yourself.

- A fire or electric shock may result.
- Contact Samsung Customer Service Center for repairs.



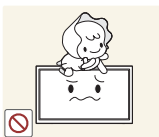
Before moving the product, turn off the power switch and disconnect the power cable and all other connected cables.

- Damage to the cord may result in a fire or electric shock.



If the product generates abnormal sounds, a burning smell or smoke, disconnect the power cord immediately and contact Samsung Customer Service Center.

- An electric shock or fire may result.



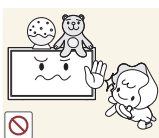
Do not let children hang from the product or climb on top of it.

- Children may become injured or seriously harmed.



If the product is dropped or the outer case is damaged, turn off the power switch and disconnect the power cord. Then contact Samsung Customer Service Center.

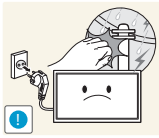
- Continued use can result in a fire or electric shock.



Do not leave heavy objects or items that children like (toys, sweets, etc.) on top of the product.

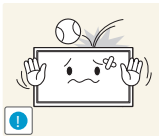
- The product or heavy objects may fall as children try to reach for the toys or sweets resulting in a serious injury.

Before Using the Product



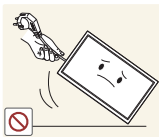
During a lightning or thunderstorm, power off the product and remove the power cable.

- A fire or electric shock may result.



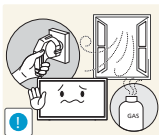
Do not drop objects on the product or apply impact.

- A fire or electric shock may result.



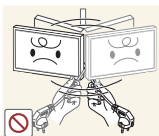
Do not move the product by pulling the power cord or any cable.

- Product failure, an electric shock or fire may result from a damaged cable.



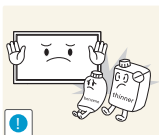
If a gas leakage is found, do not touch the product or power plug. Also, ventilate the area immediately.

- Sparks can cause an explosion or fire.



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

- Product failure, an electric shock or fire may result from a damaged cable.



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.

- An increased internal temperature may cause a fire.



Do not insert metallic objects (chopsticks, coins, hairpins, etc) or objects that burn easily (paper, matches, etc) into the product (via the vent or input/output ports, etc).

- Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.
- Product failure, an electric shock or fire may result.

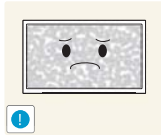


Do not place objects containing liquid (vases, pots, bottles, etc) or metallic objects on top of the product.

- Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.
- Product failure, an electric shock or fire may result.

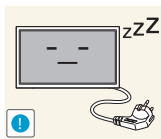
Before Using the Product

Caution



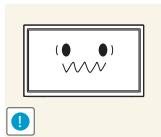
Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.

- Activate power-saving mode or a moving-picture screen saver if you will not be using the product for an extended period of time.



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

- Dust accumulation combined with heat can cause a fire, electric shock or electric leakage.



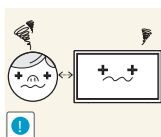
Use the product at the recommended resolution and frequency.

- Your eyesight may deteriorate.



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

- The product may fall and become damaged or cause an injury.

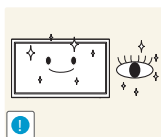


Looking at the screen too close for an extended period of time can deteriorate your eyesight.



Do not use humidifiers or stoves around the product.

- A fire or electric shock may result.

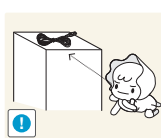


Rest your eyes for more than 5 minutes for every 1 hour of product use.

- Eye fatigue will be relieved.

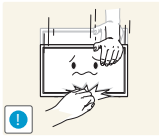


Do not touch the screen when the product has been turned on for an extended period of time as it will become hot.



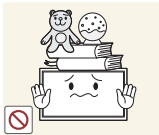
Store small accessories out of the reach of children.

Before Using the Product



Exercise caution when adjusting the product angle or stand height.

- Your hand or finger may get stuck and injured.
- Tilting the product at an excessive angle may cause the product to fall and an injury may result.



Do not place heavy objects on the product.

- Product failure or personal injury may result.



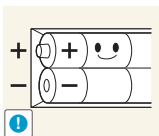
When using headphones or earphones, do not turn the volume too high.

- Having the sound too loud may damage your hearing.



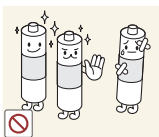
Be careful that children do not place the battery in their mouths when removed from the remote control. Place the battery in a location that children or infants cannot reach.

- If children have had the battery in their mouths, consult your doctor immediately.



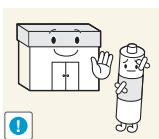
When replacing the battery, insert it with the right polarity (+, -).

- Otherwise, the battery may become damaged or it may cause fire, personal injury or damage due to leakage of the internal liquid.



Use only the specified standardized batteries, and do not use a new battery and a used battery at the same time.

- Otherwise, the batteries may be damaged or cause fire, personal injury or damage due to a leakage of the internal liquid.



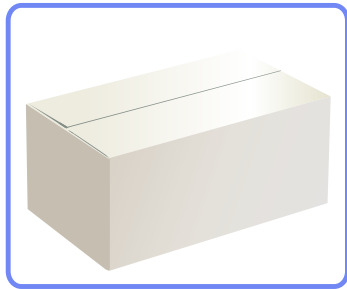
The batteries (and rechargeable batteries) are not ordinary refuse and must be returned for recycling purposes. The customer is responsible for returning the used or rechargeable batteries for recycling.

- The customer can return used or rechargeable batteries to a nearby public recycling center or to a store selling the same type of the battery or rechargeable battery.

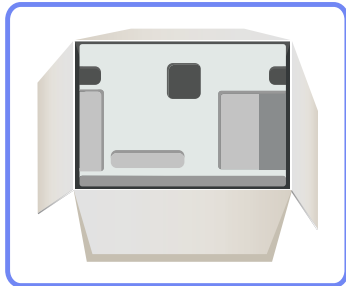
1.1 Checking the Contents

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 product and remove the styrofoam and plastic bag.



- The appearance of the actual product 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 vendor where you purchased the product if any components are missing.
- The appearance of the components and items sold separately may differ from the image shown.

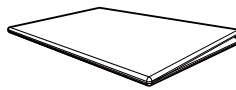
Components



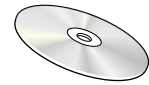
Components may differ in different locations.



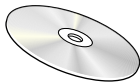
Quick setup guide



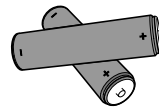
Warranty card
(Not available in some locations)



User manual



"MagicInfo Lite" CD



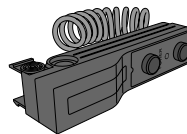
Batteries
(Not available in some locations)



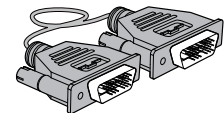
Remote Control



Power cord



External sensor Kit

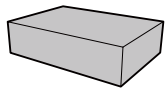


DVI cable

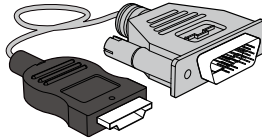
Items sold separately



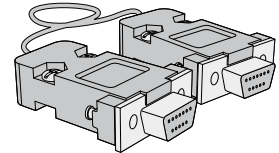
The following items can be purchased at your nearest retailer.



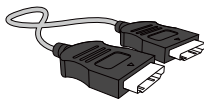
Wall-mount KIT



HDMI-DVI cable



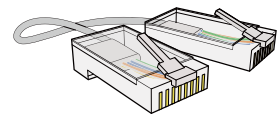
RS232C Serial cable



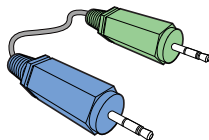
HDMI cable



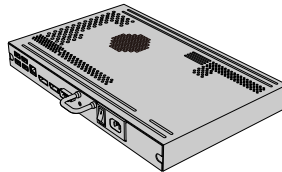
DP cable



LAN cable



Stereo cable



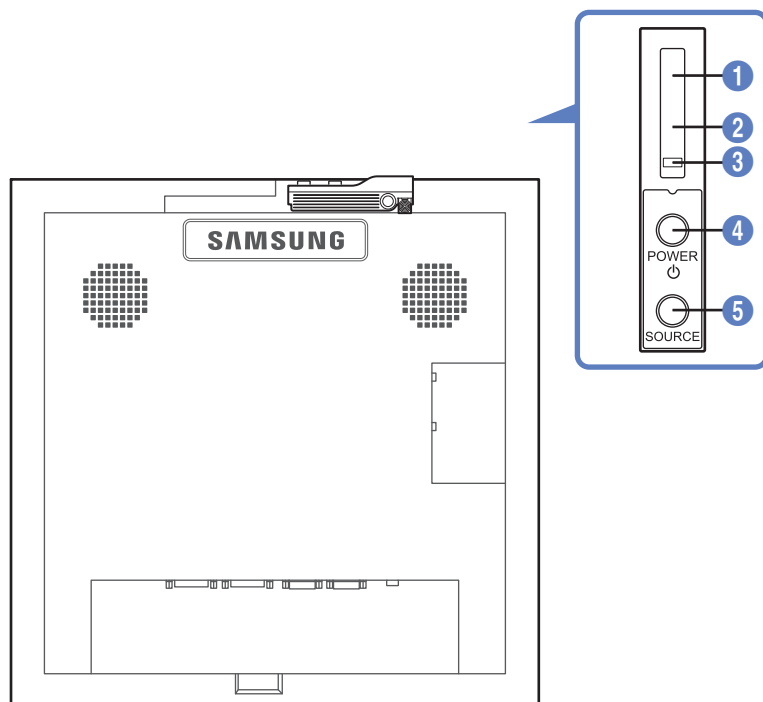
Network box



1.2 Parts

1.2.1 External sensor

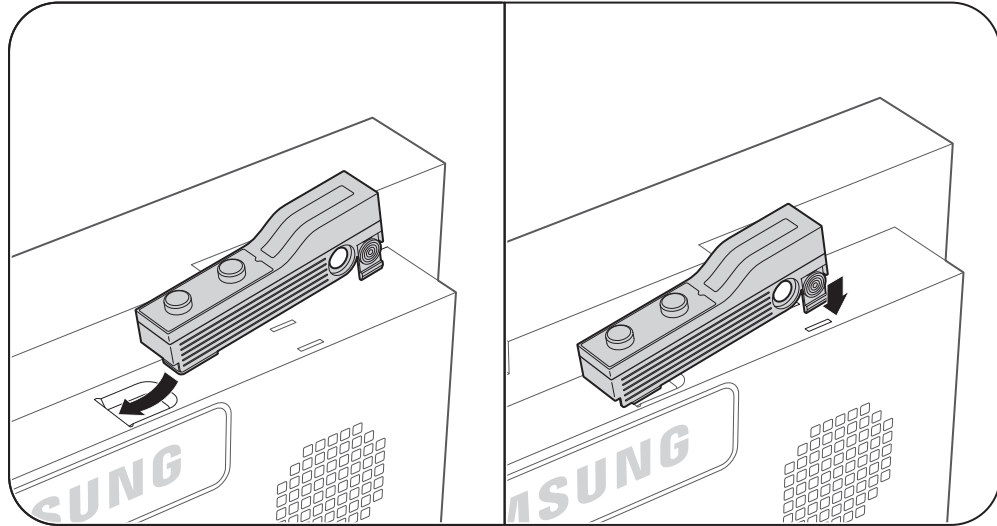


- The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.
- Keep the area between the remote sensor and remote control obstacle-free.



	Sensor	Description
①	Remote-control sensor	Aim the remote control towards this spot on the LCD Display.  Keep the area between the remote sensor and remote control obstacle-free.
②	Brightness sensor	Automatically detects the intensity of ambient light around a selected display and adjusts the screen brightness.
③	Power indicator	Turns off in power-on mode and blinks green in power-saving mode.
④	[POWER] 	Use this button for turning the Display on and off.
⑤	[SOURCE]	Switches from PC mode to Video mode. Selects the input source that an external device is connected to.

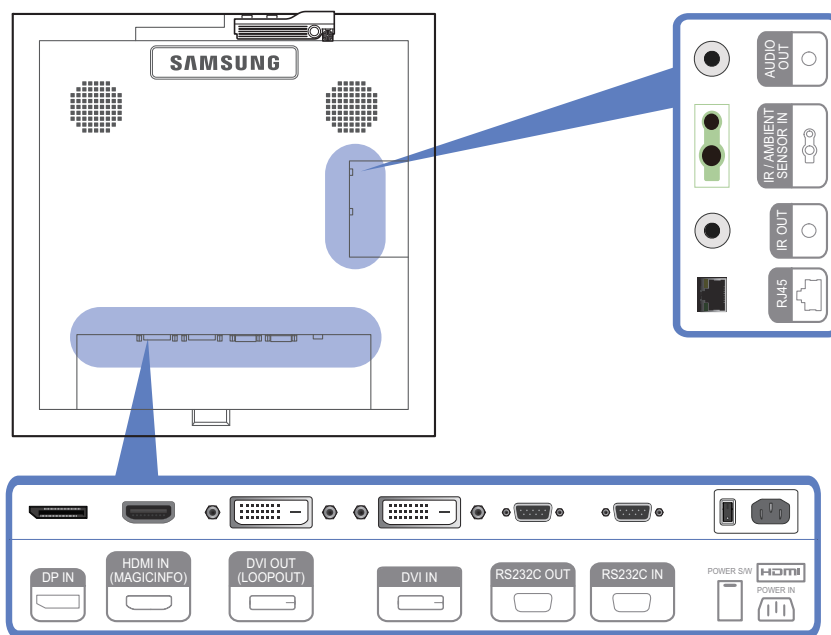
Installing the External sensor



1.2.2 Reverse Side

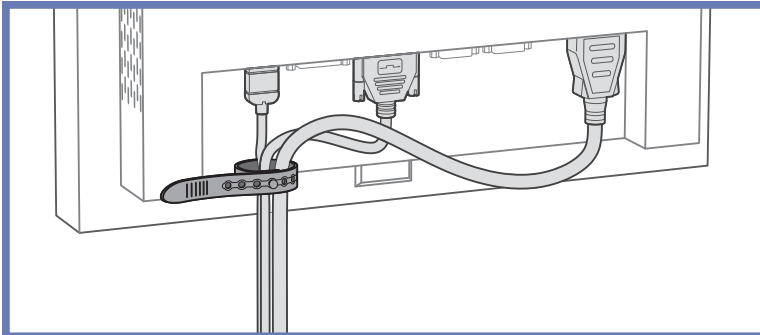


The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.



Port	Description
[DP IN]	Connects to a PC using a DP cable.
[HDMI IN (MAGICINFO)]	Connects to a source device using an HDMI cable. <ul style="list-style-type: none"> To use MagicInfo, the MagicInfo output of the network box specified by Samsung must be connected to the [HDMI IN (MAGICINFO)] port on the product. For more information on how to purchase and install a network box, contact Samsung Electronics.
[DVI OUT (LOOPOUT)]	Connects to another product using a DVI cable.
[DVI IN]	Connects to a source device using a DVI cable or HDMI-DVI cable.
[RS232C OUT] [RS232C IN]	Connects to RS232C or MDC through an RS232C Serial cable (cross type)
[RJ45]	Connects to RS232C or MDC through an RJ45 cable
[IR OUT]	Transmits input signals from an external sensor to another display through IR OUT
[IR / AMBIENT SENSOR IN]	Connects to an external sensor
[AUDIO OUT]	Connects to the audio of a source device.

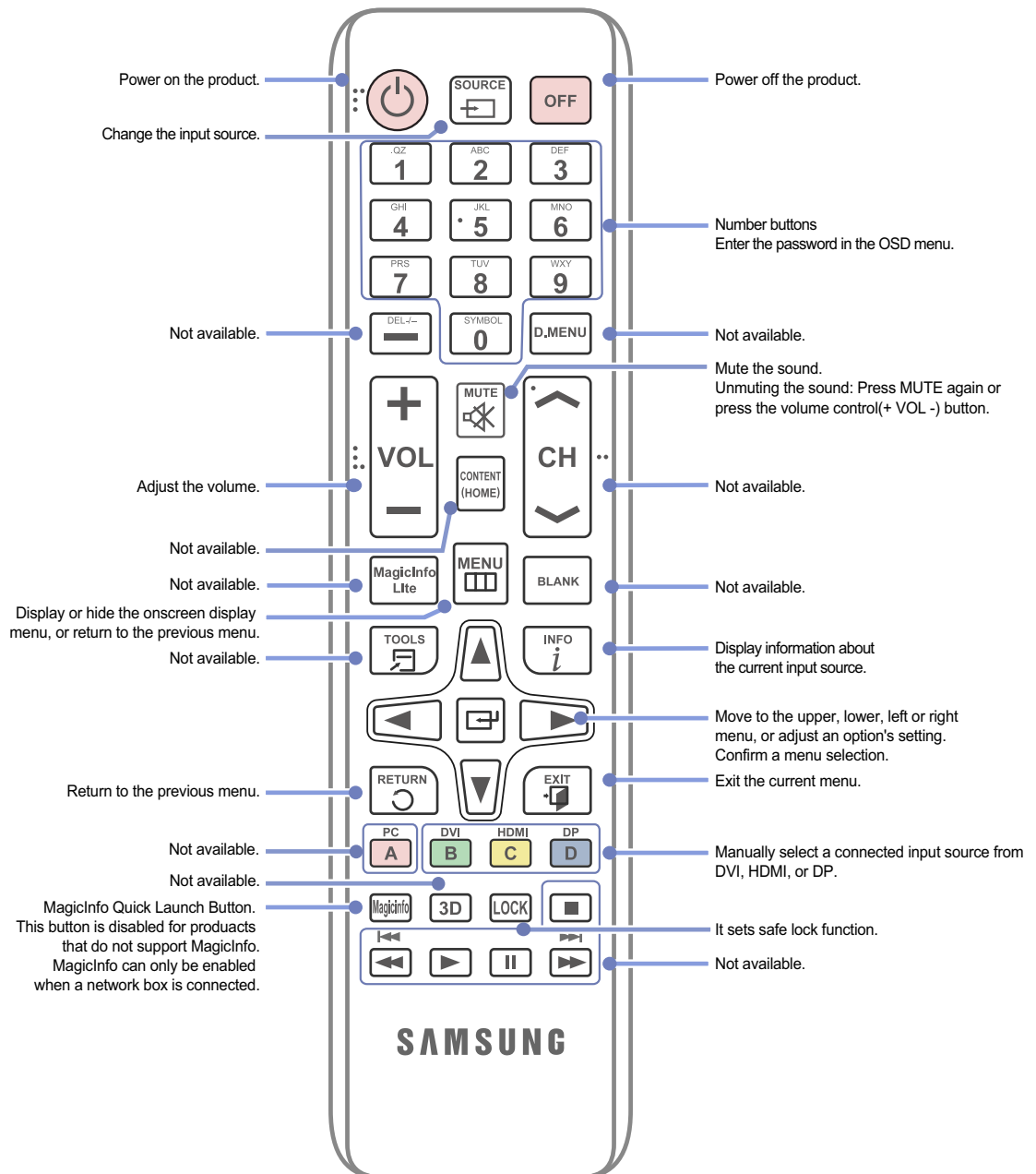
Assembling the Holder-Wire stand




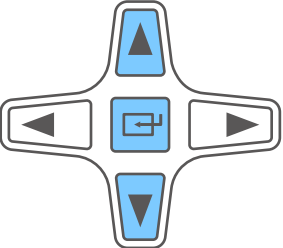
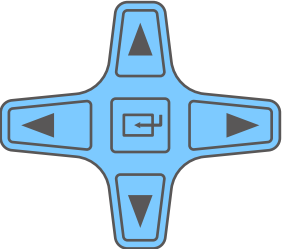
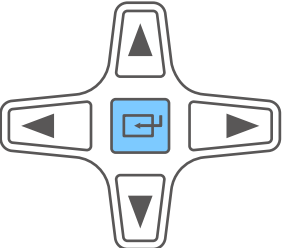

1.2.3 Remote Control



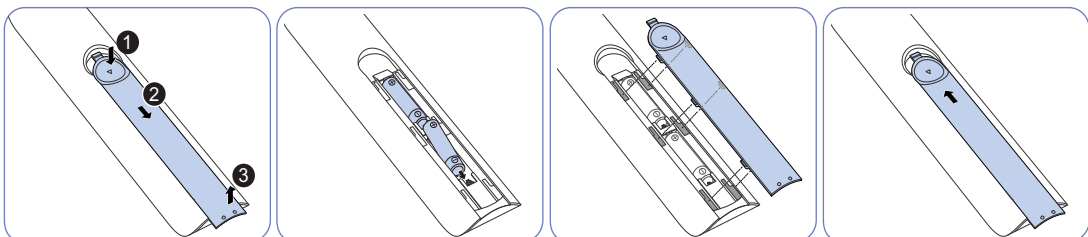
- Using other display devices in the same space as the remote control of this product can cause the other display devices to be inadvertently controlled.
- Remote control button functions may differ for different products.



Adjusting the OSD with the Remote Control

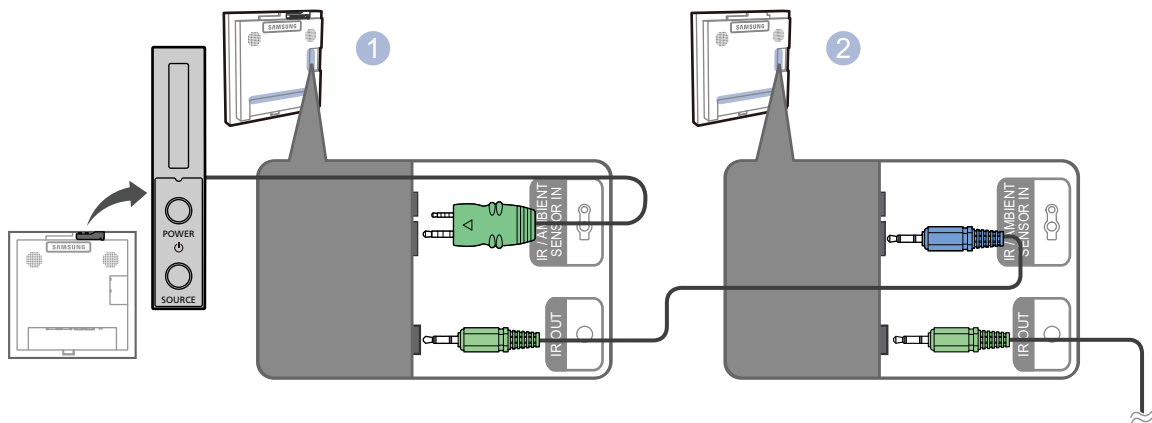
	1. Open the OSD menu.
	2. Select from Input , Picture , Sound , Setup or Multi Control in the displayed OSD menu screen.
	3. Change settings as desired.
	4. Finish setting.
	5. Close the onscreen display (OSD) menu.

To place batteries in the remote control



- Store used batteries out of reach of children and recycle.
- Do not use a new and used battery together. Replace both batteries at the same time.
- Remove batteries when the remote control is not to be used for an extended period of time.

1.2.4 Controlling more than one display product using an external sensor kit



- Connect the [IR OUT] port on the product to the [IR / AMBIENT SENSOR IN] port on the other display product using the dedicated RS232C serial cable.
- A command sent from the remote control pointed at product ① (to which the external sensor kit is connected) will be received by both display products ① and ②.



The appearance may differ depending on the product.

1.3 Before Installing the Product (Installation Guide)

! To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

- Ensure that an authorized installation company installs the wall mount.
- Otherwise, it may fall and cause personal injury.
- Make sure to install the specified wall mount.

1.3.1 Ventilation

Vertical wall mount condition

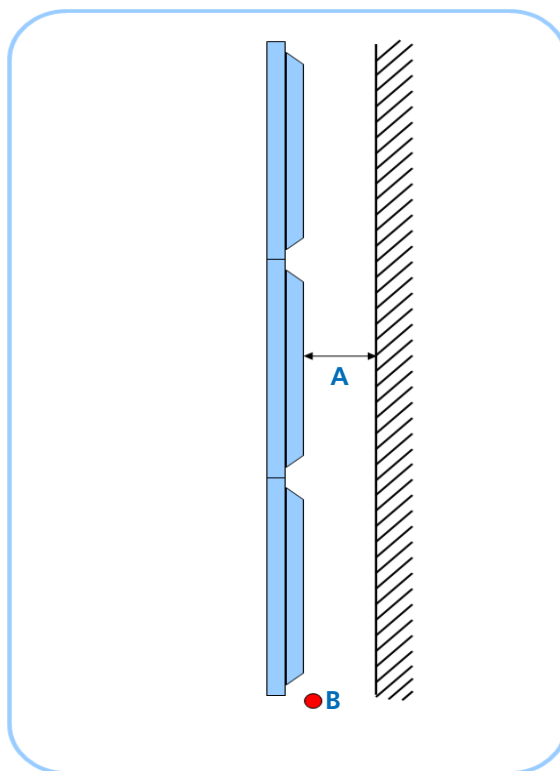


Figure 1.1 Side view

A Distance from the wall (recommended)

B Ambient Temp Measuring Point

- It is strongly recommended that ambient temperature is under 30 °C for video-wall installation.
- Considerable amount of heat is added to the upper units.
 - Internal temperature of uppermost unit is 5 ~ 10 °C higher than the lowest unit. (Even there is adequate distance from the wall)

(Unit: mm)

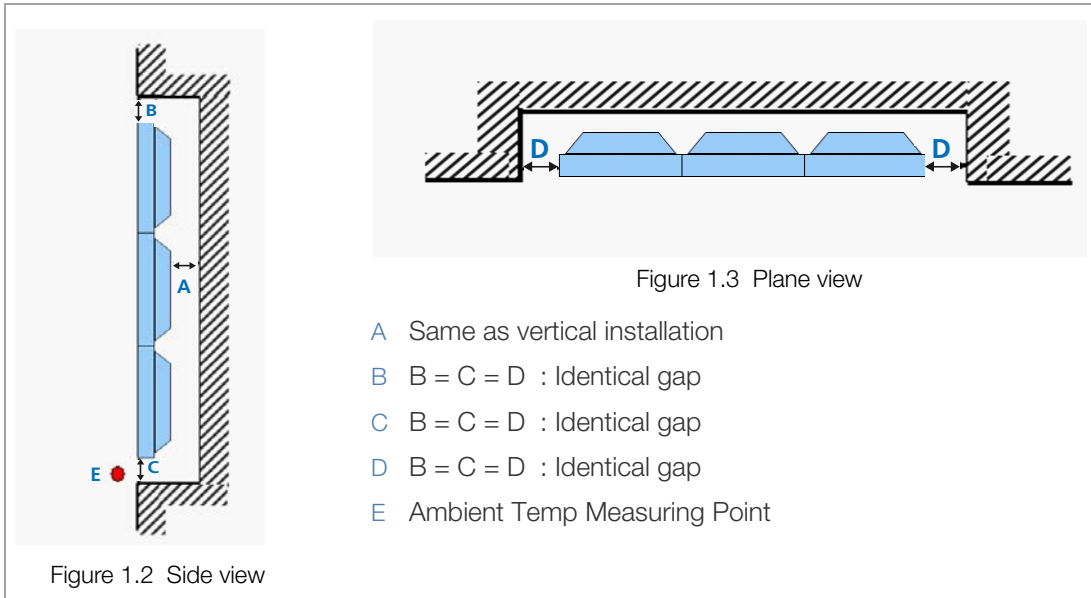
Configuration	1 x 1	2 x 2	3 x 3	4 x 4	5 x 5
A	40	80	120	160	200

! For more than 6 rows, auxiliary air conditioning system will be required.

2. Embedded/Flush Mount guide



- Ambient temperature under 30 °C is also recommended for embedded video-wall.
- Distance from the rear wall is same as vertical wall mount case.



Recommended distances

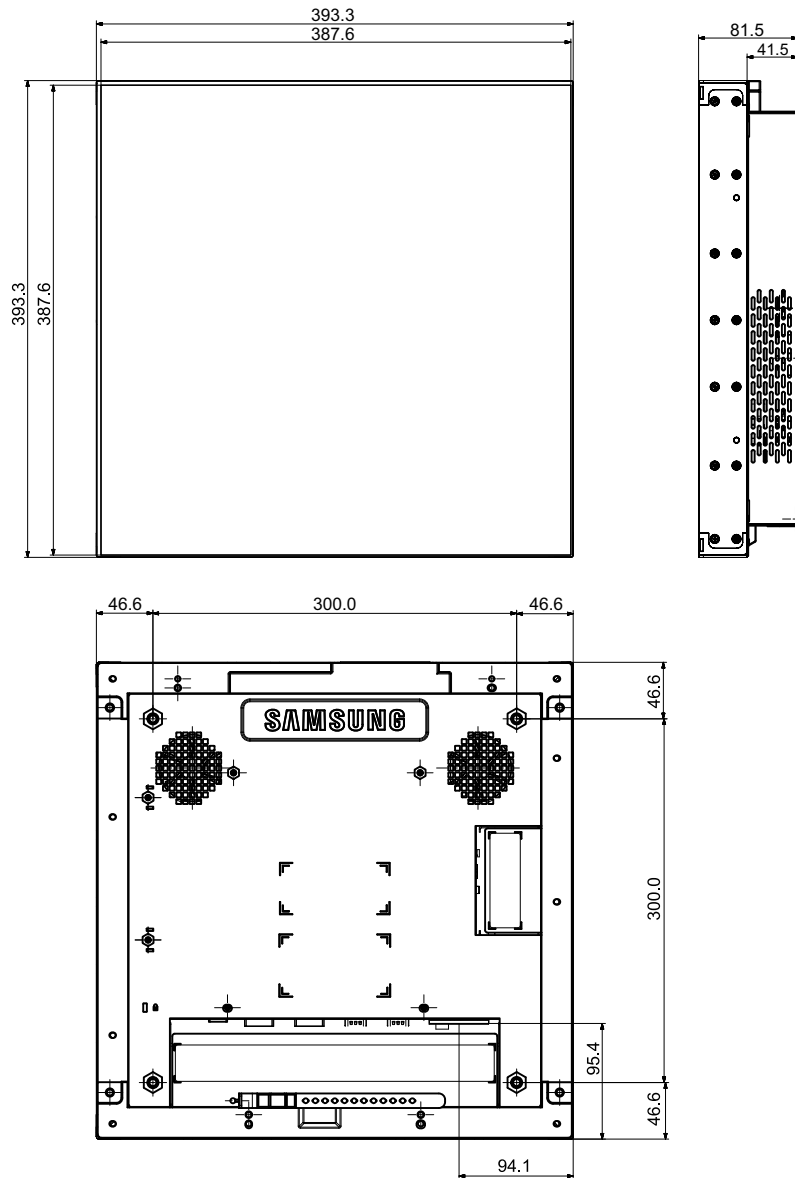
(Unit: mm)

Configuration	1 x 1	2 x 2	3 x 3	4 x 4	5 x 5
A	40	80	120	160	200
B (= C = D)	50	100	150	200	250



Additional cooling fans are required in order to decrease side gaps(B, C, D) for aesthetic purpose.

1.3.2 Dimensions



All drawings are not necessarily to scale. Some dimensions are subject to change without prior notice. Refer to the dimensions prior to performing installation of your product. Not responsible for typographical or printed errors.

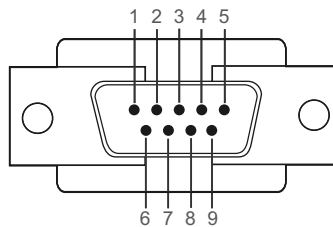
1.4 RS232C

1.4.1 Cable Connection

RS232C Cable

Interface	RS232C (9 pins)
Pin	TxD (No. 2), RxD (No. 3), GND (No. 5)
Bit rate	9600 bps
Data bits	8 bit
Parity	None
Stop bit	1 bit
Flow control	None
Maximum length	15m (only shielded type)

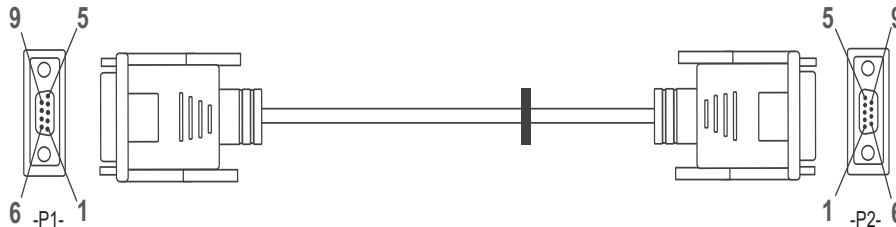
- Pin assignment



Pin	Signal
1	Detect data carrier
2	Received data
3	Transmitted data
4	Prepare data terminal
5	Signal ground
6	Prepare data set
7	Send request
8	Clear to send
9	Ring indicator

Preparations

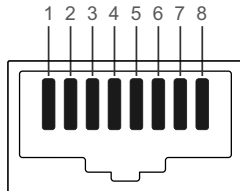
- RS232C cable
Connector: 9-Pin D-Sub
Cable : Cross Cable



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

LAN Cable

- Pin assignment

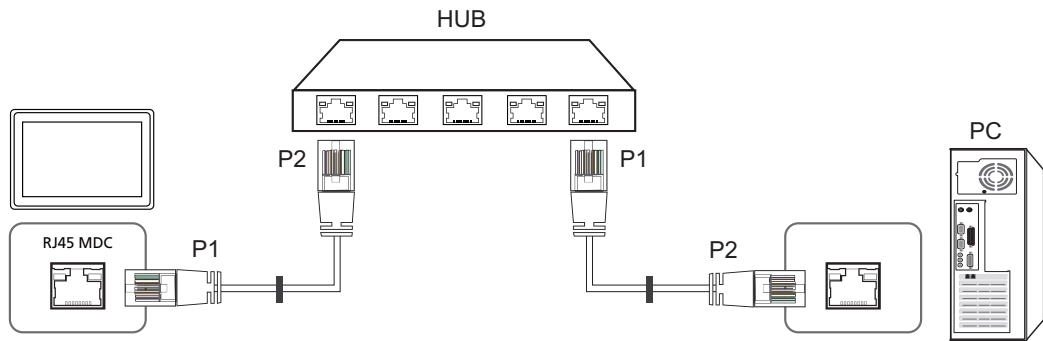


Pin No	Standard Color	Signal
1	White and orange	TX+
2	Orange	TX-
3	White and green	RX+
4	Blue	NC
5	White and blue	NC
6	Green	RX-
7	White and brown	NC
8	Brown	NC

1

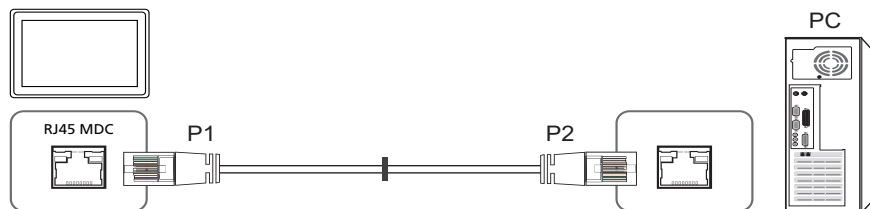
Preparations

- Connector : RJ45
<Direct LAN cable>



Signal	P1		P2	Signal
TX+	1	<----->	1	TX+
TX-	2	<----->	2	TX-
RX+	3	<----->	3	RX+
RX-	6	<----->	6	RX-

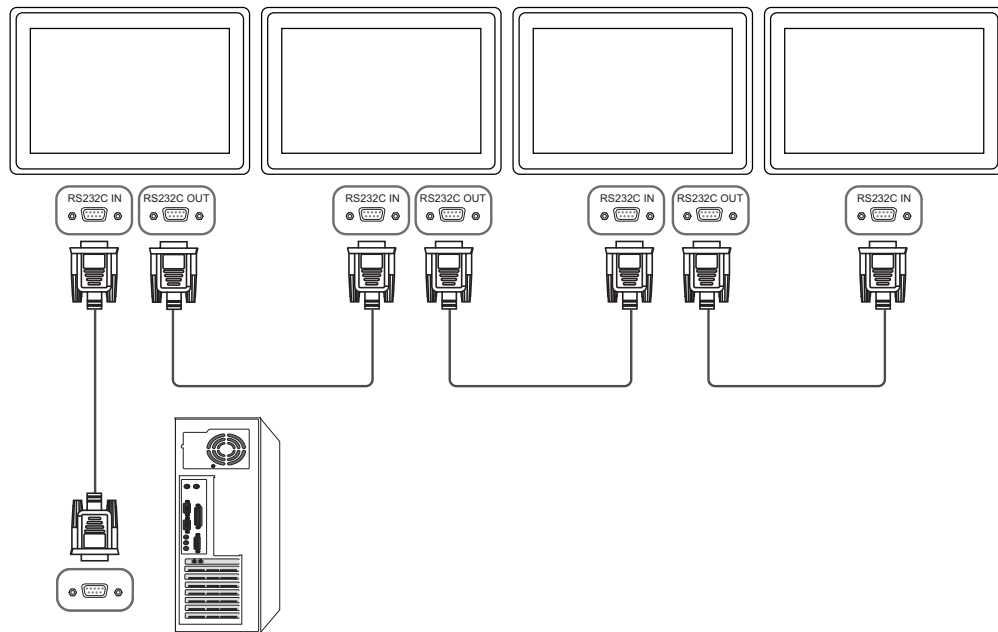
<Cross LAN cable>



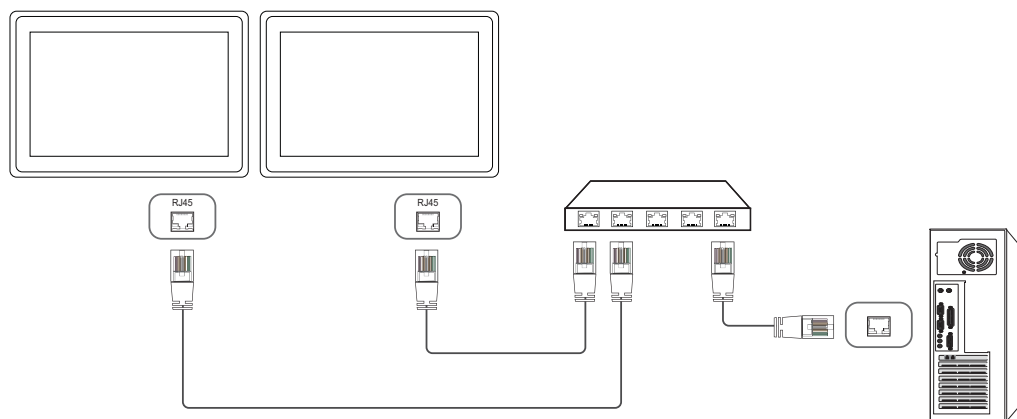
Signal	P1		P2	Signal
TX+	1	<----->	3	RX+
TX-	2	<----->	6	RX-
RX+	3	<----->	1	TX+
RX-	6	<----->	2	TX-

1.4.2 Connection

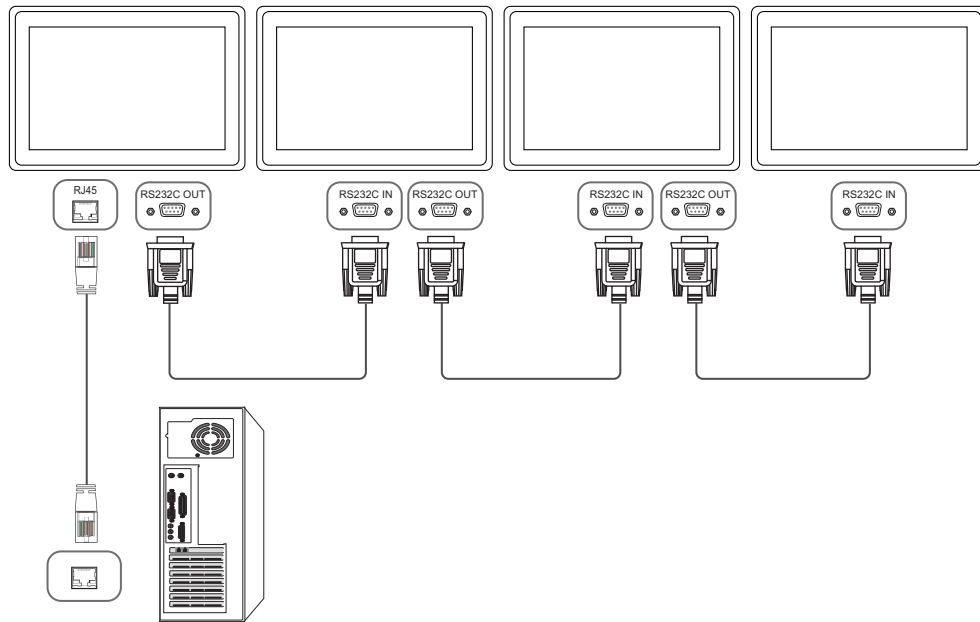
- Connection 1



- Connection 2



- Connection 3



1.4.3 Control Codes

Viewing control state (Get control command)

Header	Command	ID	Data length	Checksum
0xAA	Command type		0	

Controlling (Set control command)

Header	Command	ID	Data length	Data	Checksum
0xAA	Command type		1	Value	

Command

No.	Command type	Command	Value range
1	Power control	0x11	0~1
2	Volume control	0x12	0~100
3	Input source control	0x14	-
4	Picture Size control	0x15	-
5	Video wall mode control	0x5C	0~1
6	Safety Lock	0x5D	0~1

- Issued IDs can be displayed in hexadecimals. However, ID 0 must be displayed as 0xFF.
- All communications take place in hexadecimals. The checksum is calculated by adding up all values except the header. If a checksum adds up to be more than 2 digits as shown below ($11+FF+01+01=112$), the first digit is removed.

E.g. Power On & ID=0

Header	Command	ID	Data length	Data 1	Checksum
0xAA	0x11		1	"Power"	

↓

Header	Command	ID	Data length	Data 1	12
0xAA	0x11		1	1	

- To control all devices connected by a serial cable simultaneously irrespective of IDs, set the ID as "0xFE" and transmit commands. Commands will be executed by each device but ACK will not respond.

Power control

- Function
A product can be powered on and off using a PC.
- Viewing power state (Get Power ON / OFF Status)

Header	Command	ID	Data length	Checksum
0xAA	0x11		0	

- Setting power ON/Off (Set Power ON / OFF)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x11		1	"Power"	

"Power": Power code to be set on a product.

1 : Power ON

0 : Power OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x11	"Power"	

"Power": Power code to be set on a product.

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x11	"ERR"	

"ERR" : A code showing what error has occurred.

Volume control

- Function
The volume of a product can be adjusted using a PC.
- Viewing volume state (Get Volume Status)

Header	Command	ID	Data length	Checksum
0xAA	0x12		0	

- Setting the volume (Set Volume)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x12		1	"Volume"	

"Volume": Volume value code to be set on a product. (0-100)

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x12	"Volume"	

"Volume": Volume value code to be set on a product. (0-100)

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x12	"ERR"	

"ERR" : A code showing what error has occurred.

Input source control

- Function
The input source of a product can be changed using a PC.
- Viewing input source state (Get Input Source Status)

Header	Command	ID	Data length	Checksum
0xAA	0x14		0	

- Setting the input source (Set Input Source)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x14		1	"Input Source"	

"Input Source": An input source code to be set on a product.

0x14	PC
0x1E	BNC
0x18	DVI
0x0C	Input source
0x04	S-video
0x08	Component
0x20	MagicInfo
0x1F	DVI_video
0x30	RF (TV)
0x40	DTV
0x21	HDMI1
0x22	HDMI1_PC
0x23	HDMI2
0x24	HDMI2_PC
0x25	Display Port

- ⚠ DVI_video, HDMI1_PC and HDMI2_PC cannot be used with the Set command. They only respond to "Get" commands.
 - ⚠ This model does not support BNC, S-Video, HDMI2 and HDMI2_PC ports.
 - ⚠ **MagicInfo** is only available with models that contain the **MagicInfo** function.
- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x14	"Input Source"	

"Input Source": An input source code to be set on a product.

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x14	"ERR"	

"ERR" : A code showing what error has occurred.

Picture Size Control

- Function
Change Picture Size by Personal Computer.
Can not control picture size when **Videowall** is **On**.
- Get Picture Size Status

Header	Command	ID	Data length	Checksum
0xAA	0x15		0	

- Set Picture Size

Header	Command	ID	Data length	Data 1	Checksum
0xAA	0xFF		3	"Aspect"	

"Aspect" : Picture Size Code

PC1, PC2, DVI, DNC, HDMI_PC	
0x10	16 : 9
0x18	4 : 3
AV, S-Video, Component, DVI_Video, HDMI_Video	
0x00	Auto Wide
0x01	16 : 9
0x04	Zoom
0x05	Zoom1
0x06	Zoom2
0x31	Wide Zoom
0x0B	4 : 3
0x0C	Wide Fit
0x0D	Custom
0x0E	Smart View 1
0x0F	Smart View 2
Common	
0x09	Just Scan(Screen Fit)
0x20	Original Ratio

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x15	"Aspect"	

"Aspect" : Picture Size Code

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x15	"ERR"	

"ERR" : A code showing what error has occurred.

Video Wall Mode Control

- Function

Video Wall Mode can be activated on a product using a PC.

This control is only available on a product whose **Video Wall** is enabled.

This function is not available in MagicInfo.

- Viewing video wall mode (Get Video Wall Mode)

Header	Command	ID	Data length	Checksum
0xAA	0x5C		0	

- Setting the video wall (Set Video Wall Mode)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x5C		1	"Video Wall Mode"	

"Video Wall Mode": A code used to activate Video Wall mode on a product.

1 : **Full**

0 : **Natural**

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x5C	"Video Wall Mode"	

"Video Wall Mode": A code used to activate Video Wall mode on a product.

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x5C	"ERR"	

"ERR" : A code showing what error has occurred.

Safety Lock

- Function
PC can be used to turn the Safety Lock function on or off on a product.
This control is available regardless of whether or not the power is turned on.
- Viewing the safety lock state (Get Safety Lock Status)

Header	Command	ID	Data length	Checksum
0xAA	0x5D		0	

- Enabling or disabling safety lock (Set Safety Lock Enable / Disable)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x5D		1	"Safety Lock"	

"Safety Lock": Safety lock code to be set on a product.

1 : ON

0 : OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x5D	"Safety Lock"	

"Safety Lock": Safety lock code to be set on a product.

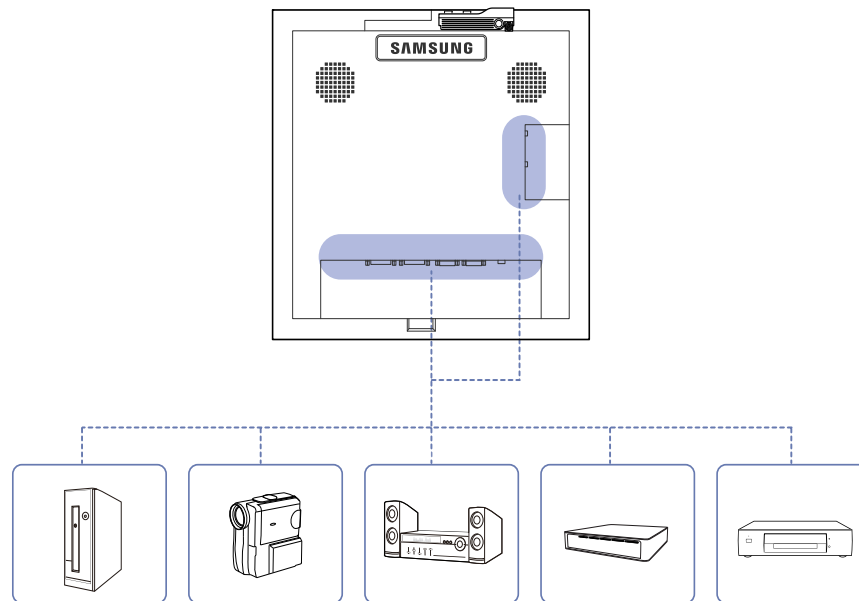
- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x5D	"ERR"	

"ERR" : A code showing what error has occurred.

2.1 Before Connecting

Check the following before you connect this product with other devices. Devices that can be connected to this product include PCs, camcorders, speakers, set top boxes and DVD/Blu-ray Disc players.



2.1.1 Pre-connection Checkpoints

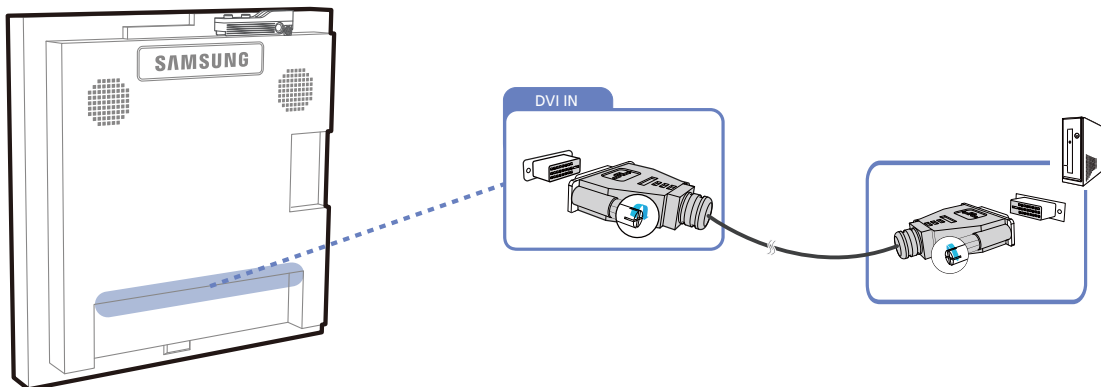
- Before connecting a source device, read the user manual provided with it. The number and locations of ports on source devices may differ from device to device.
- Do not connect the power cable until all connections are completed. Connecting the power cable during connection may damage the product.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

2.2 Connecting and Using a PC

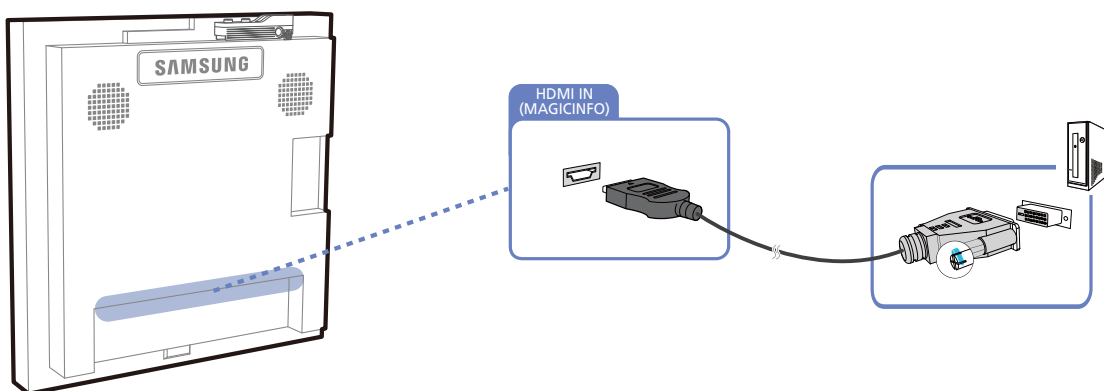
2.2.1 Connecting to a PC

- Do not connect the power cable before connecting all other cables.
Ensure you connect a source device first before connecting the power cable.
- A PC can be connected to the product in a variety of ways.
Select a connection method suitable for your PC.
 - ▢ Connecting parts may differ in different products.
 - ▢ The following images are for reference only. Real-life situations may differ from what is shown in the images.

Connection using a DVI cable (Digital type)

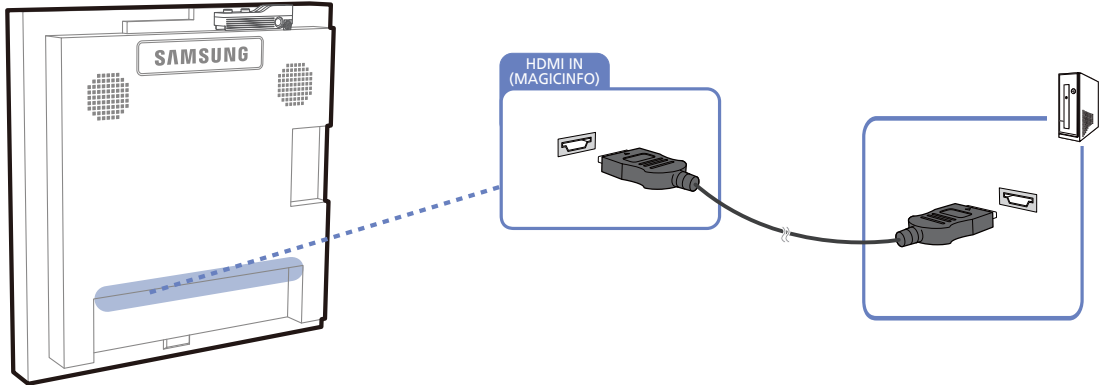


Connection Using an HDMI-DVI Cable

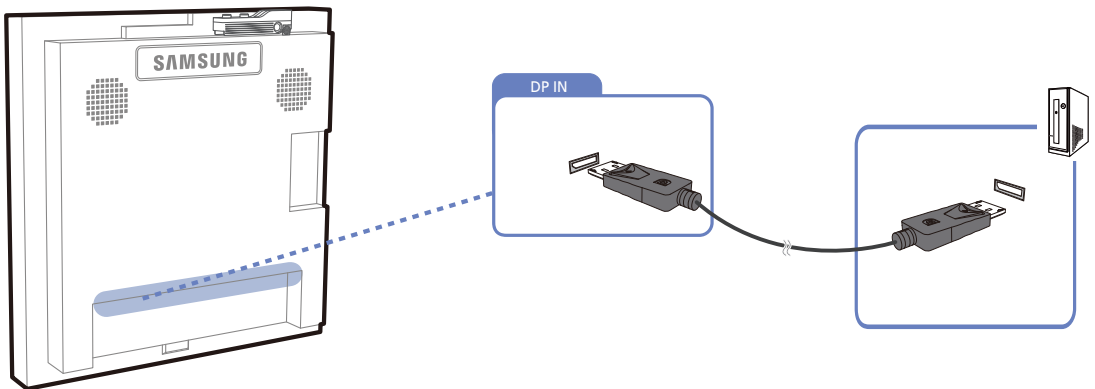


- ▢ When you connect a PC to the product using an HDMI-DVI cable, set **Edit Name** to **DVI PC** to access video and audio content stored on the PC.

Connection Using an HDMI Cable



Connection Using a DP Cable



2.2.2 Changing the Resolution

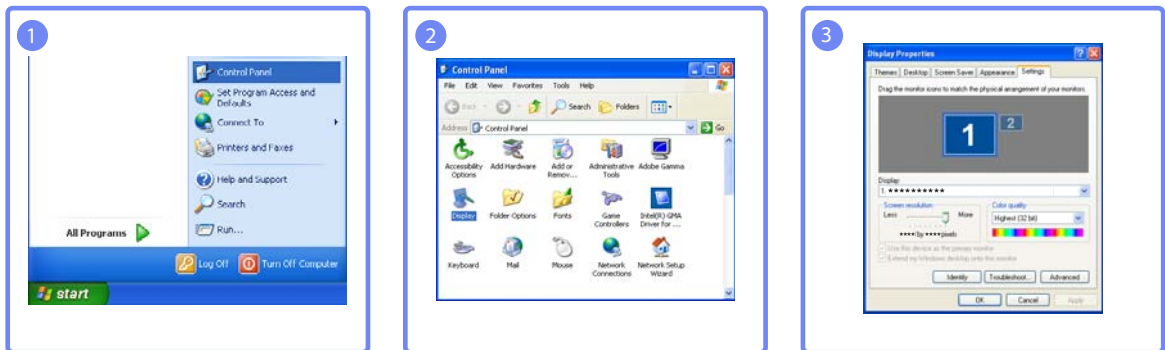


Adjust the resolution and refresh rate in Control Panel on your PC to obtain optimum picture quality.

The picture quality of TFT-LCDs may degrade if the optimum resolution is not selected.

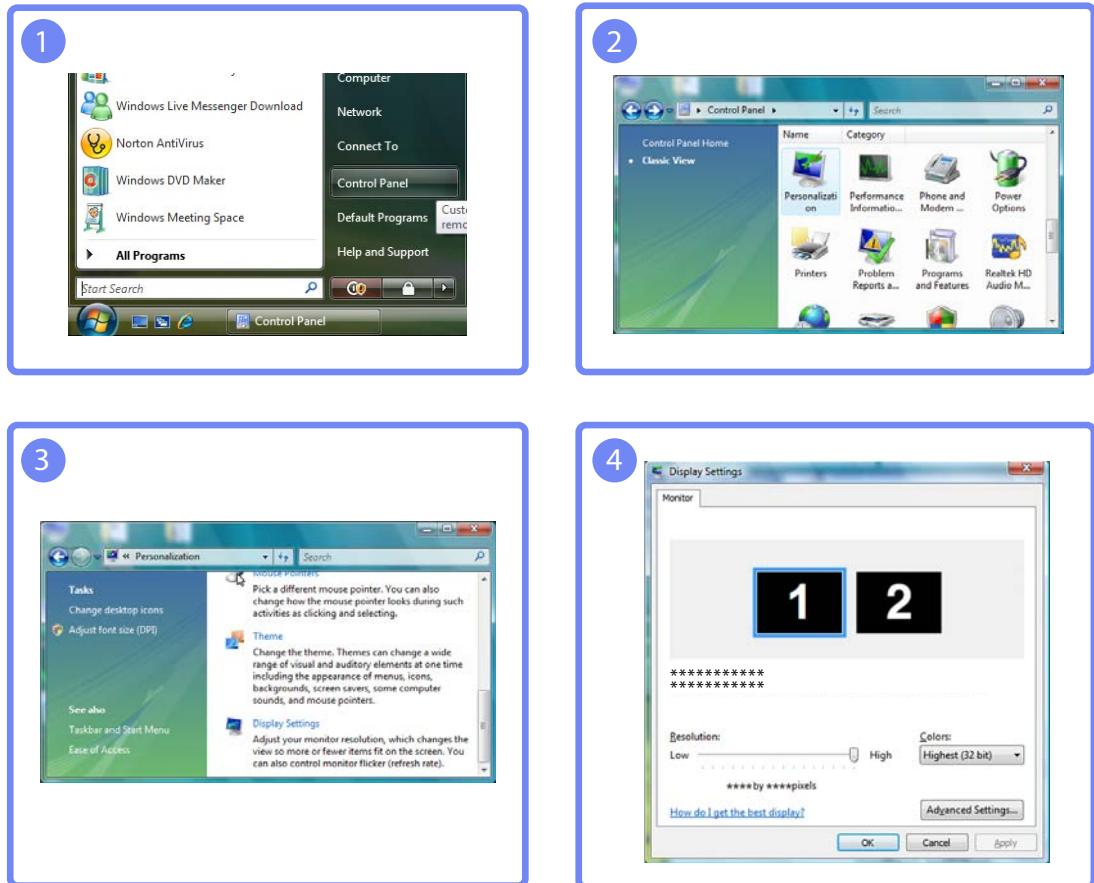
Changing the Resolution on Windows XP

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



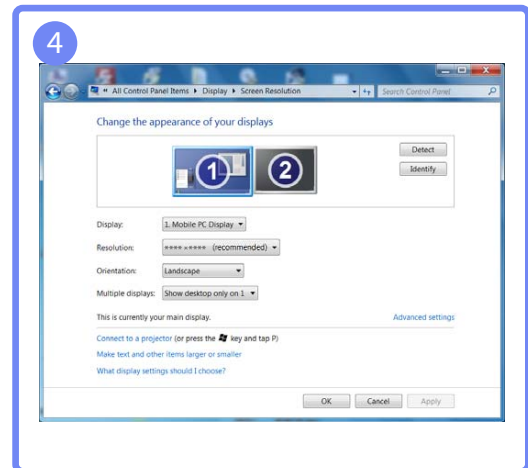
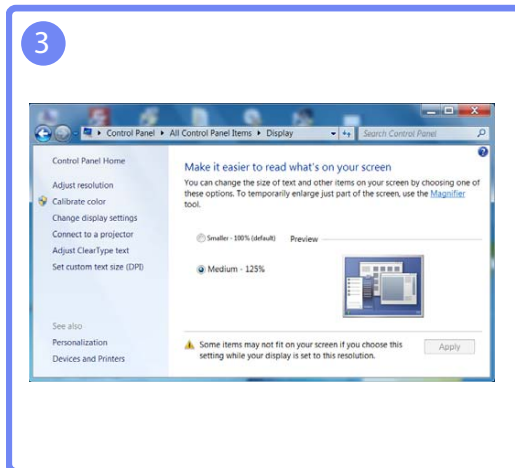
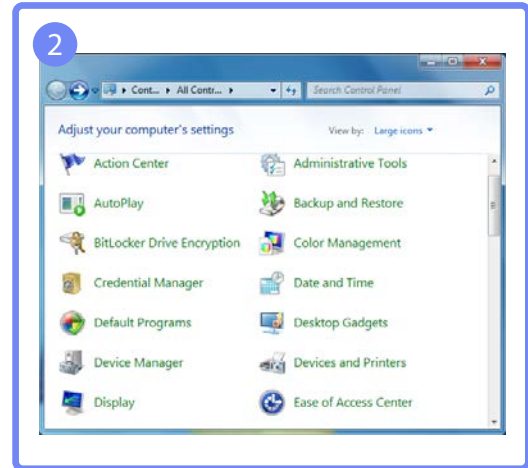
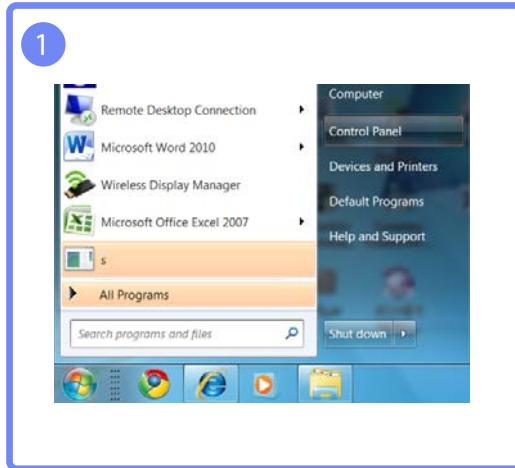
Changing the Resolution on Windows Vista

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

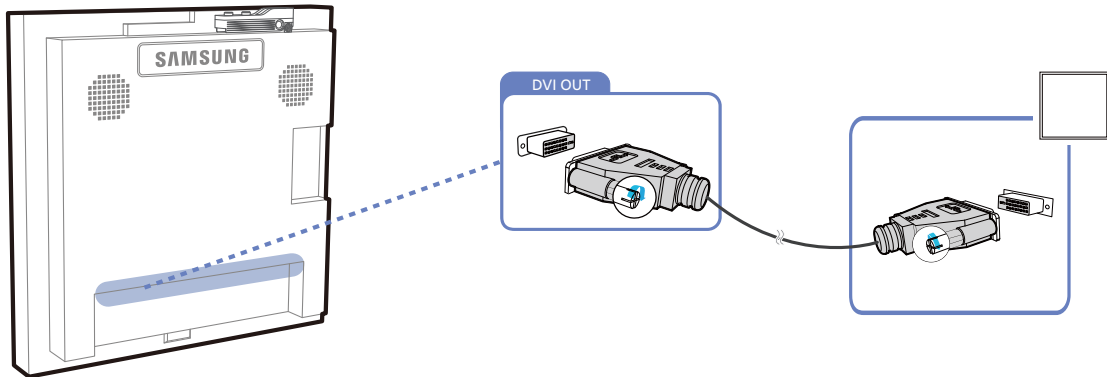


Changing the Resolution on Windows 7

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



2.3 Connecting an External Monitor

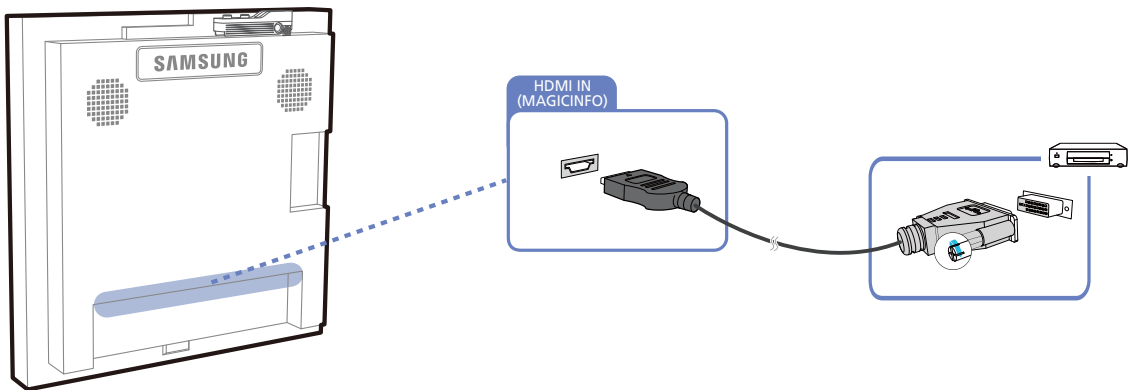


- The following images are for reference only. Real-life situations may differ from what is shown in the images.
- The Loopout function can be used to duplicate the screen of the primary display. Connect [DVI OUT] on the primary display to [DVI IN] or [HDMI IN] on another display.
- Up to Full HD resolution can be supported. Compatible input sources include DVI IN, DP IN and HDMI IN. Multiple monitors that are daisy-chained have a limit to the connectable monitors.
- The [DVI OUT] port on this product does not support the HDCP input.

2.4 Connecting to a Video Device

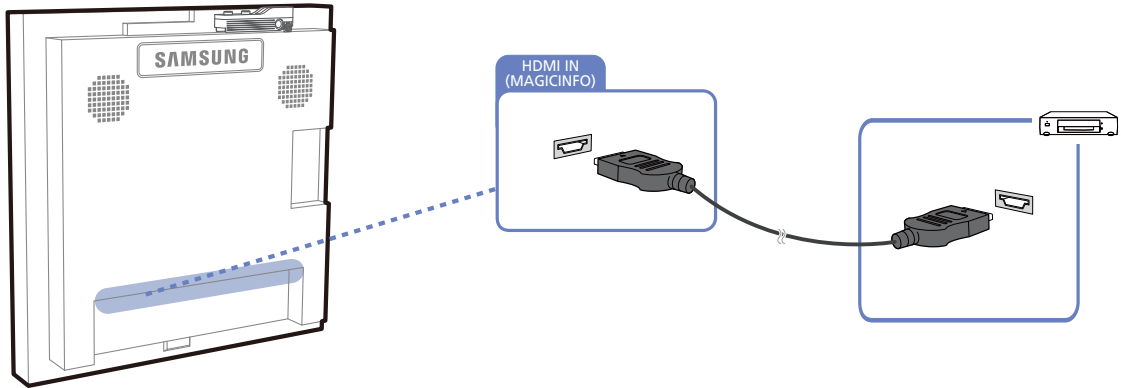
- Do not connect the power cable before connecting all other cables. Ensure you connect a source device first before connecting the power cable.
- You can connect a video device to the product using a cable.
 - The following images are for reference only. Real-life situations may differ from what is shown in the images.
 - Connecting parts may differ in different products.
 - Press the **SOURCE** button on the remote control to change the source.

2.4.1 Connection Using an HDMI-DVI Cable



- Audio will not be enabled if the product is connected to a video device using an HDMI-DVI cable. To resolve this, additionally connect an audio cable to the audio ports on the product and video device.
- Supported resolutions include 1080p (50/60Hz), 720p (50/60Hz), 480p, and 576p.

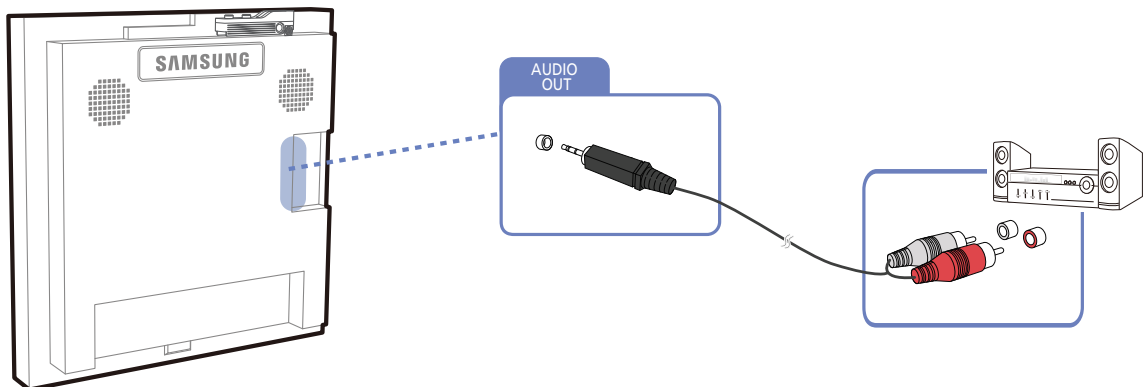
2.4.2 Connection Using an HDMI Cable



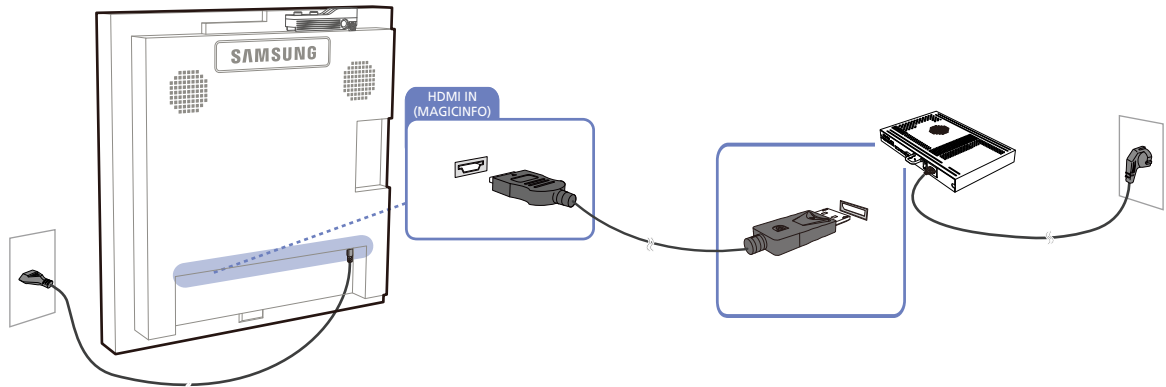
Using an HDMI cable or HDMI to DVI Cable (up to 1080p)

- For better picture and audio quality, connect to a digital device using an HDMI cable.
- An HDMI cable supports digital video and audio signals, and does not require an audio cable.
 - To connect the product to a digital device that does not support HDMI output, use an HDMI/DVI and audio cables.
- The picture may not display normally (if at all) or the audio may not work if an external device that uses an older version of HDMI mode is connected to the product. If such a problem occurs, ask the manufacturer of the external device about the HDMI version and, if out of date, request an upgrade.
- Be sure to use an HDMI cable with a thickness of 14 mm or less.
- Be sure to purchase a certified HDMI cable. Otherwise, the picture may not display or a connection error may occur.
- A basic high-speed HDMI cable or one with ethernet is recommended. This product does not support the ethernet function via HDMI.

2.4.3 Connecting to an Audio System



2.5 Connecting the network box (Sold separately)



For details on how to connect to a network box, refer to the user's manual provided with the network box upon purchase.

2.5.1 MagicInfo




To use **MagicInfo**, a network box (sold separately) must be connected to the product.



- To change the MagicInfo settings, run "MagicInfoSetupWizard" on the desktop.
- For details on how to use **MagicInfo**, refer to the DVD provided with the network box.
- The information in this section is subject to change without notice for quality improvement.
- If a problem occurs after installing an operating system other than the one provided with the network box, restoring the previous version of the operating system, or installing software that is not compatible with the operating system provided, you will not be able to benefit from technical support and will be charged a fee for a visit from a service technician. A product exchange or refund will also not be available.

2.6 Changing the Input source

2.6.1 Source List


 **MENU**  → **Input** → **Source List** → **ENTER** 


You can display the screen of a source device connected to the product. Select a source from source list to display the screen of the selected source.

 Refer to page 89 for details about the **Input** menu.



- **DVI**
- **HDMI**
- **DisplayPort**
- **MagicInfo** - Activated when a network box is connected.

 The input source can also be changed by using the **SOURCE** button on the remote control.

 The screen may not display correctly if an incorrect source is selected for the source device you want to convert to.

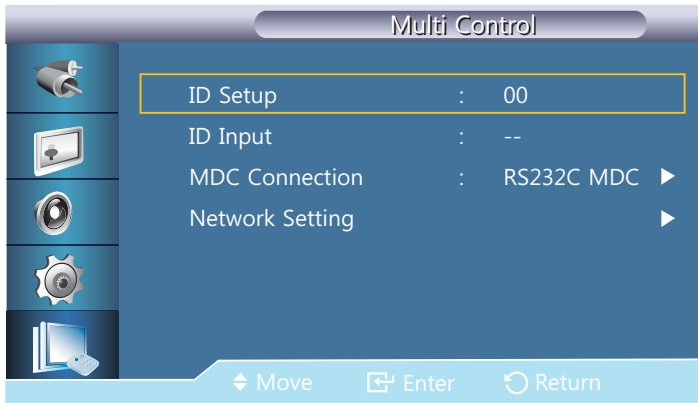
Using MDC

MDC (Multiple Display Control) is an application that allows you to easily control multiple display devices simultaneously using a PC.

3.1 Configuring Settings for Multi Control

 **MENU**  → **Multi Control** → **ENTER** 

Assigns an individual ID to the SET.



3.1.1 ID Setup

Assigns distinctive IDs to the SET.

3.1.2 ID Input

Use to select the transmitter functions of the individual SET. Only a SET where the ID corresponds to the transmitter setting becomes activated.

3.1.3 MDC Connection

Selects a port to receive the **MDC** inputs from.

- **RS232C MDC**
Communicates with the **MDC** via a RS232C MDC cable.
- **RJ45 MDC**
Communicates with the **MDC** via an RJ45 MDC cable.

3.1.4 Network Setting

- **IP Setting:** **Manual**, **Auto**
- **IP Address:** Manually enter the **IP Address** if **IP Setting** is set to **Manual**.
- **Subnet Mask:** Manually enter the **Subnet Mask** if **IP Setting** is set to **Manual**.
- **Gateway:** Manually enter the **Gateway** if **IP Setting** is set to **Manual**.

3.2 MDC Program Installation/Uninstallation

3.2.1 Installation

- 1 Insert the installation CD into the CD-ROM drive.
- 2 Click the **MDC Unified** installation program.



If a software installation window is not displayed on the main screen, install with the "MDC Unified" execution file in the MDC folder on the CD.

- 3 Select a language for installation. Next, click "OK".
- 4 When the "Welcome to the InstallShield Wizard for MDC_Unified" screen appears, click "Next".
- 5 In the "License Agreement" window displayed, select "I accept the terms in the license agreement" and click "Next".
- 6 In the displayed "Customer Information" window, fill out all the information fields and click "Next".
- 7 In the displayed "Destination Folder" window, select the directory path you want to install the program in and click "Next".



If the directory path is not specified, the program will be installed in the default directory path.

- 8 In the displayed "Ready to Install the Program" window, check the directory path to install the program in and click "Install".
- 9 Installation progress will be displayed.
- 10 Click "Finish" in the displayed "InstallShield Wizard Complete" window.



Select "Launch MDC Unified" and click "Finish" to run the MDC program immediately.

- 11 The **MDC Unified** shortcut icon will be created on the desktop after installation.



- The MDC execution icon may not be displayed depending on the PC system or product specifications.
- Press F5 if the execution icon is not displayed.

3.2.2 Uninstallation

- 1 Select **Settings > Control Panel** on the **Start** menu and double-click **Add/Delete Program**.
- 2 Select **MDC Unified** from the list and click **Change/Remove**.



MDC installation can be affected by the graphics card, mother board and network conditions.

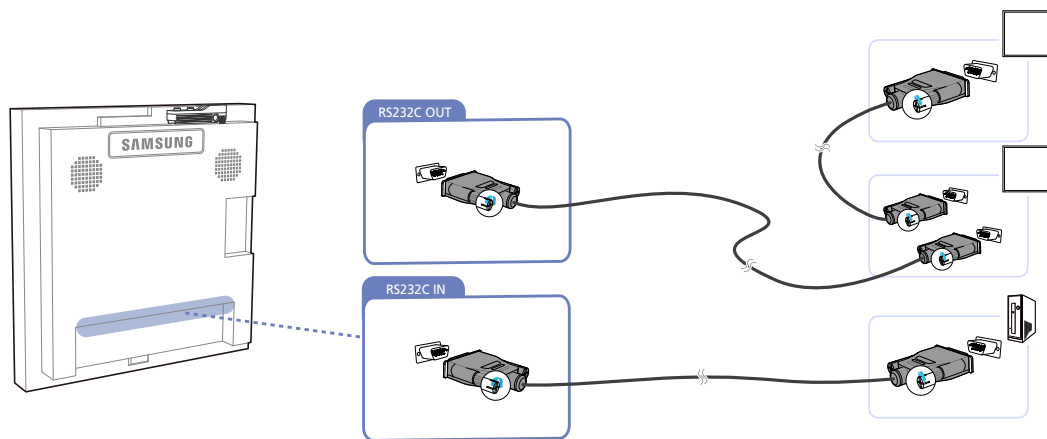
3.3 What is MDC?

Multiple display control (MDC) is an application that allows you to easily control multiple display devices simultaneously using a PC.

3.3.1 Connecting to MDC

Using MDC via RS-232C (serial data communications standards)

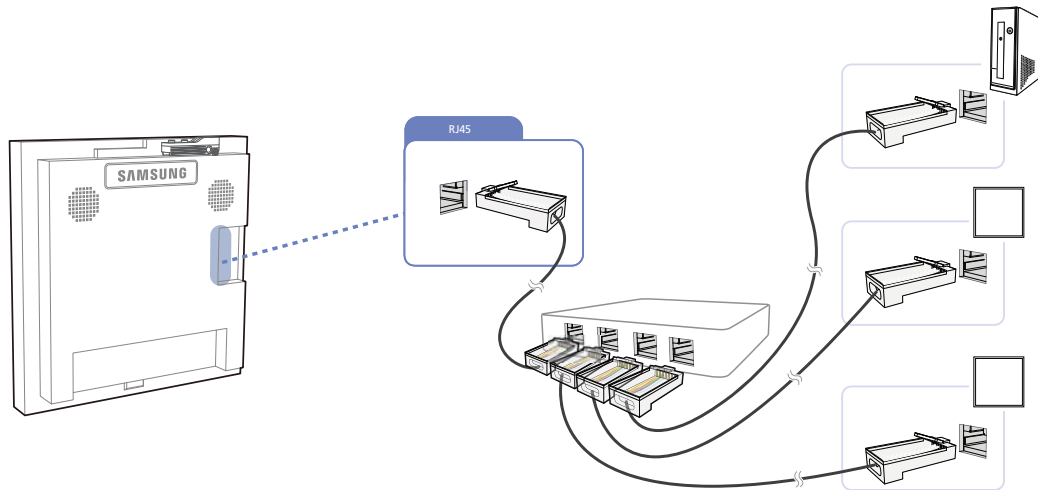
An RS-232C serial cable must be connected to the serial ports on the PC and monitor.



Using MDC via Ethernet

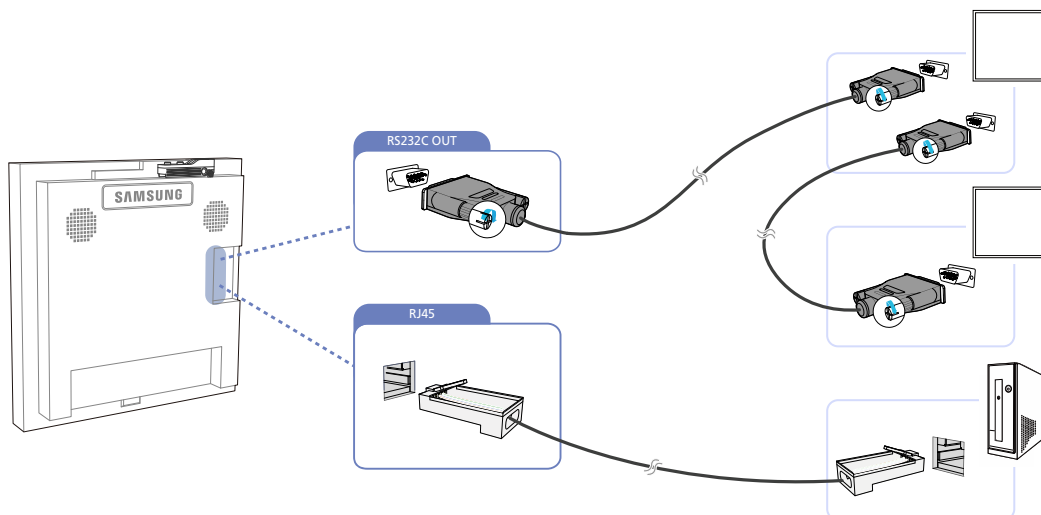
Enter the IP for the primary display device and connect the device to the PC. One display device can connect to another using an RS-232C serial cable.

Communicate with LAN cable



Multiple products can be connected using the [RJ45] port on the product and the LAN ports on the HUB.

Communicate with RS232C Serial cable via the LAN cable



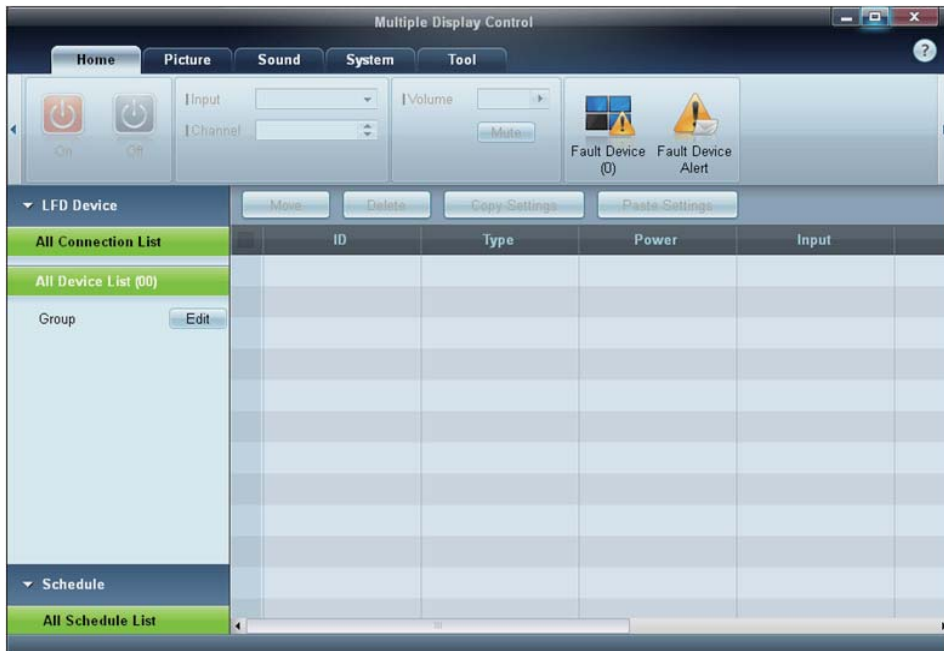
Multiple products can be connected using the [RS232C OUT] port on the product.

3.3.2 Connection Management

Connection management includes the **Connection list** and **Connection list modification options**.

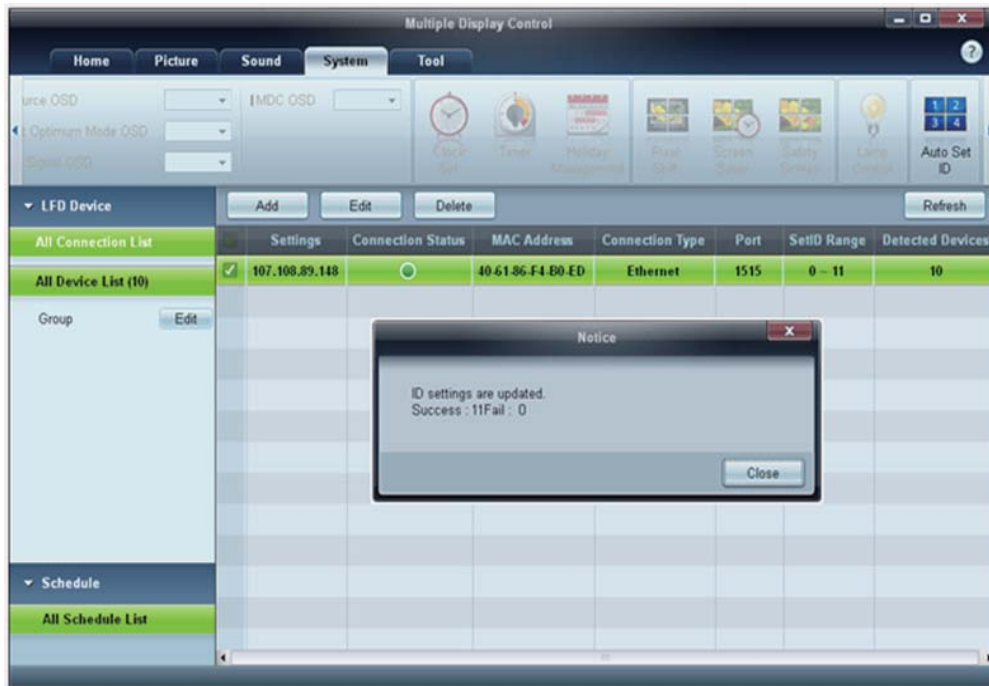
Connection list – Connection list shows the details of the connections such as connection setting (IP/COM, Port No, MAC, and **Connection Type**), connection status, **Set ID Range**, and detected devices. Each connection can contain a maximum of 100 devices connected in serial daisy-chain fashion. All the LFDs detected in a connection are displayed in the Device list, where the user can make groups and send commands to detected devices.

Connection list modification options – Connection modification options includes **Add**, **Edit**, **Delete**, and **Refresh**.



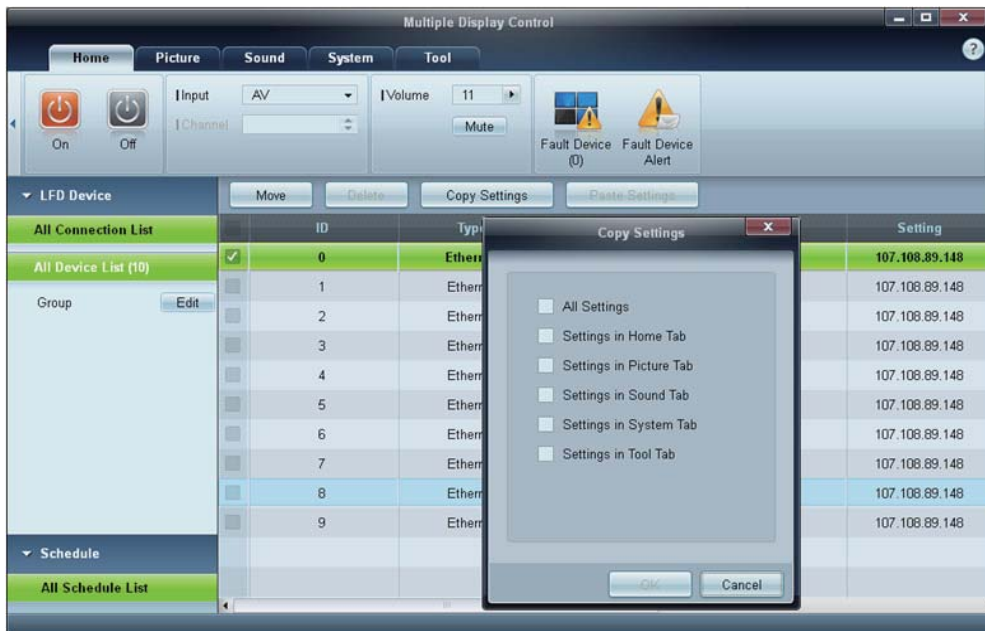
3.3.3 Auto Set ID

Auto Set ID feature assigns a Set ID for all the LFDs connected in daisy-chain of a selected connection. There can be a maximum of 100 LFDs in a connection. The Set ID is assigned sequentially in the daisy-chain running from 1 to 99, and then finally to Set ID 0.



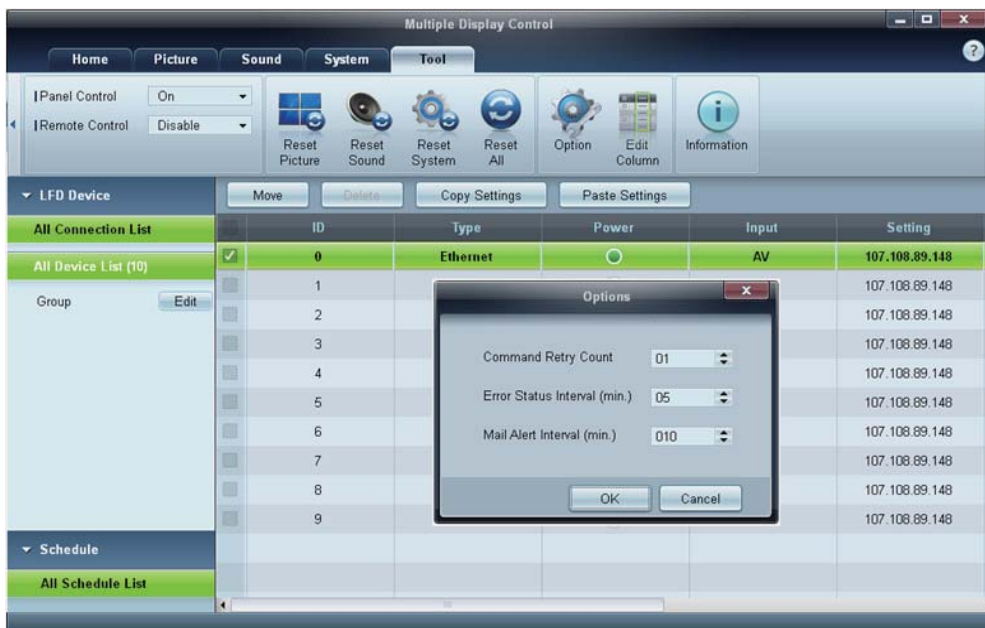
3.3.4 Cloning

Using the Cloning feature, you can copy the setting of one LFD and apply it to multiple selected LFDs. You can select specific tab categories or all tab categories for cloning, using the copy setting option window.



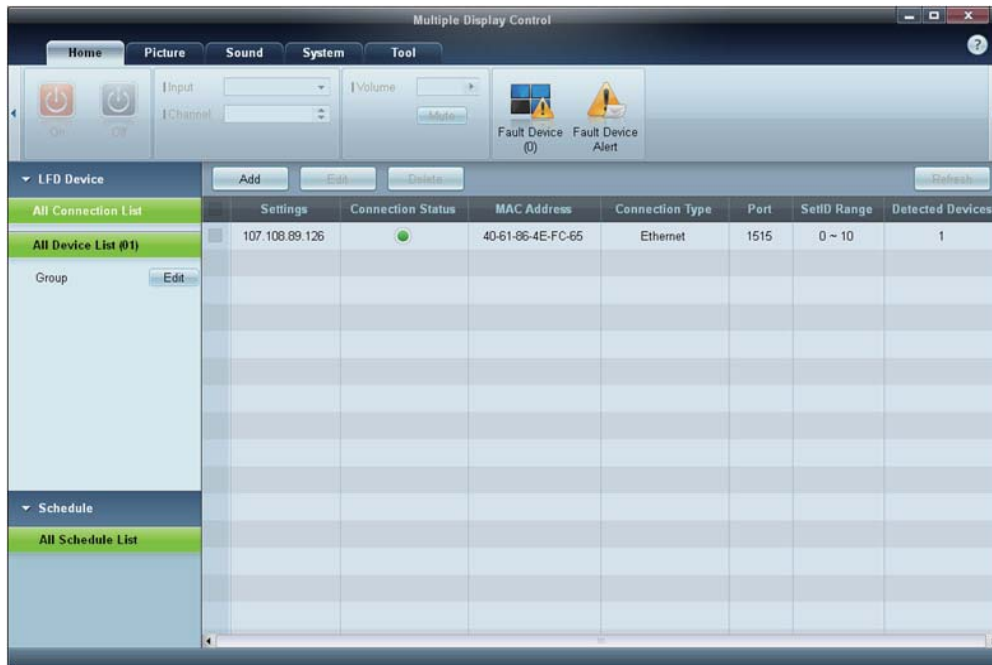
3.3.5 Command Retry

This feature is used to specify the maximum number of times the MDC command will be retried in case of there being no reply or a corrupted reply from an LFD. The retry count value can be set using the MDC options window. The retry count value must be between 1-10. The default value is 1.

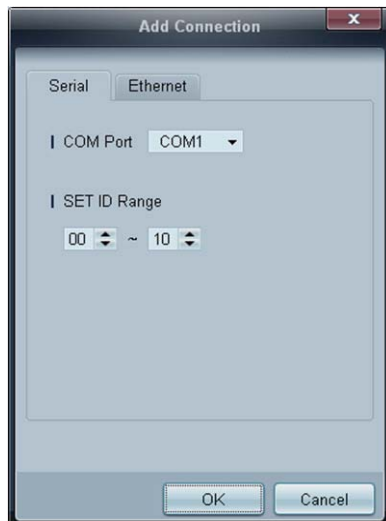


3.3.6 Getting Started with MDC

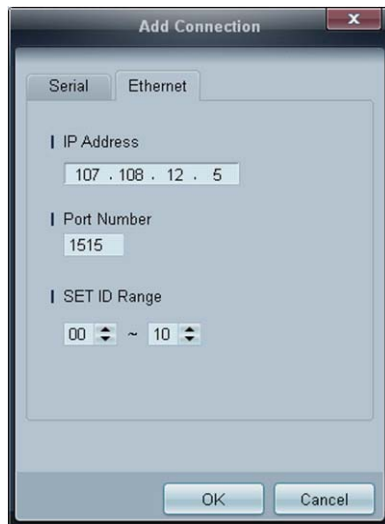
- 1 To start the program, click **Start** → **Programs** → **Samsung** → **MDC Unified**.



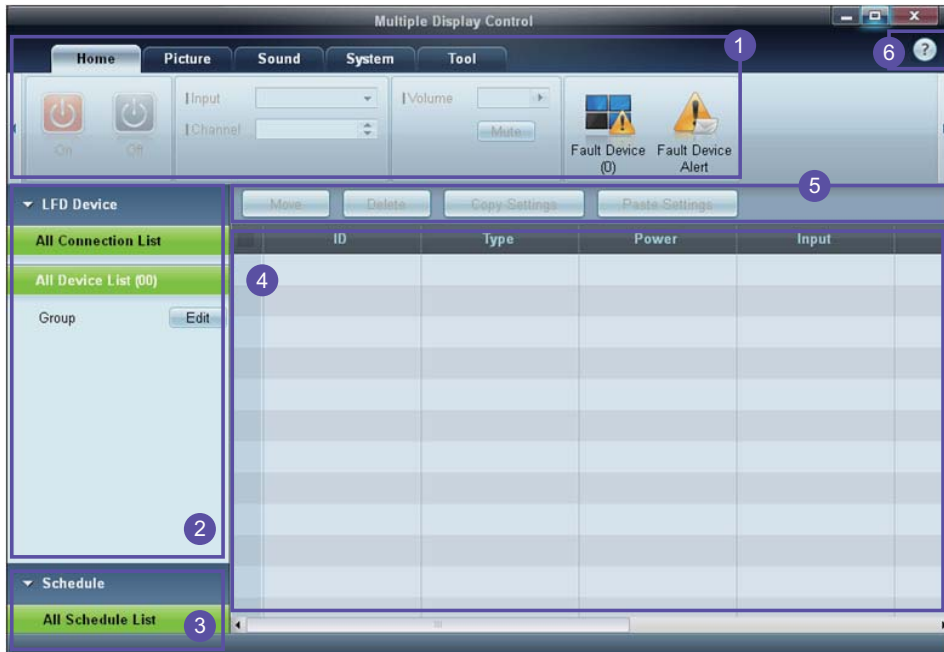
- 2 Click **Add** to add a display device.
 - If the connection is established via RS232C, go to **Serial** and specify the **COM Port**.



- If the connection is established via **Ethernet**, enter the IP that was entered for the display device.



3.3.7 Main Screen Layout



① Menu Bar	Change the status of a display device or the properties of the program.
② Device Category	View a list of connected display devices or device groups.
③ Schedule Category	View a list of schedules for display devices.
④ Set List	Select the display device you want to adjust.
⑤ Modify the Set List	Add, edit, regroup or delete sets.
⑥ Help Topics	Display help topics for the program.

3.3.8 Menus

You can power on or off a selected device or change the input source or volume of the device.

Choose display devices from the list of sets, and select the **Home** tab.



1 Home

Select an item and change the corresponding setting.

Power

- **On:** Power on a selected display.
- **Off:** Power off a selected display.

Input

- **Input Source :** Change the input source.
 - Input sources available can vary depending on the Display Device Models.
 - The input source can be changed only for displays that are turned on.
- **Channel :** Change the channel.
 - The TV channel can be changed by using the up/down arrow keys.
 - The channel can be changed only when the input source is **TV**.
 - Only registered channels can be selected.

2 Volume

- The volume can be changed or the sound can be muted only for displays that are turned on.

Volume

- The volume can be adjusted using the slider bar in the range of 0 to 100.
Adjust the volume of a selected display.

Input

- Enable or disable **Mute** for a selected display.

Mute will automatically be disabled if **Volume** is adjusted when **Mute** is on.

3 Alert

- **Fault Device**

- This menu shows a list of display devices which have following errors - fan error, temperature error, brightness sensor error, or lamp error.

Select a display device from the list. The **Repair** button will be enabled. Click the refresh button to refresh the error status of the display device. The recovered display device will disappear from the **Fault Device List**.

- **Fault Device Alert**

- Display device in which error is detected will be reported by email.

Fill in all required fields. The **Test** and **OK** buttons will be enabled. Ensure the **Sender** information and at least one **Recipient** are entered.

3.3.9 Screen Adjustment

The screen settings (contrast, brightness, etc.) can be adjusted.

Choose display devices from the list of sets, and select the **Picture** tab.

Custom

Select an item and change the corresponding screen setting.



- **Color** and **Tint** are not available if the input source is **PC**.
- **Red**, **Green**, **Blue** and **PC Screen Adjustment** are not available if the input source is **Video**.
- **Color**, **Tint**, **Color Tone**, **Color Temp**, **Red**, **Green**, **Blue** and **PC Screen Adjustment** are not available if both **PC Source** and **Video Source** are selected.

Contrast

- Adjust the contrast for the selected display device.

Brightness

- Adjust the brightness for the selected display device.

Color

- Adjust the colors for the selected display device.

Tint (G/R)

- Adjust the tint for the selected display device.

Color Tone

- Adjust the background color tone for the selected display device.

Color Temp

- Adjust the color temperature for the selected display device.



This option is enabled if **Color Tone** is set to **Off**.

Red

- Customize the intensity of red color for the selected display device.

Green

- Customize the intensity of green color for the selected display device.

Blue

- Customize the intensity of blue color for the selected display device.

Options



Dynamic Contrast

Adjust the **Dynamic Contrast** for the selected display device.

Gamma Control

Change the gamma value for the selected display.

Auto Motion Plus

This option is used to view dynamic images.

- **Off:** Disable the **Auto Motion Plus** function.
- **Clear:** Set the level of **Auto Motion Plus** to clear. This mode is suitable to display vivid images.
- **Standard:** Set the level of **Auto Motion Plus** to standard.
- **Smooth:** Set the level of **Auto Motion Plus** to smooth. This mode is suitable to display smooth images.
- **Custom:** Customize the level of screen burn-in or flickering.
- **Demo:** This function demonstrates the technology of **Auto Motion Plus**. The result when the mode is changed can be previewed on the left side of the window.



Auto Motion Plus may not be available depending on the product.

Brightness Sensor

Enable or disable the **Brightness Sensor** for the selected display device.

The **Brightness Sensor** detects the ambient light intensity and automatically adjusts the screen brightness.



Brightness Sensor may not be available depending on the product.

Size



Picture Size

Adjust the screen size for the selected display device.

The **Detail** item will be disabled if **Picture Size** is set to a mode that does not support detailed configuration.

The -/+ buttons can be used to adjust **Zoom**.

The screen can be relocated using the up/down/left/right buttons.

Detail

You can view details of the selected screen size.

PC Screen Adjustment

Frequency adjustment or fine-tuning is available by using the -/+ buttons in **Coarse** or **Fine**.

To relocate the screen, click one of the four images below **Position**.

To automatically adjust the frequency, fine-tune or relocate the screen, click **Auto Adjustment**.

3.3.10 Sound Adjustment

You can change the sound settings.

Choose display devices from the list of sets, and select the **Sound** tab.



The **Bass** or **Treble** item will be disabled if the item is not supported by the selected set.

Bass

Adjust the bass for the selected display.

Treble

Adjust the treble for the selected display.

Balance (L/R)

Adjust the volume of the left and right speakers of the selected display device.

SRS TS XT

Enable or disable the **SRS TS XT** effect for the selected display device.

3.3.11 System Setup

Choose display devices from the list of sets, and select the **System** tab.

Video Wall

The **Video Wall** function can be used to display part of a whole picture or repeat the same picture on each of connected multiple display devices.



Video Wall is enabled only when devices are in the group.

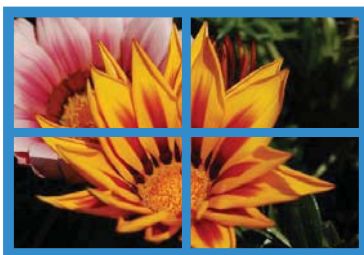
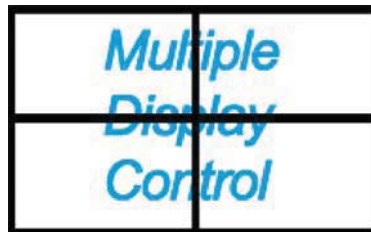
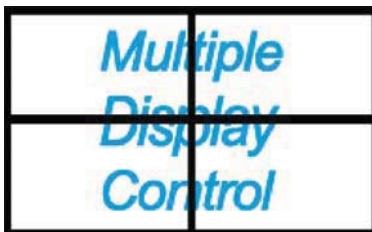


Video Wall

Enable or disable **Video Wall**.

Format

Select the format to display the split screen.



Full

Natural

H

Select the number of horizontal display devices.

A maximum of 15 displays can be arranged in a row.



A maximum of 6 can be assigned to V if 15 is assigned to H.

V

Select the number of vertical display devices.

A maximum of 15 displays can be arranged in a row.



A maximum of 6 can be assigned to V if 15 is assigned to H.

Screen Position

View the layout of displays (configured by the screen divider) or change the layout as required.

Screen Position and **Preview** are enabled when **Video Wall** is set to on.

Note that if multiple sets are selected, **Preview** is enabled only if the settings for H and V match the layout of the selected sets.

To change the **Position**, select a set and drag it to a new position.



The range of screen divider settings may differ depending on the model.

PIP

Basic information required to adjust **PIP** will appear in the menu screen.



- **PIP** will be disabled when **Video Wall** is **ON**.
- Note that **Picture Size** is disabled when **PIP** is **ON**.



PIP Size

View the **PIP Size** of the current display.

PIP Source

Select a PIP input source.

Sound Select

Select and enable the sound from either the primary screen or secondary screen.

Channel

The channel can be changed if **PIP Source** is **TV**.

General



User Auto Color

Automatically adjust the screen colors.

Auto Power

Set the product to automatically power on.

Standby Control

Set the standby mode to activate if an input source is not detected.

Fan & Temperature



Configure the settings required to detect the fan speed and internal temperature for the product's protection.

Fan Control

Select a method to configure the fan speed.

Fan Speed

Configure the fan speed.

Temperature

Detect the internal temperature by specifying the range of temperature.

Security



Safety Lock

Lock the on-screen menus.



To unlock the menus, set **Safety Lock** to **Off**.

Button Lock

Lock the buttons on the display device.



To unlock the buttons, set **Button Lock** to **Off**.

OSD Display



Source OSD

Select whether to display a message when the **Source** is changed.

Not Optimum Mode OSD

Select whether to display a message when a non-compatible mode is selected.

No Signal OSD

Select whether to display a message when there is no input signal.

MDC OSD

Select whether to display a message when settings are changed by the MDC.

Time



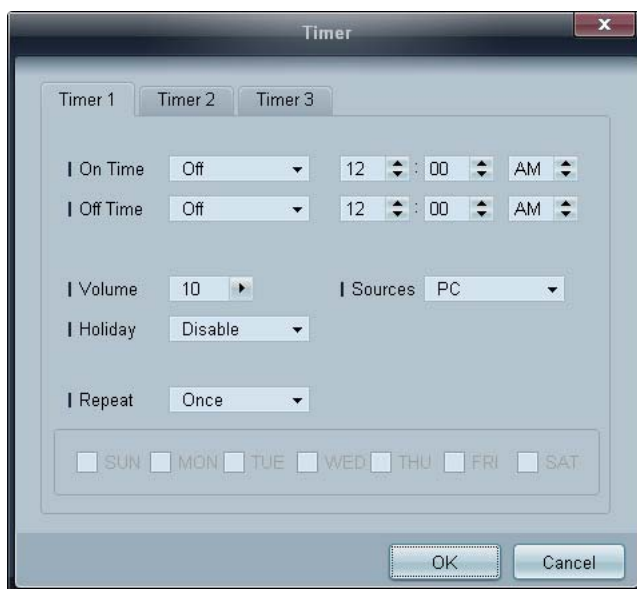
Clock Set



Change the current time on the selected display device according to the time set on a PC.

If the time is not set on the display device, null values will be displayed.

Timer



- **On Time:** Set the time to power on the selected display device.
- **Off Time:** Set the time to power off the selected display device.
- **Volume:** Specify the volume of the display device when it is powered on by **On Time**.
- **Source:** Specify the input source of the display device when it is powered on by **On Time**.
- **Holiday:** The **Holiday Management** settings can be applied to the **Timer**.
- **Repeat :** Specify the period for which you want to repeat the selected **Timer**.

- **Once:** Activate the timer only one time.
- **EveryDay:** Activate the timer every day.
- **Mon~Fri:** Activate the timer from Monday through Friday.
- **Mon~Sat:** Activate the timer from Monday through Saturday.
- **Sat~Sun:** Activate the timer on Saturdays and Sundays.
- **Manual:** Customize days of the week.



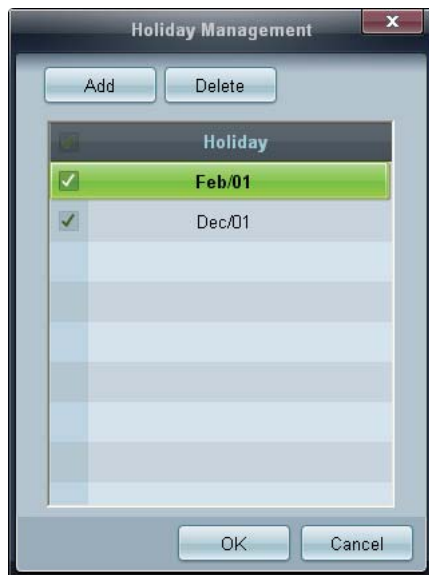
The checkboxes to select days of the week below **Repeat** are enabled only if **Manual** is selected.

Holiday Management

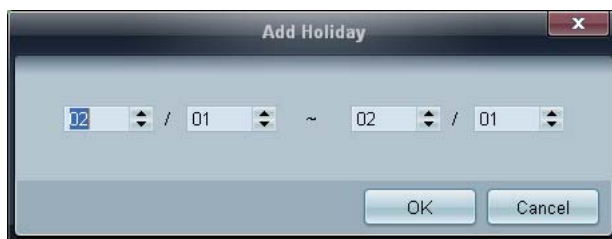
Holiday Management allows you to prevent devices that are set to be powered on by the **Timer** from turning on at a specified date.



The **Holiday Management** function can be enabled or disabled in the **Timer** settings menu.

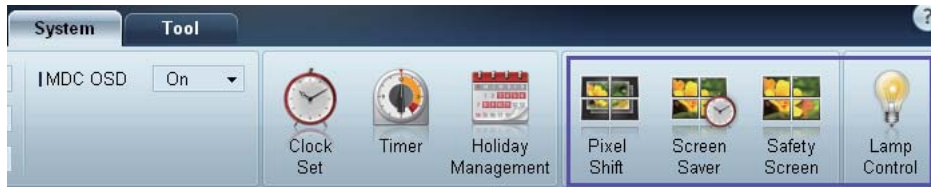


- **Add:** You can specify holidays:
Click the **Add** button in the **Holiday Management** window.

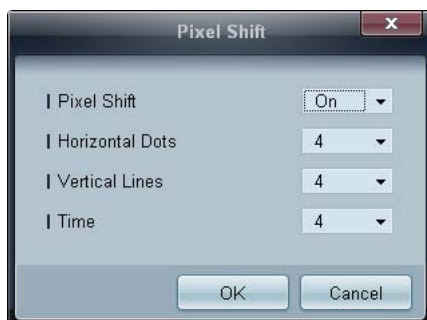


- **Delete:** Delete holidays. check the corresponding checkboxes and click this button.
- **List of holidays:** View a list of holidays you have added.

Screen Burn Protection



Pixel Shift



Move the screen slightly at specified time intervals to prevent screen burn-in.

Screen Saver



This function prevents screen burn-in when the screen of the selected display device is left idle for an extended period of time.

- **Interval:** Set the interval to activate the **Screen Saver**.
- **Mode:** The **Time** setting can vary for each **Mode**.

Safety Screen



The **Safety Screen** function can be used to prevent screen burn-in when a stationary image displays on the screen of a display device for an extended period of time.

Lamp Control

Lamp Control is used to adjust the backlight to reduce power consumption.



Automatically adjust the backlight of the selected display device at a specified time.

If **Manual Lamp Control** is adjusted, **Auto Lamp Control** will automatically switch to **Off**.

Manually adjust the backlight for the selected display.

If **Auto Lamp Control** is adjusted, **Manual Lamp Control** will automatically switch to **Off**.

- **Ambient Light: Ambient Light** detects ambient light intensity and automatically adjusts the screen brightness of all the LFDs in the same serial chain.

3.3.12 Tool Settings



1 Security

Panel Control

Turn on or off the screen of a display device.

Remote Control

Enable or disable the remote control.

2 Reset

Reset Picture

Reset the screen settings.

Reset Sound

Reset the sound settings.

Reset System

Reset the system settings.

Reset All

Reset the screen, sound and system settings at the same time.

3 Edit Column



Select the items you want to display in the list of sets.

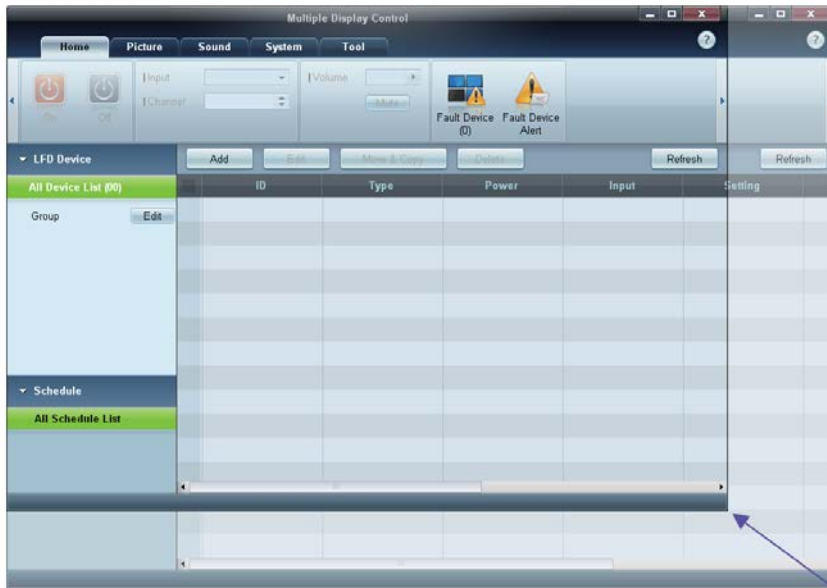
4 Information

View the program information.

3.3.13 Other Functions

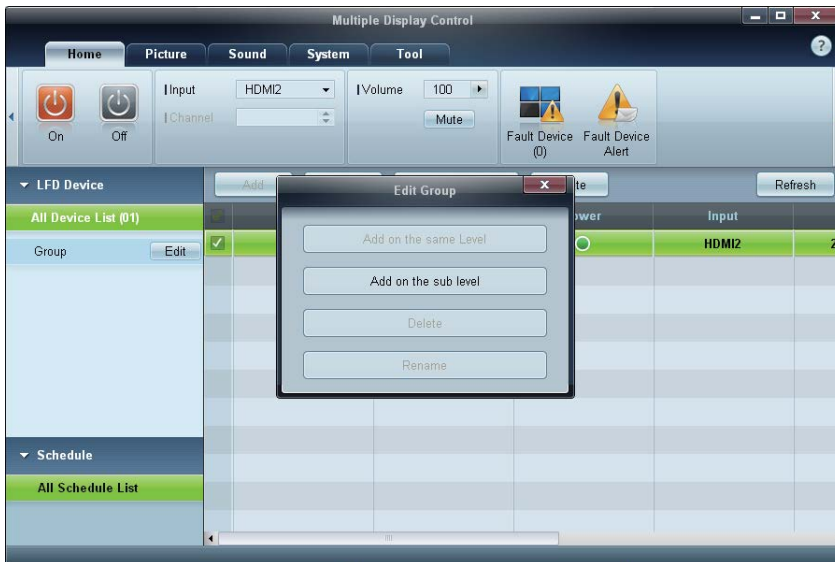
Resizing a Window

Place the mouse pointer on a corner of the program window. An arrow will appear. Move the arrow to customize the size of the program window.



Group Management

Creating Groups



Create groups and manage the list of sets on a group basis.



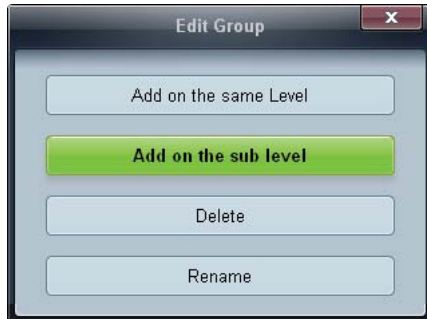
Duplicate group names cannot be used.

- 1 Right-click and select **Group>Edit** in the display device list section on the left side of the program window.
- 2 In the **Edit Group** window displayed, click **Add on the sub level** or **Add on the same level**.
 - **Add on the same level:** Create a group on the same level as the selected group.



The **Add on the same level** button is enabled only if at least one group is created.

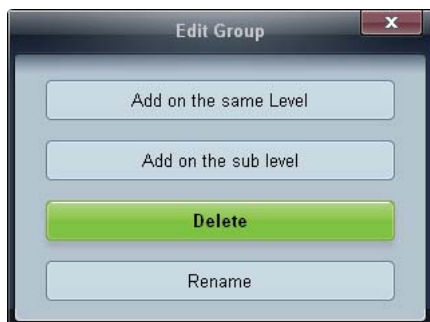
- **Add on the sub level:** Create a sub-group under the selected group.



- 3 Enter the group name.

Deleting Groups

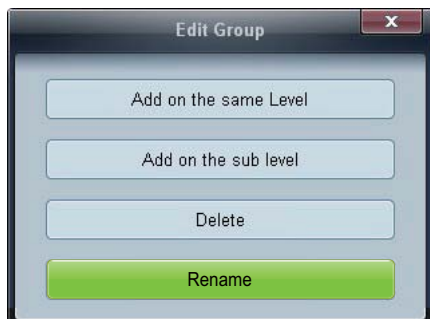
- 1 Select a group name, and click **Edit**.
- 2 In the **Edit Group** window displayed, click **Delete**.



- 3 Click **Yes**. The group will be deleted.

Renaming Groups

- 1 Select a group name, and click **Edit**.
- 2 In the **Edit Group** window displayed, click **Rename**.



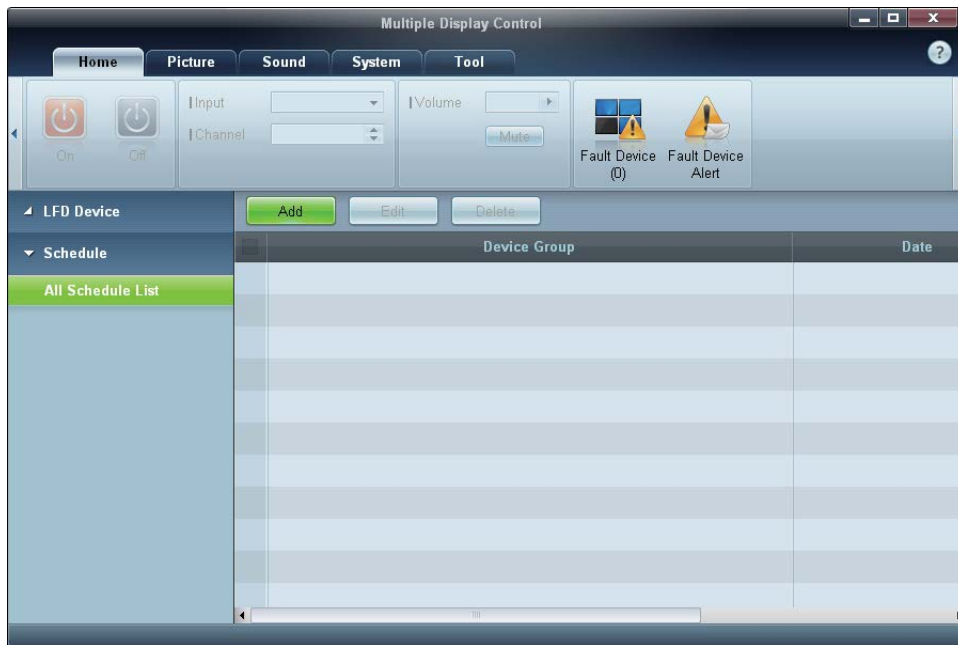
- 3 If a cursor appears in the old group name, enter a new group name.

Schedule Management

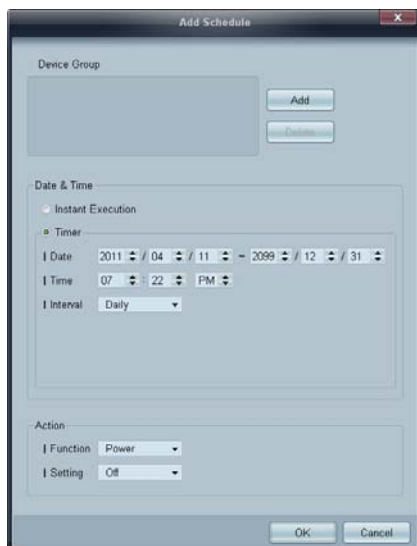
Creating Schedules

Create and register a schedule on a group basis.

- 1 Click **All Schedule List** in the schedule section on the left side of the program window. The **Add** button will be enabled in the middle.



- 2 Click the **Add** button. The **Add Schedule** window will appear.



- 3 Click **Add** below the **Device Group** item, and select the group you want to add a schedule to.



- 4 Select **Date&Time/Action** and click **OK**. The schedule will be added and a list of schedules will appear in the set list window.
 - **Device Group:** Select a group.
 - **Date&Time**
 - **Instant Execution:** Run the schedule immediately.
 - **Timer** Set the date, time and interval to run the schedule.
 - **Action:** Select a function that will activate at the specified time and interval.



Schedule Modification

To modify a schedule, select the schedule and click **Edit**.

Deleting a Schedule

To delete a schedule, select the schedule and click **Delete**.

3.3.14 Troubleshooting Guide

Issue	Solution
<p>The display you want to control does not appear on the system information chart.</p>	<ol style="list-style-type: none"> 1. Check the connection of the RS232C cable (check that the cable is properly connected to appropriate serial port). 2. Check that another display with a duplicate ID is not connected. Connecting displays with a duplicate ID can cause the displays not to be shown due to data collision. 3. Check that the display ID is within the range of 0 and 99. (Change the ID using the Display menu.) <ul style="list-style-type: none">  For a display that supports the ID in a range of 0 to 99, the ID should be set between 0 and 99.
<p>The display you want to control does not appear on the other Control Info Grids.</p>	<p>Check that the display is powered on. (See the power status in the system information chart.)</p> <p>Ensure you select the input source the display is connected to.</p>
<p>The following message appears repeatedly.</p> 	<p>Check that the display you want to control is selected.</p>
<p>Displays power on or off at different time from one another even though On Time or Off Time is set.</p>	<p>Adjust the time on the PC to synchronize the time between the connected displays.</p>
<p>The remote control does not work.</p>	<p>The remote control may not work if the RS-232C cable is removed or the program is closed abnormally while the Remote Control function is Disable. To resolve this, run the program again and set Remote Control to Enable.</p>






This program may malfunction sometimes due to a communication problem between the PC and display or electromagnetic waves emitted from nearby electronic devices.

How display properties are shown when multiple displays are used

- 1 When no display is selected: The default value is displayed.
- 2 When one display is selected: Settings for the selected display are displayed.
- 3 When two displays are selected (e.g. in sequence of **ID 1** and **ID 3**): The settings for **ID 1** are displayed before the settings for **ID 3**.
- 4 When the **All+Select** checkbox is checked and all displays are selected: The default settings are displayed.

4.1 Source List

 **MENU**  → **Input** → **Source List** → **ENTER** 

You can display the screen of a source device connected to the product. Select a source from source list to display the screen of the selected source.



- **DVI**
- **HDMI**
- **DisplayPort**
- **MagicInfo** - Activated when a network box is connected.






The input source can also be changed by using the **SOURCE** button on the remote control.

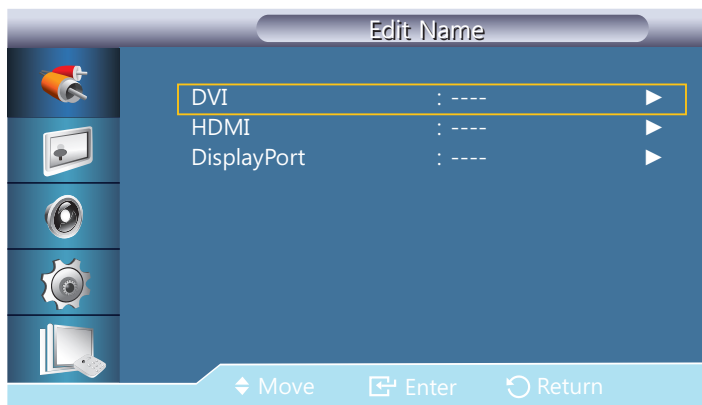


The screen may not display correctly if an incorrect source is selected for the source device you want to convert to.

4.2 Edit Name

 **MENU**  → **Input** → **Edit Name** → **ENTER** 

You can rename a connected source device.



- Sometimes the screen will not display properly unless the name of a source device is specified in **Edit Name**. In addition, it is best to rename the source device in **Edit Name** to obtain optimal picture quality.



The list can include the following source devices. Source devices on the list differ depending on the selected source.

- **VCR / DVD / Cable STB / HD STB / Satellite STB / AV Receiver / DVD Receiver / Game / Camcorder / DVD Combo / DHR / PC / DVI PC / DVI Devices**



Available settings in the **Picture** menu depend on the current source and settings made in **Edit Name**.

- When connecting a PC to the [HDMI IN (MAGICINFO)] port with HDMI cable, you should set the product to **PC** mode under **Edit Name**.
- When connecting a PC to the [HDMI IN (MAGICINFO)] port with HDMI to DVI cable, you should set the product to **DVI PC** mode under **Edit Name**.
- When connecting an AV devices to the [HDMI IN (MAGICINFO)] port with HDMI to DVI cable, you should set the product to **DVI Devices** mode under **Edit Name**.

4.3 Source AutoSwitch Settings

 MENU  → Input → Source AutoSwitch Settings → ENTER 

You can rename a connected source device.

- Turning on the display with **Source AutoSwitch On**, and the previous video source selection is not active, the display will automatically search the different video input sources for active video.

- **Source AutoSwitch**

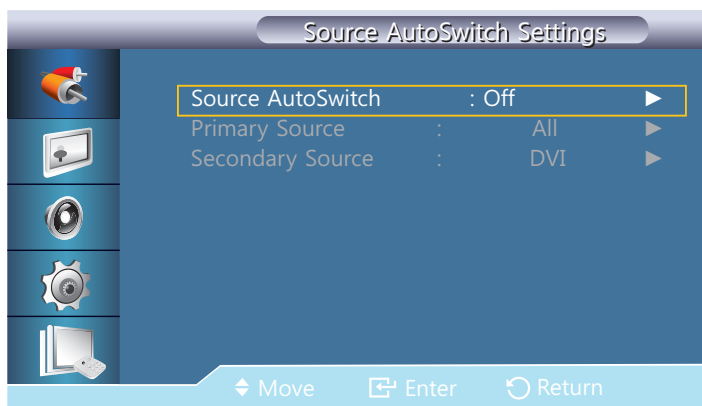
When the **Source AutoSwitch** is **On**, the display video source will automatically be searched for active video.

The **Primary Source** selection will be activated, if the current video source is not recognized.

Secondary Source selection will become active, if no primary video source is available.

If both the primary and secondary input sources are not recognized, the display will perform two searches for an active source, each search checking the primary and then secondary source. If both searches fail, the display will return to the first video source and display a message indicating that there is no signal.

When the **Primary Source** selection is set to **All**, the display will search all the video source inputs twice in sequence looking for an active video source, returning back to the first video source in the sequence if no video is found.



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

- **Primary Source**
Specify **Primary Source** for the automatic input source.
- **Secondary Source**
Specify **Secondary Source** for the automatic input source.

5

Screen Adjustment

Configure the **Picture** settings (**Brightness**, **Color(u)r Tone**, etc.).

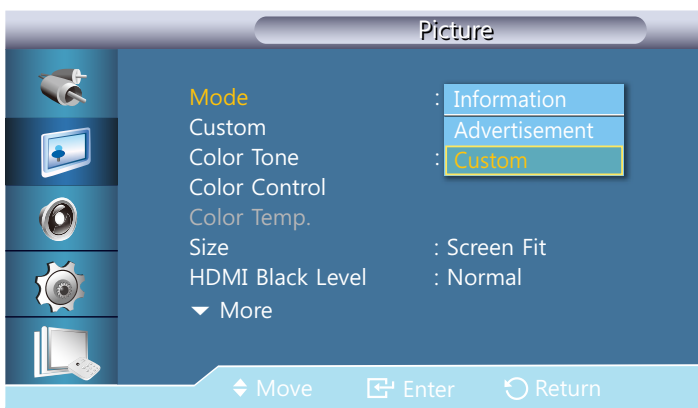
The layout of the **Picture** menu options may vary depending on the product.

5.1 Mode

 **MENU**  → **Picture** → **Mode** → **ENTER** 

Select a picture mode (**Mode**) suitable for the environment where the product will be used. Different **Mode** options are displayed depending on the current input source.

5.1.1 If the input source is DVI or DP






- **Information:** This mode reduces eye fatigue and is suitable for displaying information to the public.
- **Advertisement:** This mode is suitable for displaying video content and indoor/outdoor advertisements.
- **Custom:** Customize the screen settings as desired.

5.1.2 If the input source is HDMI



- **Dynamic:** This mode is suitable when the ambient light is bright.
- **Standard:** This mode is generally suitable for any environment.
- **Movie:** This mode reduces eye fatigue.
- **Custom:** Customize the screen settings as desired.

5.2 Custom

 MENU  → Picture → Custom → ENTER 

By using the on-screen menus, the contrast and brightness can be changed to your personal preference.

 Not available when **Dynamic Contrast** is set to **On**.



5.2.1 Contrast

Adjusts the Contrast.

5.2.2 Brightness

Adjusts the Brightness.

5.2.3 Sharpness

Adjusts the Sharpness.

5.2.4 Gamma

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

- **Natural**
- **Mode1**: Sets the picture brighter than **Natural**.
- **Mode2**: Sets the picture darker than **Mode1**.
- **Mode3**: Increases the contrast between dark and bright colors.

 Enabled only in **DVI**, **DisplayPort** mode.

5.2.5 Color

Adjusts the picture Color.



Available only in **HDMI** mode.




5.2.6 Tint

Adds a natural tone to the display.



Available only in **HDMI** mode.

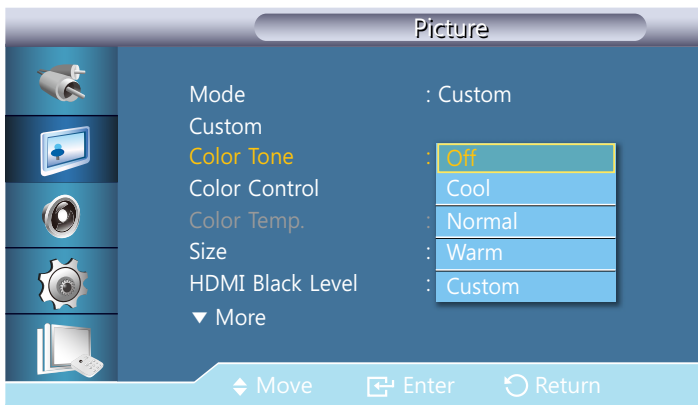
5.3 Color Tone


 MENU  → **Picture** → **Color Tone** → ENTER 

The color tones can be changed. The individual Color components are also user adjustable.

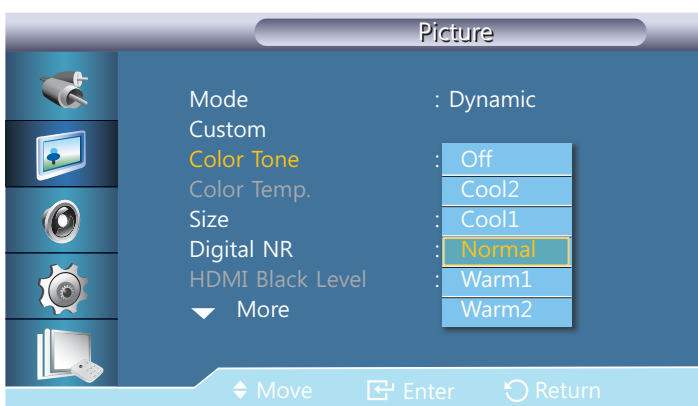
 Not available when **Dynamic Contrast** is set to **On**.


5.3.1 If the input source is DVI or DisplayPort






-  • If you set the **Color Tone** to **Cool**, **Normal**, **Warm**, or **Custom**, the **Color Temp.** function is disabled.
- If you set the **Color Tone** to **Off**, the **Color Control** function is disabled.

5.3.2 If the input source is HDMI

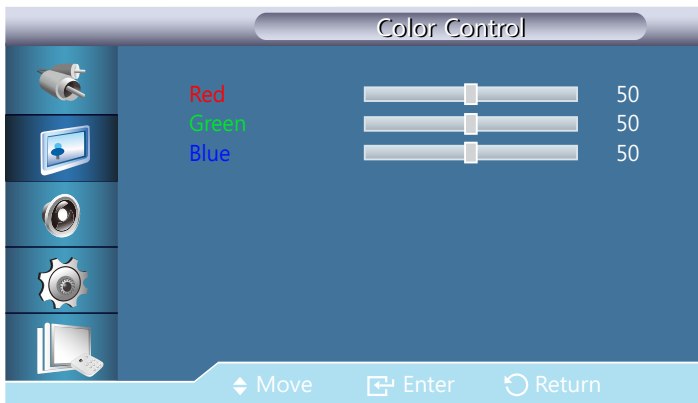


-  If you set the **Color Tone** to **Cool2**, **Cool1**, **Normal**, **Warm1**, or **Warm2**, the **Color Temp.** function is disabled.

5.4 Color Control




 MENU  → Picture → Color Control → ENTER 

Adjusts individual Red, Green, Blue color balance.



 Not available when **Dynamic Contrast** is set to **On**.

5.5 Color Temp.

 MENU  → Picture → Color Temp. → ENTER 

Adjust the color temperature (**Red/Green/Blue**). (Range: 3000K–15000K)

 Not available when **Dynamic Contrast** is set to **On**.

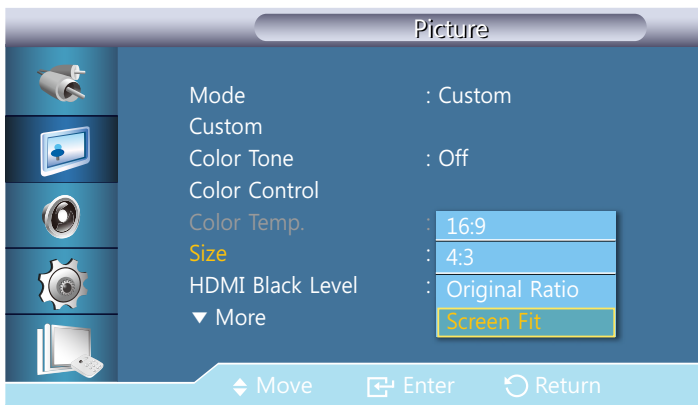




5.6 Size

 MENU  → Picture → Size → ENTER 

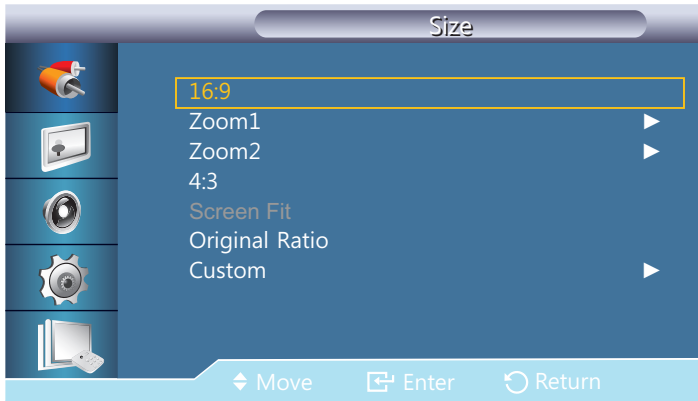
The **Size** can be switched.

5.6.1 If the input source is DVI or DisplayPort



- **16:9**: Sets the picture to 16:9 wide mode.
- **4:3**: Sets the picture to basic (4:3) mode.
 -  Do not set your product to 4:3 format for a long time. The borders displayed on the left and right, or top and bottom of the screen may cause image retention (screen burn) which is not covered by the warranty.
- **Original Ratio**: Display the image with its original aspect ratio.
 -  Available ports may differ depending on the model.(page 21)
- **Screen Fit**: Display images in the original aspect ratio.

5.6.2 If the input source is HDMI






- **16:9**: Sets the picture to 16:9 wide mode.
- **Zoom1**: Use for moderate magnification. Cuts off the top and sides.
- **Zoom2**: Use for a stronger magnification.
- **4:3**: Sets the picture to basic (4:3) mode.
 - Do not set your product to 4:3 format for a long time. The borders displayed on the left and right, or top and bottom of the screen may cause image retention(screen burn) which is not covered by the warranty.
- **Screen Fit**: Display images in the original aspect ratio.
- **Original Ratio**: Display the image with its original aspect ratio.
 - Available ports may differ depending on the model.(page 21)
- **Custom**: Changes the resolution to suit the user's preferences.
 - You can adjust and store settings for each external device you have connected to an input on the product.

5.6.3 Picture Sizes available by Input Source

Input Source	Picture Size
HDMI (720p, 1080i, 1080p)	16:9, 4:3, Screen Fit, Original Ratio, Custom
HDMI (480i, 480p)	16:9, 4:3, Screen Fit, Zoom1, Zoom2, Original Ratio, Custom
DVI, DP, HDMI(when a PC is connected)	16:9, 4:3, Screen Fit, Original Ratio

5.7 Digital NR

 MENU  → Picture → Digital NR → ENTER 

Turns the Digital Noise Reduction feature **Off / On**. The Digital Noise Reduction feature allows you to enjoy clearer and crisper images.

- **Off / On**



Available only in **HDMI** mode.




5.8 HDMI Black Level

 MENU  → Picture → HDMI Black Level → ENTER 

Selects the black level on the screen to adjust the screen depth.

- **Normal / Low**

5.9 Film Mode

 MENU  → Picture → Film Mode → ENTER 

Sets the product to automatically sense and process film signals from all sources and adjust the picture for optimum quality.

- **Off / On**



Available only in **HDMI** mode.




5.10 Dynamic Contrast

 MENU  → Picture → Dynamic Contrast → ENTER 

Adjust the screen contrast.

- **Off / On**




5.11 Lamp Control

 MENU  → Picture → Lamp Control → ENTER 

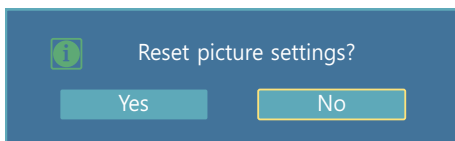
Adjusts the inverter lamp in order to reduce energy consumption.



5.12 Picture Reset

 MENU  → Picture → Picture Reset → ENTER 

Resets your current picture mode to its default settings.



Sound Adjustment

Configure the sound (**Sound**) settings for the product.

6.1 Mode




 **MENU**  **Sound**  **Mode**  **ENTER** 

Use the up and down arrow keys to select an option, and then press [].



- **Standard:** Selects the normal sound mode.
- **Music:** Emphasizes music over voices.
- **Movie:** Provides the best sound for movies.
- **Speech:** Selects **Speech** when watching a show that is mostly dialog (i.e., news).
- **Custom:** Selects **Custom** if you want to adjust the settings according to your personal preferences.

6.2 Custom

 **MENU**  → **Sound** → **Custom** → **ENTER** 

The sound settings can be adjusted to suit your personal preferences.



- You can hear the sound even when sound value is set to 0.
- If you adjust sound using **Custom** function, **Mode** will turn to **Custom** mode.

6.2.1 Bass

Emphasizes low frequency audio.



6.2.2 Treble

Emphasizes low frequency audio.






6.2.3 Balance

Allows you to Adjusts the sound balance between the left and right speakers.






6.3 Auto Volume

 MENU  → **Sound** → **Auto Volume** → ENTER 

Reduces the difference in volume control between broadcasters.

- **Off / On**




6.4 SRS TS XT

 MENU  → **Sound** → **SRS TS XT** → ENTER 

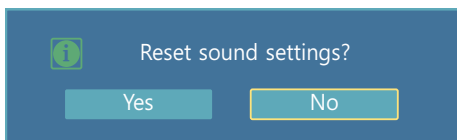
SRS TS XT is a patented SRS technology that solves the problem of playing 5.1 multichannel content over two speakers. TruSurround XT delivers a compelling, virtual surround sound experience through any two-speaker playback system, including internal television speakers. It is fully compatible with all multichannel formats.

- **Off / On**




6.5 Sound Reset

 MENU  → **Sound** → **Sound Reset** → ENTER 

Reset all sound settings to the factory defaults. Select **Sound Reset**, press ENTER , select **Yes** in the pop-up, and then press ENTER  again.



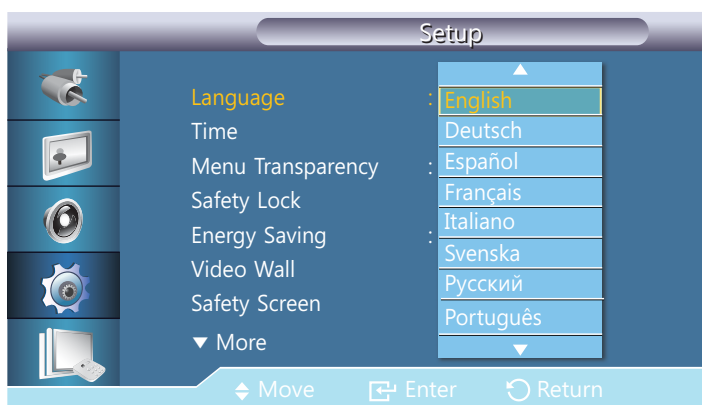
7.1 Language

 **MENU**  → **Setup** → **Language** → **ENTER** 

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 Time

 **MENU**  → **Setup** → **Time** → **ENTER** 

You can configure **Clock Set** or **Sleep Timer**. You can also set the product to automatically turn on or off at a specified time using the **Timer** function.

7.2.1 Clock Set

Set the clock to use the various various timer features of the product.



Clock Set

Set the **Date** and **Time**.

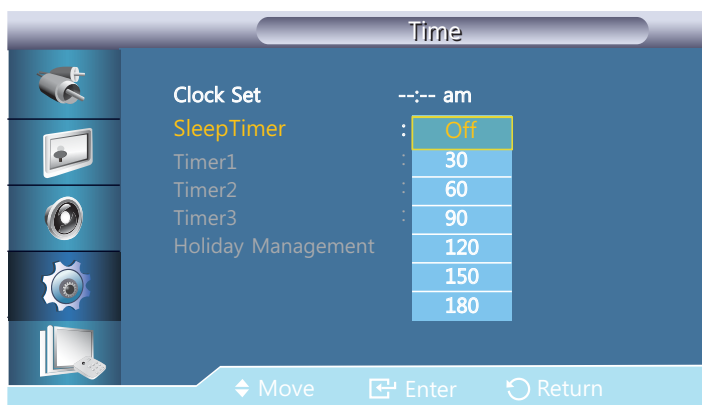
Select **Clock Set**. Select **Date** or **Time**, and then press [↵]. Use the number buttons to enter numbers or press the up and down arrow buttons. Use the left and right arrow buttons to move from one entry field to the next. Press [↵] when done. To exit **Clock Set**, select **Close**, and then press [↵].



You can set the **Date** and **Time** directly by pressing the number buttons on the remote control.

7.2.2 Sleep Timer

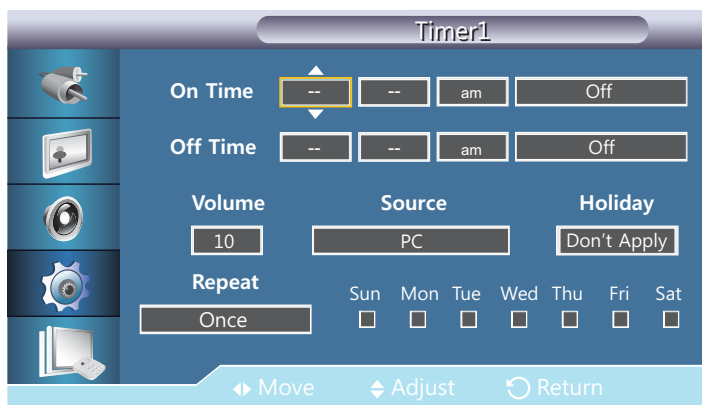
Automatically shuts off the product after a preset period of time. (30 min / 60 min / 90 min / 120 min / 150 min / 180 min / Off).



Use the up and down arrows to select a period of time, and then press [↵]. To cancel **Sleep Timer**, select **Off**.

7.2.3 Timer1 / Timer2 / Timer3

You can set the LCD display to automatically turn on or off at a specified time.

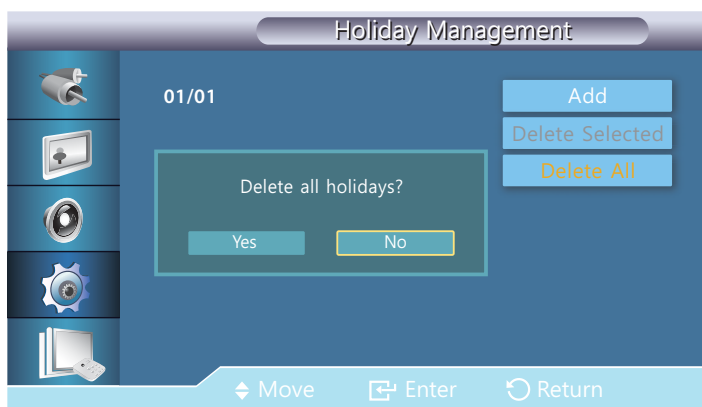


- **On Time**
- **Off Time**
- **Volume:** Set the desired volume level. Use the left and right arrow buttons to change the volume level.
- **Source:** Select the input source of your choice.
- **Holiday:** Select **Apply** to disable the timer on holidays and **Don't Apply** to enable the timer on holidays.
- **Repeat:** Available selections include **Once**, **EveryDay**, **Mon~Fri**, **Mon~Sat**, **Sat~Sun**, and **Manual**.
 - **Once:** The **Timer** goes off only once.
 - **EveryDay:** The **Timer** repeats daily.
 - **Mon~Fri:** The **Timer** repeats from Monday through Friday.
 - **Mon~Sat:** The **Timer** repeats from Monday through Saturday.
 - **Sat~Sun:** The **Timer** goes off on Saturday and Sunday.
 - **Manual:** Select a day of the week you want the Timer to go off.
- Only enabled when the clock is set using the **Clock Set** menu.
- The **Manual** option allows you to select a day of the week.

7.2.4 Holiday Management

Timer will be disabled during a period specified as a holiday.

Setting Holiday Management



- **Add:** Specify the period you want to add as a holiday.
- **Delete Selected:** You can delete selected holidays.
 - Only enabled when registered holidays are selected.
 - More than one holiday can be selected and deleted.
- **Delete All:** You can delete all the registered holidays.




7.3 Menu Transparency

MENU → **Setup** → **Menu Transparency** → **ENTER**

Change the transparency of the background of the OSD.



7.4 Safety Lock


 **MENU**  → **Setup** → **Safety Lock** → **ENTER** 

7.4.1 Change PIN

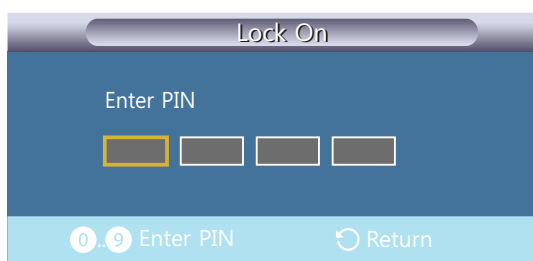


The password can be changed.

The preset password for the LCD Display is "0000".

 If you forgot your password, press the remote buttons **INFO** → **EXIT** → **MUTE** to reset the password to "0000."

7.4.2 Lock



This is the function that locks the OSD in order to keep the current settings or to prevent others from adjusting the settings.

 Selecting **Lock On** will enable **Lock Off**. To disable the **Lock** function, enter the password for **Lock Off**.




7.5 Energy Saving

 MENU  → Setup → Energy Saving → ENTER 

This feature adjusts the power consumption of the unit in order to save energy.

- Off / On

7.6 Video Wall

 MENU  → Setup → Video Wall → ENTER 

Customize the layout of multiple displays that are connected to form a video wall. In addition, display part of a whole picture or repeat the same picture on each of the connected multiple displays. To display multiple images, refer to MDC Help or the MagicInfo user guide. Some models may not support the MagicInfo function.



If more than four displays are connected horizontally and vertically, it is recommended that you use an input resolution of XGA (1024 x 768) level or higher to prevent a dark picture due to degradation in the contrast or color intensity.

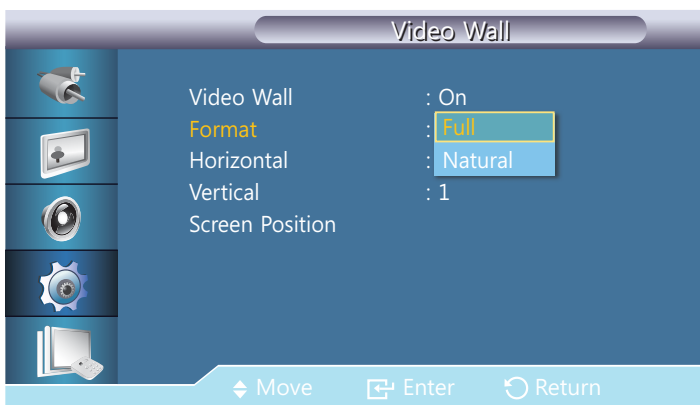
7.6.1 Video Wall

You can activate or deactivate **Video Wall**.

To organize a video wall, select **On**.

7.6.2 Format

Select a format to display images on multiple displays.



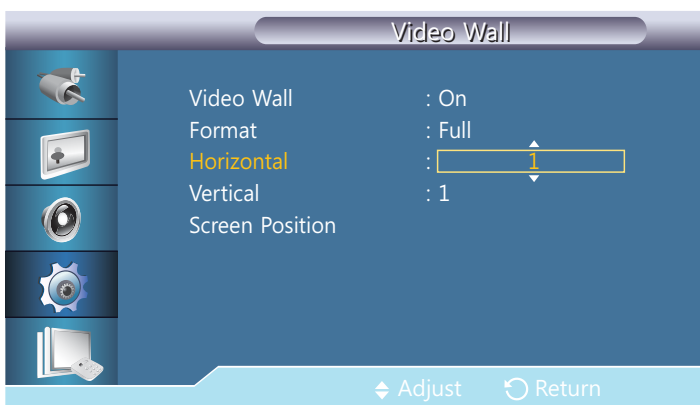
- **Full:** Display images in full screen.
- **Natural:** Display images at the original resolution without enlarging or reducing.



The **Screen Position** option is only enabled when **Video Wall** is set to **On**.

7.6.3 Horizontal

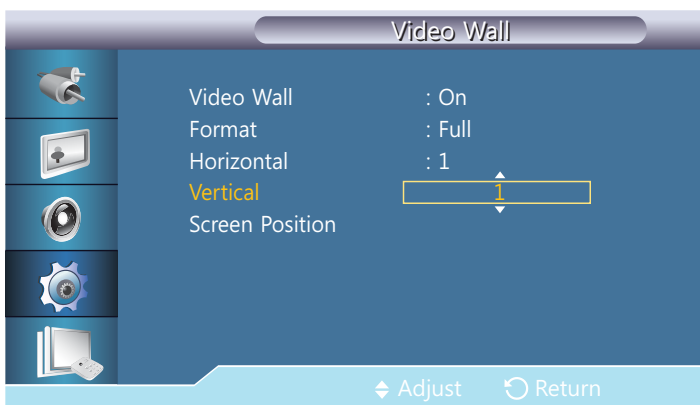
This function automatically divides the screen according to the specified number of horizontal displays. Enter the number of horizontally arranged displays. The horizontal screen will automatically be divided according to the number entered. A maximum of 15 displays can be assigned to the horizontal arrangement.



- The screen can be divided into a maximum of 100 screens (horizontal and vertical screens multiplied). For example, if the horizontal arrangement is set to 15, a maximum of 6 displays can be assigned to the vertical arrangement. Conversely, if the vertical arrangement is set to 15, a maximum of 6 displays can be assigned to the horizontal arrangement.
- The **Screen Position** option is only enabled when **Video Wall** is set to **On**.

7.6.4 Vertical

This function automatically divides the screen according to the specified number of vertical displays. Enter the number of vertically arranged displays. The vertical screen will automatically be divided according to the number entered. A maximum of 15 displays can be assigned to the vertical arrangement.



- The screen can be divided into a maximum of 100 screens (horizontal and vertical screens multiplied). For example, if the horizontal arrangement is set to 15, a maximum of 6 displays can be assigned to the vertical arrangement. Conversely, if the vertical arrangement is set to 15, a maximum of 6 displays can be assigned to the horizontal arrangement.
- The **Screen Position** option is only enabled when **Video Wall** is set to **On**.

7.6.5 Screen Position

You can customize the arrangement of split screens by moving displays identified with a number using the **Screen Position** function.

Select **Screen Position** to display the arrangement of displays (identified with a number) specified according to the Horizontal or Vertical settings. To customize the arrangement, move a number (display) using the direction buttons on the remote control and press [↵].



- A maximum of 100 displays can be arranged in **Screen Position**.
- The **Screen Position** option is only enabled when **Video Wall** is set to **On**.
- The **Screen Position** window is only displayed when **Horizontal** and **Vertical** are configured.

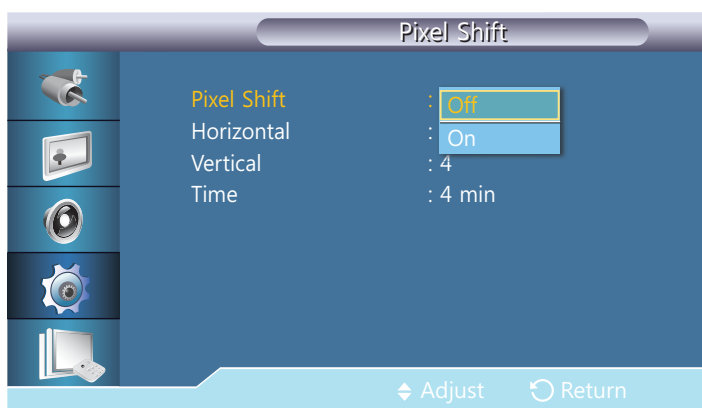
7.7 Safety Screen

 **MENU**  **Setup**  **Safety Screen**  **ENTER** 

The **Safety Screen** function is used to prevent afterimages that may appear when a still picture is displayed on the screen over a long time.

 This function is not available when the power is turned off.

7.7.1 Pixel Shift



Pixel Shift

To prevent after-images on the screen, you can use this function to have pixels move on the LCD in the horizontal or vertical direction.

- **Off / On**

Horizontal

Sets how many pixels the screen moves horizontally.

Five adjustment levels: 0, 1, 2, 3, and 4.

Vertical

Sets how many pixels the screen moves vertically.

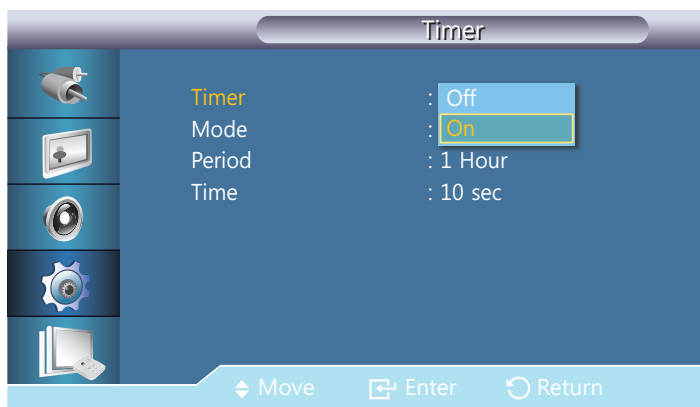
Five adjustment levels: 0, 1, 2, 3, and 4.

Time

Set the time interval for performing the horizontal or vertical movement, respectively.

7.7.2 Timer

You can set the timer for Screen Burn Protection.



Timer

If you start the operation to erase any residual image, the operation will be performed for the set period of time and then automatically finish.

- **Off / On**

Mode

You can change the **Safety Screen** Type.

- **Bar / Eraser / Pixel**

Period

Use this function to set the execution period for each mode set in the timer.

Time

Within the set period of time specify a time for execution.

- **Mode - Bar, Eraser, Pixel : 10~50 sec**

7.7.3 Bar

This function prevents after-images on the screen by moving long black and white vertical lines.



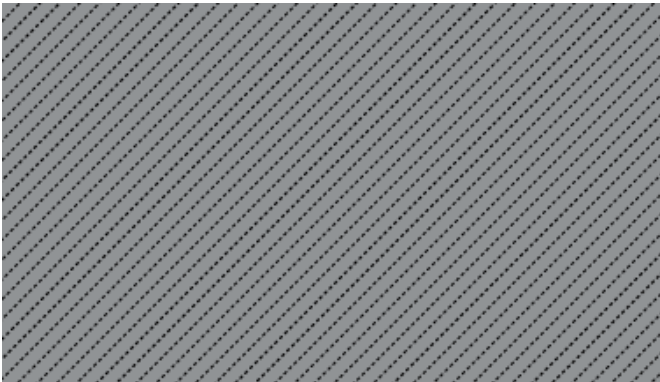
7.7.4 Eraser

This function prevents after-images on the screen by moving a rectangular pattern.



7.7.5 Pixel

This function prevents after-images by moving many pixels on the screen.



7.7.6 Side Gray

Select the brightness of the grey for the screen background.

- **Off / Light / Dark**

7.8 Resolution Select

 **MENU**  → **Setup** → **Resolution Select** → **ENTER** 

When the picture is not displayed properly on the screen when setting the graphics card resolution of the computer to 1024 x 768 @ 60Hz, 1280 x 768 @ 60Hz, 1360 x 768 @ 60Hz or 1366 x 768 @ 60Hz, by using this function(Resolution Select), you can have the picture displayed on the screen in the specified resolution.

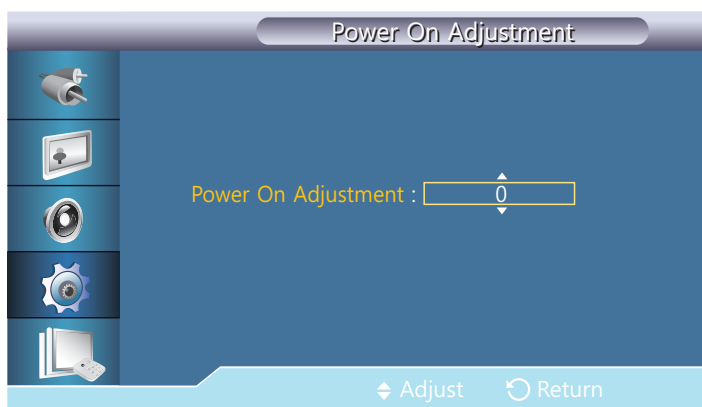



- Selecting the menu is only allowed when the graphics resolution is set to 1024 x 768 @ 60Hz, 1280 x 768 @ 60Hz, 1360 x 768 @ 60Hz or 1366 x 768 @ 60Hz.

7.9 Power On Adjustment




 MENU  → Setup → Power On Adjustment → ENTER 

You can set the warm-up time for the screen to turn on after the power button is pressed. (Range: 0 – 50 seconds)

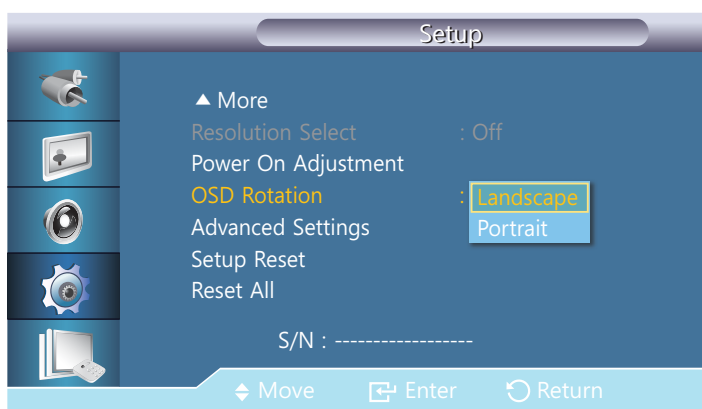


 A warm-up time that is too short may damage the product due to overvoltage.

7.10 OSD Rotation

 MENU  → Setup → OSD Rotation → ENTER 

You can rotate and display the menu window in portrait mode when the product is in portrait orientation.



- Landscape / Portrait

7.11 Advanced Settings

 MENU  → Setup → Advanced Settings → ENTER 

Configures the settings more elaborately.

7.11.1 Fan & Temperature

Protects the product by detecting the fan speed and internal temperature.

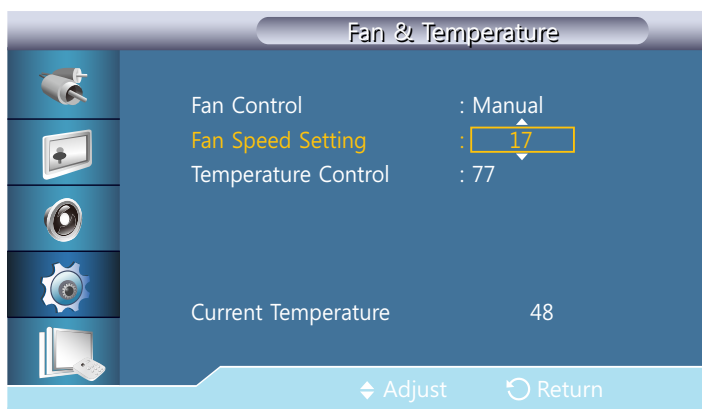
Fan Control

Selects auto or manual for the fan speed settings.

- Auto / Manual

Fan Speed Setting

Sets the fan speed within a range of 0 and 100.

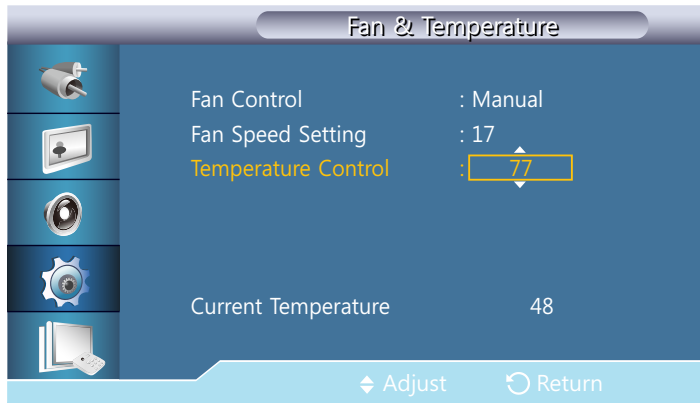


 Enabled when **Fan Control** is set to **Manual**.

Temperature Control

Detects the product's internal temperature and specifies the desired temperature.

The product is set to 77 °C by default.



- The picture will be dimmed if the temperature exceeds the specified temperature, and the product will automatically power off to prevent overheating if the temperature keeps rising.
- It is best to use the product at temperatures 75 - 80 °C (based on ambient temperature of 40 °C).
- Refer to "Specifications" herein for details about operating conditions.
- **Current Temperature:** Shows the current temperature of the product.

7.11.2 Auto Power

Enables or disables **Auto Power** for the product.

- **Off / On**



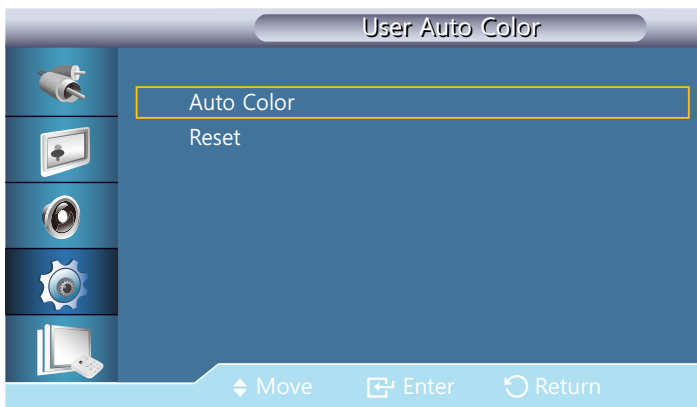
When **Auto Power** is **On**, the product will power on automatically as soon as it is connected to power.

7.11.3 Button Lock

Locks or unlocks the monitor control buttons on the product.

- **Off / On**

7.11.4 User Auto Color



Auto Color

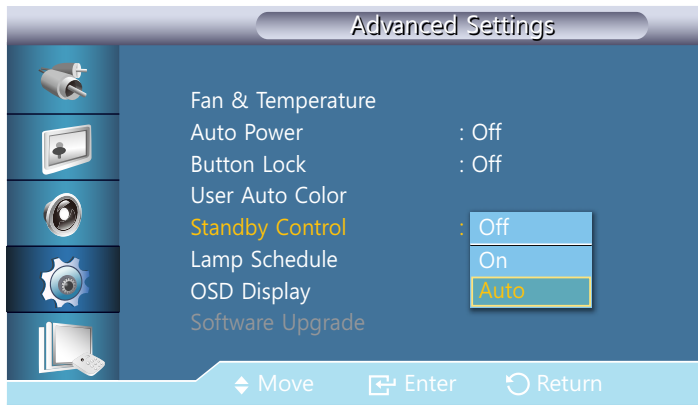
Automatically adjusts the colors.

Reset

Resets the color settings.

7.11.5 Standby Control

Sets the standby mode, which will be activated when no input signal is detected.



Off

A message will read <No Signal> if no input signal is detected.

On

Power-saving mode will be activated if no input signal is detected.

Auto

When no input signal is detected,

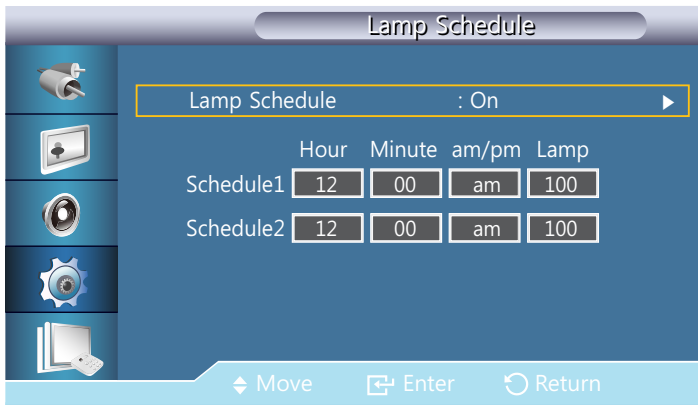
- Power-saving mode will be activated if an external device is connected.
- A message will read <No Signal> if no external device is connected.



This function at <Auto> doesn't work at **HDMI** source.

7.11.6 Lamp Schedule

Adjusts the luminance to a user-specified value at a specified time.



- **Off / On**



Only enabled when the clock is set using the **Clock Set** menu.

7.11.7 OSD Display

Displays or hides a menu item on the screen.

Source OSD

- **Off / On**

Not Optimum Mode OSD

- **Off / On**

No Signal OSD

- **Off / On**

MDC OSD

- **Off / On**

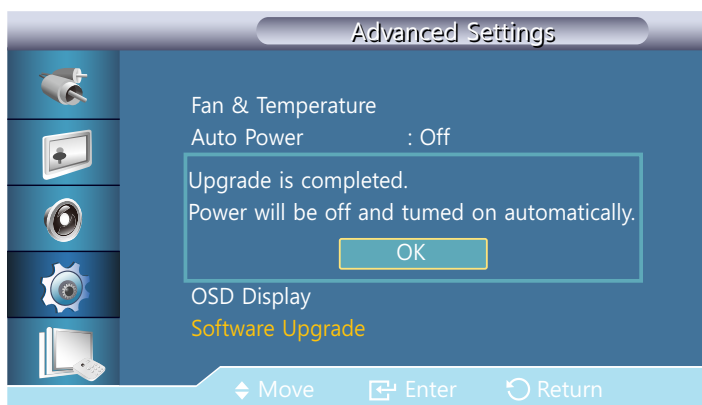
7.11.8 Software Upgrade

Performs a software upgrade.

- 1 Connect the product to a computer via a digital signal such as **DVI** or **HDMI**. Click the BMP image file converted from an SW code. The image below will appear on the screen of the product.
- 2 While a BMP image onto which the software code has been converted is displayed on the screen, select **Software Upgrade**.






- When there are two or more BMP images, they are displayed on the screen using a slideshow.
 - It is recommended that the playback interval between two BMP images in the slideshow should be one second. The image extraction probability will decrease with other playback intervals.
 - A BMP image might not be extracted if it is covered by another image (for example, the mouse pointer).
- 3 If a more recent version than the current software version is detected, you will be asked whether to upgrade the current software. If you select **<Yes>**, the upgrade is performed.
 - 4 When the software upgrade is completed, the product is turned off and on automatically.

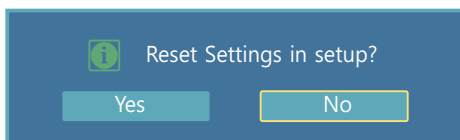


- - This only operates with a digital signal, such as in **DVI**, **HDMI** mode. (The input resolution must be identical to the panel resolution.)
 - In **HDMI** modes, the timing values used for both the PC and product are only supported if the **Edit Name** is set to **PC** or **DVI PC**.
 - This is only supported if the **Size** is set to **16:9**.




7.12 Setup Reset

 MENU  → Setup → Setup Reset → ENTER 

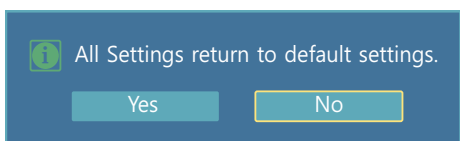
This option returns the current settings under system to the default factory settings.



7.13 Reset All

 MENU  → Setup → Reset All → ENTER 

This option returns all the current settings for a display to the default factory settings.



8.1 Requirements Before Contacting Samsung Customer Service Center

8.1.1 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 remains blank while the power LED blinks even when the product is correctly connected to a PC, perform product testing.

- 1 Power off both the PC and product.
- 2 Disconnect all the cables from the product.
- 3 Power on the product.
- 4 If **"No Signal"** is displayed, the product is operating normally.



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

8.1.2 Checking the Resolution and Frequency

"Not Optimum Mode" will briefly be displayed if a mode that exceeds a supported resolution is selected (refer to Supported Resolutions).

8.1.3 Check the followings.

Installation issue	
The screen keeps switching on and off.	Check the cable connection between the product and PC, and ensure the connection is secure. ("2.2 Connecting and Using a PC")
Blank spaces are found on all four sides of the screen when an HDMI or HDMI-DVI cable is connected to the product and PC.	The blank spaces found on the screen have nothing to do with the product. Blank spaces on the screen are caused by the PC or graphics card. To resolve the problem, adjust the screen size in the HDMI or DVI settings for the graphics card. If the graphics card settings menu does not have an option to adjust the screen size, update the graphics card driver to the latest version. (Please contact the graphics card or computer manufacturer for further details about how to adjust the screen settings.)

Screen issue	
The power LED is off. The screen will not switch on.	Make sure that the power cord is connected. ("2.2 Connecting and Using a PC")
"No Signal" is displayed on the screen (refer to "Connecting to a PC").	Check that the product is connected correctly with a cable ("2.2 Connecting and Using a PC")
	Check that the device connected to the product is powered on.
"Not Optimum Mode" is displayed.	This message is displayed when a signal from the graphics card exceeds the product's maximum resolution and frequency.
	Refer to the Standard Signal Mode Table and set the maximum resolution and frequency according to the product specifications.
The images on the screen look distorted.	Check the cable connection to the product ("2.2 Connecting and Using a PC")
The screen is not clear. The screen is blurry.	Remove any accessories (video extension cable, etc) and try again.
	Set the resolution and frequency to the recommended level.
The screen appears unstable and shaky.	Check that the resolution and frequency of the PC and graphics card are set within a range compatible with the product. Then, change the screen settings if required by referring to the Additional Information on the product menu and the Standard Signal Mode Table.
There are shadows or ghost images left on the screen.	
The screen is too bright. The screen is too dark.	Adjust Brightness and Contrast .
Screen color is inconsistent.	Go to Picture and adjust the Colo(u)r Temp. settings.
The colors on the screen have a shadow and are distorted.	Go to Picture and adjust the Colo(u)r Temp. settings.
White does not really look white.	Go to Picture and adjust the Colo(u)r Temp. settings.
There is no image on the screen and the power LED blinks every 0.5 to 1 second.	The product is in power-saving mode.
	Press any key on the keyboard or move the mouse to return to the previous screen.

Sound issue	
There is no sound.	Check the connection of the audio cable or adjust the volume ("2.2 Connecting and Using a PC")
	Check the volume.
The volume is too low.	Adjust the volume.
	If the volume is still low after turning it up to the maximum level, adjust the volume on your PC sound card or software program.
Remote control issue	
The remote control does not work.	Make sure that the batteries are correctly in place (+/-).
	Check if the batteries are flat.
	Check for power failure.
	Make sure that the power cord is connected.
	Check for any special lighting or neon signs switched on in the vicinity.
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.

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



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

9.1 General

Model Name		UD22B
Panel	Size	21.6 inches (54 cm)
	Display area	387.36 mm (H) x 387.36 mm (V) 15.3 inches (H) x 15.3 inches (V)
Display Color		16.7M
Dimensions (W x H x D) / Weight (without stand)		393.3 x 393.3 x 81.5 mm / 6.5 kg 15.5 x 15.5 x 3.2 inches / 14.3 lbs
VESA Mounting Interface		300 x 300 mm (11.8 x 11.8 inches)
Synchronization	Horizontal Frequency	30 ~ 81 KHz
	Vertical Frequency	56 ~ 85 Hz
Resolution	Optimum resolution	960 x 960 @ 60 Hz
	Maximum resolution	1920 x 1080 @ 60 Hz
Maximum Pixel Clock		148.5 MHz (Analog,Digital)
Signal connectors		Input : DVI IN, HDMI IN, DP IN, IR/AMBIENT SENSOR IN, RJ45 MDC, RS232C IN Output : DVI OUT(LOOPOUT), AUDIO OUT, IR OUT, RS232C OUT
Environmental considerations	Operating	Temperature : 32 °F ~ 104 °F (0 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
	Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing



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.



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.



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.



This device is a Class A 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

9.2 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 only functions when the product is connected to a PC with a power-saving function.

PowerSaver	Normal Operation		Power saving mode	Power off (Power Button off)
	Rating	Typical		
Power Indicator	On		Blinking	Off
Power Consumption	65 W	67 W	less than 0.5 W	less than 0.5 W



- The displayed power consumption level can vary in different operating conditions or when settings are changed.
- SOG(Sync On Green) is not supported.
- To reduce the power consumption to 0, turn off the switch at the back or disconnect the power cord. Disconnect the power cable if you will not be using the product for an extended period of time (during vacation, etc.).

9.3 Preset Timing Modes

 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. Using 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 your product.

- Check the frequency when you exchange a CDT product (connected to a PC) for an LCD product. If the LCD product does not support 85Hz, change the vertical frequency to 60Hz using the CDT product before you exchange it with the LCD product.

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

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 480	31.469	59.940	25.175	-/-
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	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, 960 x 960	59.731	59.971	75.500	-/+
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, 1280 x 1024	63.981	60.020	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
VESA, 1920 x 1080(RB)	66.587	59.934	138.500	+/-



Horizontal Frequency

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

Vertical Frequency

The product displays a single image multiple times per second (like a fluorescent light) to display what the viewer sees. The rate of a single image being displayed repeatedly per second is called vertical frequency or refresh rate. Vertical frequency is measured 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
CANADA	1-800-SAMSUNG (726-7864)	http://www.samsung.com/ca http://www.samsung.com/ch_fr (French)
MEXICO	01-800-SAMSUNG (726-7864)	http://www.samsung.com

LATIN AMERICA		
ARGENTINA	0800-333-3733	http://www.samsung.com
BRAZIL	0800-124-421 4004-0000	http://www.samsung.com
BOLIVIA	800-10-7260	http://www.samsung.com
CHILE	800-SAMSUNG (726-7864) From mobile 02-482 82 00	http://www.samsung.com
COLOMBIA	01-8000112112	http://www.samsung.com
COSTA RICA	0-800-507-7267	http://www.samsung.com
DOMINICA	1-800-751-2676	http://www.samsung.com
ECUADOR	1-800-10-7267	http://www.samsung.com
EL SALVADOR	800-6225	http://www.samsung.com
GUATEMALA	1-800-299-0013	http://www.samsung.com
HONDURAS	800-27919267	http://www.samsung.com
JAMAICA	1-800-234-7267	http://www.samsung.com
NICARAGUA	00-1800-5077267	http://www.samsung.com
PANAMA	800-7267	http://www.samsung.com
PERU	0-800-777-08	http://www.samsung.com
PUERTO RICO	1-800-682-3180	http://www.samsung.com
TRINIDAD & TOBAGO	1-800-SAMSUNG (726-7864)	http://www.samsung.com
VENEZUELA	0-800-100-5303	http://www.samsung.com

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ALBANIA	42 27 5755	http://www.samsung.com
AUSTRIA	0810 - SAMSUNG (7267864, € 0.07/min)	http://www.samsung.com
BELGIUM	02-201-24-18	http://www.samsung.com/be (Dutch) http://www.samsung.com/be_fr (French)
BOSNIA	05 133 1999	http://www.samsung.com
BULGARIA	07001 33 11	http://www.samsung.com
CROATIA	062 SAMSUNG (062 726 7864)	http://www.samsung.com
CZECH	800 - SAMSUNG (800-726786)	http://www.samsung.com
	Samsung Electronics Czech and Slovak, s.r.o., Oasis Florenc, Sokolovská 394/17, 180 00, Praha 8	
DENMARK	70 70 19 70	http://www.samsung.com
FINLAND	030 - 6227 515	http://www.samsung.com
FRANCE	01 48 63 00 00	http://www.samsung.com
GERMANY	01805 - SAMSUNG (726-7864,€ 0,14/Min)	http://www.samsung.com
CYPRUS	From landline : 8009 4000	http://www.samsung.com
GREECE	From landline : 80111-SAMSUNG (7267864) From landline & mobile : (+30) 210 6897691	http://www.samsung.com
HUNGARY	06-80-SAMSUNG (726-7864)	http://www.samsung.com
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MONTENEGRO	020 405 888	http://www.samsung.com
NETHERLANDS	0900 - SAMSUNG (0900-7267864) (€ 0,10/Min)	http://www.samsung.com
NORWAY	815-56 480	http://www.samsung.com
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RUMANIA	From landline : 08010-SAMSUNG (7267864) From landline & mobile : (+40) 21 206 01 10	http://www.samsung.com
SERBIA	0700 Samsung (0700 726 7864)	http://www.samsung.com
SLOVAKIA	0800 - SAMSUNG (0800-726 786)	http://www.samsung.com
SPAIN	902 - 1 - SAMSUNG (902 172 678)	http://www.samsung.com
SWEDEN	0771 726 7864 (SAMSUNG)	http://www.samsung.com
SWITZERLAND	0848-SAMSUNG (7267864, CHF 0.08/min)	http://www.samsung.com/ch http://www.samsung.com/ch_fr (French)
U.K	0330 SAMSUNG (7267864)	http://www.samsung.com
EIRE	0818 717100	http://www.samsung.com
LITHUANIA	8-800-77777	http://www.samsung.com
LATVIA	8000-7267	http://www.samsung.com
ESTONIA	800-7267	http://www.samsung.com
TURKEY	444 77 11	http://www.samsung.com

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

Appendix

CIS		
BELARUS	810-800-500-55-500	http://www.samsung.com
MOLDOVA	00-800-500-55-500	http://www.samsung.com

ASIA PACIFIC		
AUSTRALIA	1300 362 603	http://www.samsung.com
NEW ZEALAND	0800 SAMSUNG (0800 726 786)	http://www.samsung.com
CHINA	400-810-5858	http://www.samsung.com
HONG KONG	(852) 3698 - 4698	http://www.samsung.com/hk http://www.samsung.com/hk_en/
INDIA	1800 1100 11 3030 8282 1800 3000 8282 1800 266 8282	http://www.samsung.com
INDONESIA	0800-112-8888 021-5699-7777	http://www.samsung.com
JAPAN	0120-327-527	http://www.samsung.com
MALAYSIA	1800-88-9999	http://www.samsung.com
PHILIPPINES	1-800-10-SAMSUNG (726-7864) for PLDT 1-800-3-SAMSUNG (726-7864) for Digitel 1-800-8-SAMSUNG (726-7864) for Globe 02-5805777	http://www.samsung.com
SINGAPORE	1800-SAMSUNG (726-7864)	http://www.samsung.com
THAILAND	1800-29-3232 02-689-3232	http://www.samsung.com
TAIWAN	0800-329-999 0266-026-066	http://www.samsung.com
VIETNAM	1 800 588 889	http://www.samsung.com

MIDDIE EAST		
IRAN	021-8255	http://www.samsung.com
OMAN	800-SAMSUNG (726-7864)	http://www.samsung.com
KUWAIT	183-2255	http://www.samsung.com
BAHRAIN	8000-4726	http://www.samsung.com

MIDDLE EAST		
EGYPT	08000-726786	http://www.samsung.com
JORDAN	800-22273	http://www.samsung.com
MOROCCO	080 100 2255	http://www.samsung.com
SAUDI ARABIA	9200-21230	http://www.samsung.com
U.A.E	800-SAMSUNG (726-7864)	http://www.samsung.com

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

Responsibility for the Pay Service (Cost to Customers)



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

Not a product defect

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

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

A Product damage caused by customer's fault

Product damage caused by customer's mishandling or wrong repair

If a product damage is caused by;

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

Others

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



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

Optimum Picture Quality and Afterimage Burn-in Prevention

Optimum Picture Quality

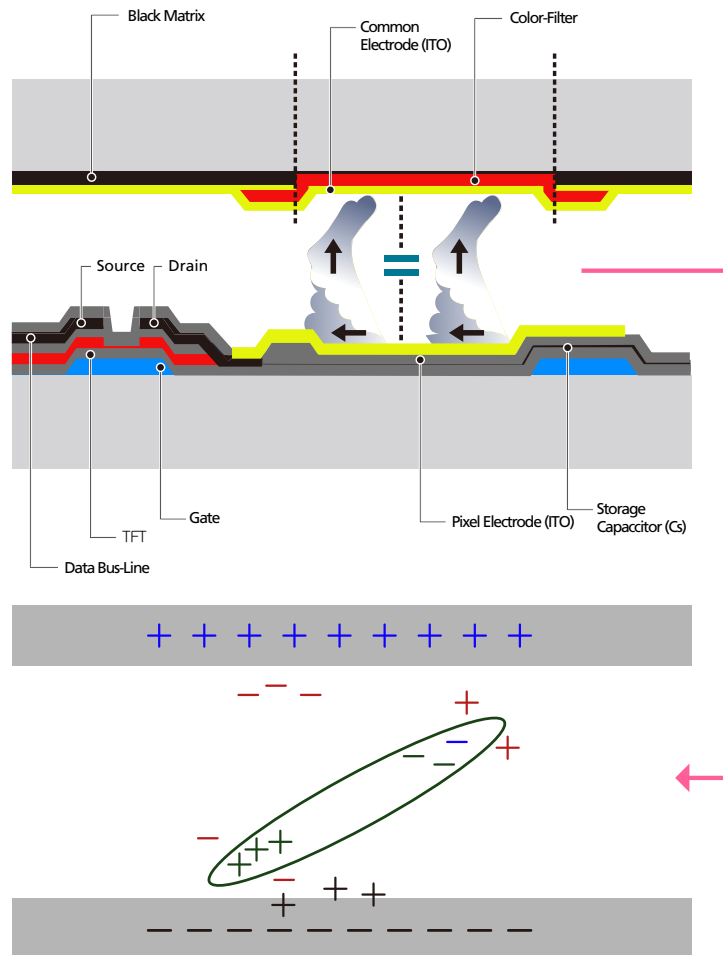
- To enjoy the optimum picture quality, go to Control Panel on your PC and adjust the resolution and refresh rate as follows. The picture quality of TFT-LCDs may degrade if the optimum resolution is not selected.
 - Resolution: 960 x 960
 - Vertical frequency (refresh rate): 56 ~ 85 Hz
- Due to the nature of the manufacturing of this product, approximately 1 pixel per million (1ppm) may be brighter or darker on the panel. This does not affect product performance.
 - The number of sub-pixels by panel type: 2,764,800
- Run "**Auto Adjustment**" to improve the picture quality. If noise is still found even after auto adjustment, adjust **Coarse** or **Fine**.
- Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.
 - Activate power-saving mode or a dynamic screen saver if you will not be using the product for an extended period of time.
- Unlike CDT monitors, TFT-LCD monitors (due to the nature of the panel) can be set to only one resolution to obtain the optimum picture quality. Therefore, setting 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 your monitor.

Prevention of Afterimage Burn-in

What is afterimage burn-in?

Afterimage burn-in should not occur when the LCD panel is operating normally. Normal operation refers to a continuously changing video pattern. If the LCD panel displays a fixed pattern for an extended period of time (more than 12 hours), a slight voltage difference may occur between the electrodes in pixels that control the liquid crystals.

Such a voltage difference between electrodes increases with time and makes the liquid crystals thinner. When this occurs, a previous image can remain on the screen when the pattern changes. To prevent this, the accumulated voltage difference should be reduced.

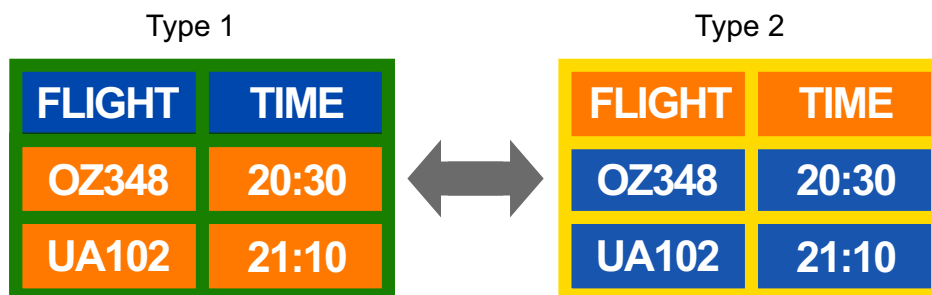


- Powering Off, Screen Saver and Power Saving Mode
 - Power off the product for 4 hours after using it for 20 hours.

Appendix

- Power off the product for 2 hours after using it for 12 hours.
- Go to Display Properties > Power Supply on your PC and set the product to power off as required.
- Using a screen saver is recommended.
It is best to use a single-color or moving-image screen saver.

- Regular color Change



Use 2 colors

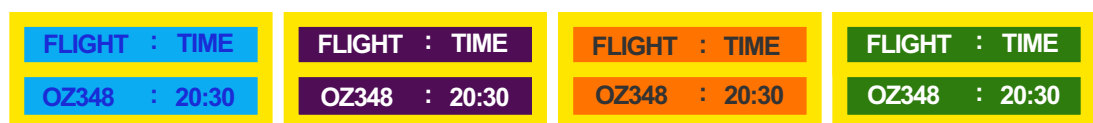
Switch between 2 colors every 30 minutes as shown above.

- Avoid combinations of a text color and background color of contrasting brightness.
Avoid using grey as it may contribute to afterimage burn-in.
Avoid using colors of contrasting brightness (black and white; grey).



- Regular Text color Change

- Use bright colors of similar brightness.
Interval: Change text color and background color every 30 minutes



- Move and change text every 30 minutes as shown below.



- Regularly display a moving image along with a logo.
Interval: Display a moving image along with a logo for 60 seconds after using for 4 hours.
- The best way to protect the product from afterimage burn-in is switching the power off or setting the PC or system to run a screen saver when not in use. Also, Warranty service may be limited depending on instruction guide.

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



(Applicable in countries with separate collection systems)

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

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

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

Correct disposal of batteries in this product



(Applicable in countries with separate collection systems)

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

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

Terminology

OSD(On Screen Display)

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

Gamma

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

Gray 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 product.

Horizontal Frequency

Characters or images displayed on the product 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 product 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 product and PC to produce an optimum display environment.

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

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