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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Before Using the Product

Cleaning

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

Take the following steps when cleaning.

1. Power off the 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).
### Safety Precautions

<table>
<thead>
<tr>
<th>Caution</th>
<th>RISK OF ELECTRIC SHOCK DO NOT OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caution:</strong> 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.</td>
<td></td>
</tr>
</tbody>
</table>

![Symbol] 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.

![Symbol] This symbol alerts you that important literature concerning operation and maintenance has been included with this product.

### Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Warning]</td>
<td>A serious or fatal injury may result if instructions are not followed.</td>
</tr>
<tr>
<td>![Caution]</td>
<td>Personal injury or damage to properties may result if instructions are not followed.</td>
</tr>
<tr>
<td>![Prohibited]</td>
<td>Activities marked by this symbol are prohibited.</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Instructions marked by this symbol must be followed.</td>
</tr>
</tbody>
</table>
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 REPELLENTS OR CIGARETTE 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.
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.
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)
- "MagicInfo Lite" CD
- Batteries (Not available in some locations)
- Power cord
- External sensor Kit
- DVI cable
- User manual
- Remote Control
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.

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

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[DP IN]</td>
<td>Connects to a PC using a DP cable.</td>
</tr>
</tbody>
</table>
| [HDMI IN (MAGICINFO)]| Connects to a source device using an HDMI cable.  
  - 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

<table>
<thead>
<tr>
<th>Configuration</th>
<th>1 x 1</th>
<th>2 x 2</th>
<th>3 x 3</th>
<th>4 x 4</th>
<th>5 x 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
</tbody>
</table>

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.

**Figure 1.2 Side view**

**Figure 1.3 Plane view**

A Same as vertical installation
B B = C = D : Identical gap
C B = C = D : Identical gap
D B = C = D : Identical gap
E Ambient Temp Measuring Point

**Recommended distances**

(Unit: mm)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>1 x 1</th>
<th>2 x 2</th>
<th>3 x 3</th>
<th>4 x 4</th>
<th>5 x 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>B (= C = D)</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
</tbody>
</table>

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

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

- Pin assignment

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detect data carrier</td>
</tr>
<tr>
<td>2</td>
<td>Received data</td>
</tr>
<tr>
<td>3</td>
<td>Transmitted data</td>
</tr>
<tr>
<td>4</td>
<td>Prepare data terminal</td>
</tr>
<tr>
<td>5</td>
<td>Signal ground</td>
</tr>
<tr>
<td>6</td>
<td>Prepare data set</td>
</tr>
<tr>
<td>7</td>
<td>Send request</td>
</tr>
<tr>
<td>8</td>
<td>Clear to send</td>
</tr>
<tr>
<td>9</td>
<td>Ring indicator</td>
</tr>
</tbody>
</table>
Preparations

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

<table>
<thead>
<tr>
<th>Pin No</th>
<th>Standard Color</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White and orange</td>
<td>TX+</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
<td>TX-</td>
</tr>
<tr>
<td>3</td>
<td>White and green</td>
<td>RX+</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
<td>NC</td>
</tr>
<tr>
<td>5</td>
<td>White and blue</td>
<td>NC</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>White and brown</td>
<td>NC</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
<td>NC</td>
</tr>
</tbody>
</table>
## Preparations

- Connector: RJ45

### <Direct LAN cable>

<table>
<thead>
<tr>
<th>Signal</th>
<th>P1</th>
<th>P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX+</td>
<td>1</td>
<td>&lt;-----&gt; 1</td>
</tr>
<tr>
<td>TX-</td>
<td>2</td>
<td>&lt;-----&gt; 2</td>
</tr>
<tr>
<td>RX+</td>
<td>3</td>
<td>&lt;-----&gt; 3</td>
</tr>
<tr>
<td>RX-</td>
<td>6</td>
<td>&lt;-----&gt; 6</td>
</tr>
</tbody>
</table>

### <Cross LAN cable>

<table>
<thead>
<tr>
<th>Signal</th>
<th>P1</th>
<th>P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX+</td>
<td>1</td>
<td>&lt;-----&gt; 3</td>
</tr>
<tr>
<td>TX-</td>
<td>2</td>
<td>&lt;-----&gt; 6</td>
</tr>
<tr>
<td>RX+</td>
<td>3</td>
<td>&lt;-----&gt; 1</td>
</tr>
<tr>
<td>RX-</td>
<td>6</td>
<td>&lt;-----&gt; 2</td>
</tr>
</tbody>
</table>
1.4.2 Connection

- Connection 1

- Connection 2
- Connection 3
1.4.3 Control Codes

Viewing control state (Get control command)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>Command</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Controlling (Set control command)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>Command</td>
<td></td>
<td>1</td>
<td>Value</td>
<td></td>
</tr>
</tbody>
</table>

Command

<table>
<thead>
<tr>
<th>No.</th>
<th>Command type</th>
<th>Command</th>
<th>Value range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power control</td>
<td>0x11</td>
<td>0~1</td>
</tr>
<tr>
<td>2</td>
<td>Volume control</td>
<td>0x12</td>
<td>0~100</td>
</tr>
<tr>
<td>3</td>
<td>Input source control</td>
<td>0x14</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Picture Size control</td>
<td>0x15</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Video wall mode control</td>
<td>0x5C</td>
<td>0~1</td>
</tr>
<tr>
<td>6</td>
<td>Safety Lock</td>
<td>0x5D</td>
<td>0~1</td>
</tr>
</tbody>
</table>

- 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

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data 1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x11</td>
<td>1</td>
<td>1</td>
<td>&quot;Power&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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)**

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x11</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x11</td>
<td></td>
<td>1</td>
<td>&quot;Power&quot;</td>
</tr>
</tbody>
</table>

  1 : Power ON
  0 : Power OFF

- **Ack**

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>‘A’</td>
<td>0x11</td>
<td>&quot;Power&quot;</td>
<td></td>
</tr>
</tbody>
</table>

- **Nak**

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>‘N’</td>
<td>0x11</td>
<td>&quot;ERR&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Preparations

Volume control

- Function
  The volume of a product can be adjusted using a PC.

- Viewing volume state (Get Volume Status)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x12</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- Setting the volume (Set Volume)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x12</td>
<td></td>
<td>1</td>
<td>&quot;Volume&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

- Ack

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>'A'</td>
<td>0x12</td>
<td>&quot;Volume&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

- Nak

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>'N'</td>
<td>0x12</td>
<td>&quot;ERR&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

Input source control

- **Function**
  The input source of a product can be changed using a PC.

- **Viewing input source state (Get Input Source Status)**

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x14</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- **Setting the input source (Set Input Source)**

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x14</td>
<td>1</td>
<td>1</td>
<td>&quot;Input Source&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x14</td>
<td>PC</td>
</tr>
<tr>
<td>0x1E</td>
<td>BNC</td>
</tr>
<tr>
<td>0x18</td>
<td>DVI</td>
</tr>
<tr>
<td>0x0C</td>
<td>Input source</td>
</tr>
<tr>
<td>0x04</td>
<td>S-video</td>
</tr>
<tr>
<td>0x08</td>
<td>Component</td>
</tr>
<tr>
<td>0x20</td>
<td>MagicInfo</td>
</tr>
<tr>
<td>0x1F</td>
<td>DVI_video</td>
</tr>
<tr>
<td>0x30</td>
<td>RF (TV)</td>
</tr>
<tr>
<td>0x40</td>
<td>DTV</td>
</tr>
<tr>
<td>0x21</td>
<td>HDMI1</td>
</tr>
<tr>
<td>0x22</td>
<td>HDMI1_PC</td>
</tr>
<tr>
<td>0x23</td>
<td>HDMI2</td>
</tr>
<tr>
<td>0x24</td>
<td>HDMI2_PC</td>
</tr>
<tr>
<td>0x25</td>
<td>Display Port</td>
</tr>
</tbody>
</table>

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

- Nak

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

Picture Size Control

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

- Get Picture Size Status

  ![Table]

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x15</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- Set Picture Size

  ![Table]

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data 1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>&quot;Aspect&quot;</td>
<td></td>
</tr>
</tbody>
</table>

"Aspect" : Picture Size Code

- Ack
Preparations

"Aspect" : Picture Size Code

- Nak

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

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)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x5C</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- Setting the video wall (Set Video Wall Mode)

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x5C</td>
<td></td>
<td>1</td>
<td>&quot;Video Wall Mode&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

1 : **Full**

0 : **Natural**

- Ack

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>'A'</td>
<td>0x5C</td>
<td>&quot;Video Wall Mode&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

- Nak

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td></td>
<td>3</td>
<td>'N'</td>
<td>0x5C</td>
<td>&quot;ERR&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

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)**
  
<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x5D</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- **Enabling or disabling safety lock (Set Safety Lock Enable / Disable)**
  
<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0x5D</td>
<td></td>
<td>1</td>
<td>&quot;Safety Lock&quot;</td>
</tr>
</tbody>
</table>

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

1 : ON

0 : OFF

- **Ack**

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td>3</td>
<td></td>
<td>‘A’</td>
<td>0x5D</td>
<td>&quot;Safety Lock&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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

- **Nak**

<table>
<thead>
<tr>
<th>Header</th>
<th>Command</th>
<th>ID</th>
<th>Data length</th>
<th>Ack/Nak</th>
<th>r-CMD</th>
<th>Val1</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAA</td>
<td>0xFF</td>
<td>3</td>
<td></td>
<td>‘N’</td>
<td>0x5D</td>
<td>&quot;ERR&quot;</td>
<td></td>
</tr>
</tbody>
</table>

*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.
Connecting and Using a Source Device

Connection Using an HDMI Cable

Connection Using an 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.
Connecting and Using a Source Device

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

Assigns an individual ID to the SET.

![Multi Control menu]

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 MDCUnified" 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 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

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Menu Bar</td>
</tr>
<tr>
<td>2</td>
<td>Device Category</td>
</tr>
<tr>
<td>3</td>
<td>Schedule Category</td>
</tr>
<tr>
<td>4</td>
<td>Set List</td>
</tr>
<tr>
<td>5</td>
<td>Modify the Set List</td>
</tr>
<tr>
<td>6</td>
<td>Help Topics</td>
</tr>
</tbody>
</table>
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.
Using MDC

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

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.

Enable or disable Video Wall.

Format

Select the format to display the split screen.

- Full
- Natural
Using MDC

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.
**Using MDC**

**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.
Using MDC

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.
Using 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**.
Using MDC

- **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

Press OK to play a selected mode.
Using MDC

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.
Using MDC

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

<table>
<thead>
<tr>
<th>Issue</th>
<th>Solution</th>
</tr>
</thead>
</table>
| The display you want to control does not appear on the system information chart. | 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.)  
  
  For a display that supports the ID in a range of 0 to 99, the ID should be set between 0 and 99. |
| The display you want to control does not appear on the other Control Info Grids. | Check that the display is powered on. (See the power status in the system information chart.)  
Ensure you select the input source the display is connected to. |
| The following message appears repeatedly. | Check that the display you want to control is selected. |
| Displays power on or off at different time from one another even though On Time or Off Time is set. | Adjust the time on the PC to synchronize the time between the connected displays. |
| The remote control does not work. | 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. |

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

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

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.
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

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

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

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

Adjusts individual Red, Green, Blue color balance.

Not available when Dynamic Contrast is set to On.

5.5 Color Temp.

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

Not available when Dynamic Contrast is set to On.
5.6 Size

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

<table>
<thead>
<tr>
<th>Input Source</th>
<th>Picture Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDMI (720p, 1080i, 1080p)</td>
<td>16:9, 4:3, Screen Fit, Original Ratio, Custom</td>
</tr>
<tr>
<td>HDMI (480i, 480p)</td>
<td>16:9, 4:3, Screen Fit, Zoom1, Zoom2, Original Ratio, Custom</td>
</tr>
<tr>
<td>DVI, DP, HDMI (when a PC is connected)</td>
<td>16:9, 4:3, Screen Fit, Original Ratio</td>
</tr>
</tbody>
</table>
5.7 Digital NR

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

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

- Normal / Low

5.9 Film Mode

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

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.
6 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

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

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

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.
Setup

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.
Setup

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 [Enter].

- 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

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.

- **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 \( \rightarrow \) Setup \( \rightarrow \) Resolution Select \( \rightarrow \) 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**

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**

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

- **Landscape / Portrait**
7.11 Advanced Settings

Configure 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.
Setup

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.

![Fan 2: Temperature](image)

- **Fan Control**: Manual
- **Fan Speed Setting**: 17
- **Temperature Control**: [Indicator]
- **Current Temperature**: 48
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.

<table>
<thead>
<tr>
<th>Fan &amp; Temperature</th>
<th>Auto Power: Off</th>
<th>Button Lock: Off</th>
<th>User Auto Color</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standby Control</strong></td>
<td>Off</td>
<td>On</td>
<td>Auto</td>
</tr>
<tr>
<td>Lamp Schedule</td>
<td>Off</td>
<td>On</td>
<td>Auto</td>
</tr>
<tr>
<td>OSD Display</td>
<td>Off</td>
<td>On</td>
<td>Auto</td>
</tr>
<tr>
<td>Software Upgrade</td>
<td>Off</td>
<td>On</td>
<td>Auto</td>
</tr>
</tbody>
</table>

### 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**

![Reset Settings in setup?](image)

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

7.13 **Reset All**

![All Settings return to default settings.](image)

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.

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

### Sound issue

<table>
<thead>
<tr>
<th>Issue</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no sound.</td>
<td>Check the connection of the audio cable or adjust the volume (“2.2 Connecting and Using a PC”)</td>
</tr>
<tr>
<td></td>
<td>Check the volume.</td>
</tr>
<tr>
<td>The volume is too low.</td>
<td>Adjust the volume.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

### Remote control issue

<table>
<thead>
<tr>
<th>Issue</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The remote control does not work.</td>
<td>Make sure that the batteries are correctly in place (+/ -).</td>
</tr>
<tr>
<td></td>
<td>Check if the batteries are flat.</td>
</tr>
<tr>
<td></td>
<td>Check for power failure.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the power cord is connected.</td>
</tr>
<tr>
<td></td>
<td>Check for any special lighting or neon signs switched on in the vicinity.</td>
</tr>
</tbody>
</table>

### Source device issue

<table>
<thead>
<tr>
<th>Issue</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A beeping sound is heard when my PC is booting.</td>
<td>If a beeping sound is heard when your PC is booting, have your PC serviced.</td>
</tr>
</tbody>
</table>
## 8.2 Q & A

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can I change the frequency?</td>
<td>Set the frequency on your graphics card.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows XP&quot;: Go to Control Panel → Appearance and Themes → Display → Settings → Advanced → Monitor and adjust the frequency in Monitor Settings.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows ME/2000&quot;: Go to Control Panel → Display → Settings → Advanced → Monitor and adjust the frequency in Monitor Settings.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows Vista&quot;: Go to Control Panel → Appearance and Personalization → Personalize → Display Settings → Advanced Settings → Monitor and adjust the frequency in Monitor Settings.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows 7&quot;: Go to Control Panel → Appearance and Personalization → Display → Adjust resolution → Advanced Settings → Monitor and adjust the frequency in Monitor Settings.</td>
</tr>
<tr>
<td>How can I change the resolution?</td>
<td>* &quot;Windows XP&quot;: Go to Control Panel → Appearance and Themes → Display → Settings and adjust the resolution.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows ME/2000&quot;: Go to Control Panel → Display → Settings and adjust the resolution.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows Vista&quot;: Go to Control Panel → Appearance and Personalization → Personalize → Display Settings and adjust the resolution.</td>
</tr>
<tr>
<td></td>
<td>* &quot;Windows 7&quot;: Go to Control Panel → Appearance and Personalization → Display → Adjust Resolution and adjust the resolution.</td>
</tr>
<tr>
<td>How do I set power-saving mode?</td>
<td>Windows XP: Set power-saving mode in Control Panel → Appearance and Themes → Display → Screen Saver Settings or BIOS SETUP on the PC.</td>
</tr>
<tr>
<td></td>
<td>Windows ME/2000: Set power-saving mode in Control Panel → Display → Screen Saver Settings or BIOS SETUP on the PC.</td>
</tr>
<tr>
<td></td>
<td>Windows Vista: Set power-saving mode in Control Panel → Appearance and Personalization → Personalize → Screen Saver Settings or BIOS SETUP on the PC.</td>
</tr>
<tr>
<td></td>
<td>Windows 7: Set power-saving mode in Control Panel → Appearance and Personalization → Personalize → Screen Saver Settings or BIOS SETUP on the PC.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model Name</th>
<th>UD22B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Size</td>
<td>21.6 inches (54 cm)</td>
</tr>
<tr>
<td>Display area</td>
<td>387.36 mm (H) x 387.36 mm (V)</td>
</tr>
<tr>
<td></td>
<td>15.3 inches (H) x 15.3 inches (V)</td>
</tr>
<tr>
<td>Display Color</td>
<td>16.7M</td>
</tr>
<tr>
<td>Dimensions (W x H x D) / Weight (without stand)</td>
<td>393.3 x 393.3 x 81.5 mm / 6.5 kg</td>
</tr>
<tr>
<td></td>
<td>15.5 x 15.5 x 3.2 inches / 14.3 lbs</td>
</tr>
<tr>
<td>VESA Mounting Interface</td>
<td>300 x 300 mm (11.8 x 11.8 inches)</td>
</tr>
<tr>
<td>Synchronization Horizontal Frequency</td>
<td>30 ~ 81 KHz</td>
</tr>
<tr>
<td></td>
<td>Vertical Frequency</td>
</tr>
<tr>
<td>Resolution Optimum resolution</td>
<td>960 x 960 @ 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Maximum resolution</td>
</tr>
<tr>
<td>Maximum Pixel Clock</td>
<td>148.5 MHz (Analog,Digital)</td>
</tr>
<tr>
<td>Signal connectors Input</td>
<td>DVI IN, HDMI IN, DP IN, IR/AMBIENT SENSOR IN, RJ45 MDC, RS232C IN</td>
</tr>
<tr>
<td></td>
<td>Output</td>
</tr>
<tr>
<td>Environmental considerations Operating Temperature</td>
<td>32 °F ~ 104 °F (0 °C ~ 40 °C)</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
</tr>
<tr>
<td></td>
<td>Storage Temperature</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
</tr>
</tbody>
</table>

### 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
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.

<table>
<thead>
<tr>
<th>PowerSaver</th>
<th>Normal Operation</th>
<th>Power saving mode</th>
<th>Power off (Power Button off)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rating</td>
<td>Typical</td>
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<tr>
<td>Power Indicator</td>
<td>On</td>
<td>Blinking</td>
<td>Off</td>
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<tr>
<td>Power Consumption</td>
<td>65 W</td>
<td>67 W</td>
<td>less than 0.5 W</td>
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</tbody>
</table>

- 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.

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Horizontal Frequency (kHz)</th>
<th>Vertical Frequency (Hz)</th>
<th>Pixel Clock (MHz)</th>
<th>Sync Polarity (H/V)</th>
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<tr>
<td>IBM, 640 x 480</td>
<td>31.469</td>
<td>59.940</td>
<td>25.175</td>
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<tr>
<td>IBM, 720 x 400</td>
<td>31.469</td>
<td>70.087</td>
<td>28.322</td>
<td>-/+</td>
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<tr>
<td>MAC, 640 x 480</td>
<td>35.000</td>
<td>66.667</td>
<td>30.240</td>
<td>-/-</td>
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<tr>
<td>MAC, 832 x 624</td>
<td>49.726</td>
<td>74.551</td>
<td>57.284</td>
<td>-/-</td>
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<tr>
<td>MAC, 1152 x 870</td>
<td>68.681</td>
<td>75.062</td>
<td>100.000</td>
<td>-/-</td>
</tr>
<tr>
<td>VESA, 640 x 480</td>
<td>37.861</td>
<td>72.809</td>
<td>31.500</td>
<td>-/-</td>
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<tr>
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<td>31.500</td>
<td>-/-</td>
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<tr>
<td>VESA, 800 x 600</td>
<td>37.879</td>
<td>60.317</td>
<td>40.000</td>
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<tr>
<td>VESA, 800 x 600</td>
<td>48.077</td>
<td>72.188</td>
<td>50.000</td>
<td>+/-</td>
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<tr>
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<tr>
<td>VESA, 960 x 960</td>
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<td>59.971</td>
<td>75.500</td>
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<tr>
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<td>60.023</td>
<td>75.029</td>
<td>78.750</td>
<td>+/-</td>
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<td>63.981</td>
<td>60.020</td>
<td>108.000</td>
<td>+/-</td>
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<tr>
<td>VESA, 1280 x 1024</td>
<td>79.976</td>
<td>75.025</td>
<td>135.000</td>
<td>+/-</td>
</tr>
<tr>
<td>VESA, 1920 x 1080(RB)</td>
<td>66.587</td>
<td>59.934</td>
<td>138.500</td>
<td>+/-</td>
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</table>
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.

<table>
<thead>
<tr>
<th>NORTH AMERICA</th>
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</tr>
</thead>
</table>
| 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 |

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<tr>
<th>LATIN AMERICA</th>
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</thead>
<tbody>
<tr>
<td>ARGENTINA</td>
<td>0800-333-3733</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
</tr>
</tbody>
</table>
| BRAZIL              | 0800-124-421  
                       | 4004-0000 | http://www.samsung.com |
| BOLIVIA             | 800-10-7260 | http://www.samsung.com |
| CHILE               | 800-SAMSUNG (726-7864)  
<pre><code>                   | From mobile 02-482 82 00 | http://www.samsung.com |
</code></pre>
<p>| COLOMBIA            | 01-8000112112 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| COSTA RICA          | 0-800-507-7267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| DOMINICA            | 1-800-751-2676 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| ECUADOR             | 1-800-10-7267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| EL SALVADOR         | 800-6225 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| GUATEMALA           | 1-800-299-0013 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| HONDURAS            | 800-27919267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| JAMAICA             | 1-800-234-7267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| NICARAGUA           | 00-1800-5077267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| PANAMA               | 800-7267 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| PERU                | 0-800-777-08 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| PUERTO RICO         | 1-800-682-3180 | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| TRINIDAD &amp; TOBAGO   | 1-800-SAMSUNG (726-7864) | <a href="http://www.samsung.com">http://www.samsung.com</a> |
| VENEZUELA           | 0-800-100-5303 | <a href="http://www.samsung.com">http://www.samsung.com</a> |</p>
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<td>42 27 5755</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>AUSTRIA</td>
<td>0810 - SAMSUNG (7267864, € 0.07/min)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
</tr>
<tr>
<td>BELGIUM</td>
<td>02-201-24-18</td>
<td><a href="http://www.samsung.com/be">http://www.samsung.com/be</a> (Dutch) <a href="http://www.samsung.com/be_fr">http://www.samsung.com/be_fr</a> (French)</td>
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<td>BOSNIA</td>
<td>05 133 1999</td>
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<td>BULGARIA</td>
<td>07001 33 11</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>CROATIA</td>
<td>062 SAMSUNG (062 726 7864)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>CZECH</td>
<td>800 - SAMSUNG (800-726786)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td></td>
<td>Samsung Electronics Czech and Slovak, s.r.o., Oasis Florenc, Sokolovská 394/17, 180 00, Praha 8</td>
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<tr>
<td>DENMARK</td>
<td>70 70 19 70</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>FINLAND</td>
<td>030 - 6227 515</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>FRANCE</td>
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<td>GERMANY</td>
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<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>CYPRUS</td>
<td>From landline : 8009 4000</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>GREECE</td>
<td>From landline : 80111-SAMSUNG (7267864) From landline &amp; mobile : (+30) 210 6897691</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>HUNGARY</td>
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<td>ITALIA</td>
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<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>KOSOVO</td>
<td>+381 0113216899</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
</tr>
<tr>
<td>LUXEMBURG</td>
<td>261 03 710</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>MACEDONIA</td>
<td>023 207 777</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>MONTENEGRO</td>
<td>020 405 888</td>
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<tr>
<td>NETHERLANDS</td>
<td>0900 - SAMSUNG (0900-7267864) (€ 0,10/Min)</td>
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<td>NORWAY</td>
<td>815-56 480</td>
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<td>POLAND</td>
<td>0 801-1SAMSUNG (172-678) +48 22 807-93-33</td>
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<td>PORTUGAL</td>
<td>808 20 - SAMSUNG (808 20 7267)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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## EUROPE

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<td>From landline: 08010-SAMSUNG (7267864)</td>
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<td>From landline &amp; mobile: (+40) 21 206 01 10</td>
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<td>SERBIA</td>
<td>0700 Samsung (0700 726 7864)</td>
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<td>SLOVAKIA</td>
<td>0800 - SAMSUNG (0800-726 786)</td>
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<td>SPAIN</td>
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<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>SWITZERLAND</td>
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<td>U.K</td>
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<td>EIRE</td>
<td>0818 717100</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>LITHUANIA</td>
<td>8-800-77777</td>
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<td>LATVIA</td>
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<td>ESTONIA</td>
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<td>TURKEY</td>
<td>444 77 11</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>RUSSIA</td>
<td>8-800-555-55-55</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>GEORGIA</td>
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<td>ARMENIA</td>
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<td>AZERBAIJAN</td>
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<tr>
<td>KAZAKHSTAN</td>
<td>8-10-800-500-55-500 (GSM: 7799)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>UZBEKISTAN</td>
<td>8-10-800-500-55-500</td>
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<td>810-800-500-55-500</td>
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<td>MOLDOVA</td>
<td>00-800-500-55-500</td>
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<td>AUSTRALIA</td>
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<td>NEW ZEALAND</td>
<td>0800 SAMSUNG (0800 726 786)</td>
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<td>CHINA</td>
<td>400-810-5858</td>
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<td>INDIA</td>
<td>1800 1100 11 3030 8282</td>
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<td>INDONESIA</td>
<td>0800-112-8888 021-5699-7777</td>
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<td>JAPAN</td>
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<td>MALAYSIA</td>
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<td>PHILIPPINES</td>
<td>1-800-10-SAMSUNG (726-7864)</td>
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<td>SINGAPORE</td>
<td>1800-SAMSUNG (726-7864)</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>THAILAND</td>
<td>1800-29-3232 02-689-3232</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<td>TAIWAN</td>
<td>0800-329-999 0266-026-066</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>VIETNAM</td>
<td>1 800 588 889</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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## MIDDLE EAST

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<td>IRAN</td>
<td>021-8255</td>
<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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<tr>
<td>OMAN</td>
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### MIDDLE EAST

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<td>JORDAN</td>
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<td><a href="http://www.samsung.com">http://www.samsung.com</a></td>
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### AFRICA

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<td>COTE D’LVOIRE</td>
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Responsibility for the Pay Service (Cost to Customers)

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

Not a product defect
Cleaning of the product, Adjustment, Explanation, Re-installation and etc.

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

A Product damage caused by customer’s fault
Product damage caused by customer’s mishandling or wrong repair

If a product damage is caused by;

- External impact or drop.
- Use of supplies or separately sold product unspecified by Samsung.
- Repair from a person besides an engineer of outsourcing service company or partner of Samsung Electronics Co., Ltd.
- Remodeling or repairing the product by customer.
- Using it with incorrect voltage or non-authorised electrical connections.

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

  **Type 1**
  
<table>
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<tr>
<th>FLIGHT</th>
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</thead>
<tbody>
<tr>
<td>OZ348</td>
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<td>UA102</td>
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  **Type 2**
  
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<td>20:30</td>
</tr>
<tr>
<td>UA102</td>
<td>21:10</td>
</tr>
</tbody>
</table>

  - 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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