

# User Manual

DSH-270WA

LCD Monitor

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## **1 Introduction**

### **1.1 About the product**

DSH-270WA is a FHD surgical medical monitor. This product adopts advanced display technology, specially designed for use in medical environment. True and accurate image restoration, high brightness, high contrast, wide angle of view display performance, ensure its display effect in minimally invasive and operating room environment, provide reliable support for doctors for detailed observation. A variety of video input and output interfaces that fully meet the requirements of various endoscopes, operating rooms and ICU.

### **1.2 About the user manual**

This document describes the functionality and the reasonable usage of DSH-270WA. For ensuring the clarity, please note that it does not contain all detailed information on this product.

This user manual contains important information that you have to read in order to ensure your personal safety and prevent damages to your property. Please read these safety information and product information so that you can operate the machine safely and effectively.

This user manual is only suitable for DSH-270WA.

Please save this manual for future use.

This user manual is updated or changed without any notices.

### 1.3 Packing list

Please check the following articles when you buy the display. Please note that the pictures are only for references. The following pictures only mean the similar items.

#### 1.3.1 Standard

LCD monitor 1pcs  
 Adapter 1pcs



LCD monitor



Adapter

#### 1.3.2 Optional

|                  |        |                     |        |
|------------------|--------|---------------------|--------|
| Certification    | ■ 1pcs | Bolt                | ■ 4pcs |
| DP signal cable  | □ 1pcs | Power cord          | ■ 1pcs |
| BNC signal cable | ■ 1pcs | CD                  | ■ 1pcs |
| DVI signal cable | ■ 1pcs | Equipotential cable | ■ 1pcs |
| Warranty card    | ■ 1pcs | HDMI signal cable   | □ 1pcs |
| Nylon cable ties | ■ 3pcs | Packing list        | ■ 1pcs |



Certification



DP signal cable



BNC signal cable



DVI signal cable



Warranty card



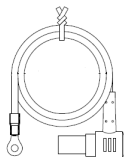
Bolt



Power cord



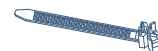
CD



Equipotential cable



HDMI signal cable



Nylon cable ties



Packing list

## 2 Safety information

To ensure personal safety and proper maintenance, please read this section and the caution statements on the unit.

### WARNING

**If the unit begins to emit smoke, smells like something is burning, or makes strange noises, disconnect all power connections immediately and contact your dealer for advice.**

Attempting to use a malfunctioning unit may result in fire, electric shock, or equipment damage. Information provided for the OPERATOR to safely terminate operation of ME EQUIPMENT.

**Do not open the cabinet or modify the unit.**

Opening the cabinet or modifying the unit may result in fire, electric shock, or burn.



**Refer all servicing to qualified service personnel.**

Do not attempt to service this product yourself as opening or removing covers may result in fire, electric shock, or equipment damage.

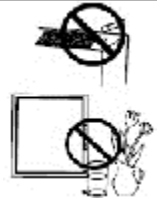
Only those who have been trained can use it.

**small objects or liquids away from the unit.**

Small objects accidentally falling through the ventilation slots into the cabinet or spillage into the cabinet may result in fire, electric shock, or equipment damage.

If an object or liquid falls/spills into the cabinet, unplug the unit immediately.

Have the unit checked by a qualified service engineer before using it again.



**This monitor can be a long boot, but the life will be reduced.**

**Suggest that the device is operated by personnel experiencing training.**

**The device is not serviced or maintained while in use with the patient.**

**Place the device on a solid and stable surface.**

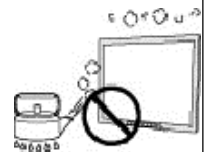
If the unit is placed on an inadequate surface may occur fall and result in personal injury or equipment damage. If the unit falls, disconnect the power immediately and ask dealer for help. Please do not continue to use damaged equipment. Using a damaged unit may result in fire or electric shock.



**Set the unit in an appropriate location.**

Not doing so may result in fire, electric shock, or equipment damage.

- Do not place outdoors.
- Do not place in the transportation system (ship, aircraft, trains, automobiles etc.
- Do not place in a dusty or humid environment.
- Do not place in a location where the steam comes directly on the screen.
- Do not place near heat generating devices or a humidifier.
- Do not place in an inflammable gas environment.







**To avoid danger of suffocation, keep the plastic packing bags away from babies and children..**


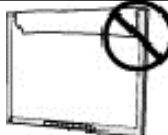


**Use the enclosed power cord and connect to the standard power outlet of your country.**

Be sure to remain within the rated voltage of the power cord. Not doing so may result in fire or electric shock.

|   |   |
|---|---|
| <p><b>To disconnect the power cord, grasp the plug firmly and pull.</b><br/>Tugging on the cord may damage and result in fire or electric shock.</p>  |  |
| <p><b>The equipment must be connected to a grounded main outlet.</b><br/>To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.</p>  |  |
| <p><b>Use the correct voltage.</b></p> <ul style="list-style-type: none"> <li>➤ The unit is designed for use with a specific voltage only. Connection to another voltage than specified in this User's Manual may cause fire, electric shock, or equipment damage.</li> <li>➤ Do not overload your power circuit, as this may result in fire or electric shock.</li> </ul>        |   |
| <p><b>Handle the power cord with care.</b></p> <ul style="list-style-type: none"> <li>➤ Do not press the power cord under the equipment or other heavy objects.</li> <li>➤ Do not pull or wrap the power cord. If the power cord is damaged, please stop using it. Using a damaged power cord may cause a fire or electric shock.</li> </ul>                                      |  |
| <p><b>Never touch the plug and power cord if it begins to thunder.</b></p> <p style="text-align: center;">  </p> <p>Touching them may result in electric shock.</p>  |   |
| <p><b>Do not touch a damaged LCD panel directly with bare hands.</b></p> <p>The liquid crystal that may leak from the panel is poisonous if it enters the eyes or mouth. If any part of the skin or body comes in direct contact with the panel, please wash thoroughly. If some physical symptoms result, please consult your doctor.</p>  |   |
| <p><b>Follow local regulation or laws for safe disposal.</b></p> <p>The MANUFACTURER will make available on request circuit diagrams, component part lists, descriptions, calibration instructions, or other information that will assist SERVICE PERSONNEL to repair those parts of ME EQUIPMENT that are designated by the MANUFACTURER as repairable by SERVICE PERSONNEL.</p> |   |

 **CAUTION**

|   |   |
|---|---|
| <p><b>Handle with care when carrying the unit.</b><br/>Disconnect the power cord and signal cables and remove the optional unit. Moving the unit with the cord or the option attached is dangerous. It may result in injury.</p>  |   |
| <p><b>When handling the unit, grip the bottom of the unit firmly with both hands ensuring the panel faces outward before lifting.</b><br/>Dropping the unit may result in injury or equipment damage.</p>   |  |
| <p><b>Do not block the ventilation slots on the cabinet.</b></p> <ul style="list-style-type: none"> <li>➤ Do not place any objects on the ventilation slots.</li> <li>➤ Do not install the unit in a closed space.</li> <li>➤ Do not use the unit laid down or upside down.</li> </ul> <p>Blocking the ventilation slots prevents proper airflow and may result in fire, electric shock, or equipment damage.</p> |  |
| <p><b>Do not touch the plug with wet hands.</b><br/>Doing so may result in electric shock.</p>  |   |
| <p><b>Periodically clean the area around the plug.</b><br/>Dust, water, or oil on the plug may result in fire.</p>  |   |

**Unplug the unit before cleaning it.**

Cleaning the unit while it is plugged into a power outlet may result in electric shock.

**If you plan to leave the unit unused for an extended period, disconnect the power cord from the wall socket after turning off the power switch for the safety and the power conservation.**

**The ME EQUIPMENT that are not serviced or maintained while in use with the patient .**

**The device cannot used under OXYGEN RICH ENVIRONMENTS**

**The device cannot used with flammable anaesthetics.**

**The device cannot used in conjunction with flammable agents.**

**Do not modify this equipment without authorization of the manufacturer.**

**Do not position ME EQUIPMENT to make it difficult to operate the disconnection device.**

**LCD PANEL**

When the monitor is cold and brought into a room or the room temperature goes up quickly, dew condensation may occur inside and outside the monitor. In that case, do not turn the monitor on and wait until dew condensation disappears, otherwise it may cause some damages to it.

In order to suppress the luminosity change by long-term use and to maintain the stable luminosity, please use the monitor with the lower brightness.

The screen may have defective pixels. These pixels may appear as slightly light or dark area on the screen. This is due to the characteristics of the panel itself, and not the product.

The backlight of the LCD panel has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer.

Do not press on the panel or edge of the frame strongly, as this may result in damage to the screen. There will be prints left on the screen if the pressed image is dark or black. If pressure is repeatedly applied to the screen, it may deteriorate or damage your LCD panel. Leave the screen white to decrease the prints.

Do not scratch or press on the panel with any sharp objects, such as a pencil or pen as this may result in damage to the panel. Do not attempt to brush with tissues as this may scratch the LCD panel.

When the screen image is changed after displaying the same image for extended periods of time, an afterimage may appear. Use the screen saver or timer to avoid displaying the same image for extended periods of time.

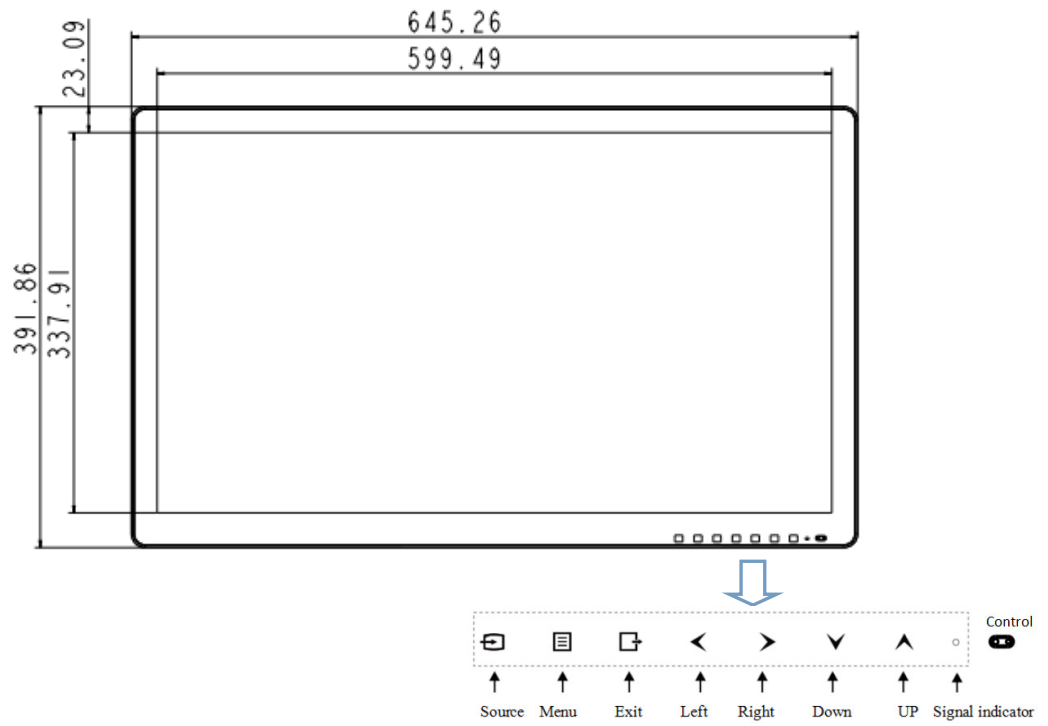
The monitor can be at power on for a long time, but its lifespan may be reduced. Suggest it should take a rest for 10 minutes per hour.

Turn on the monitor and computer orderly.

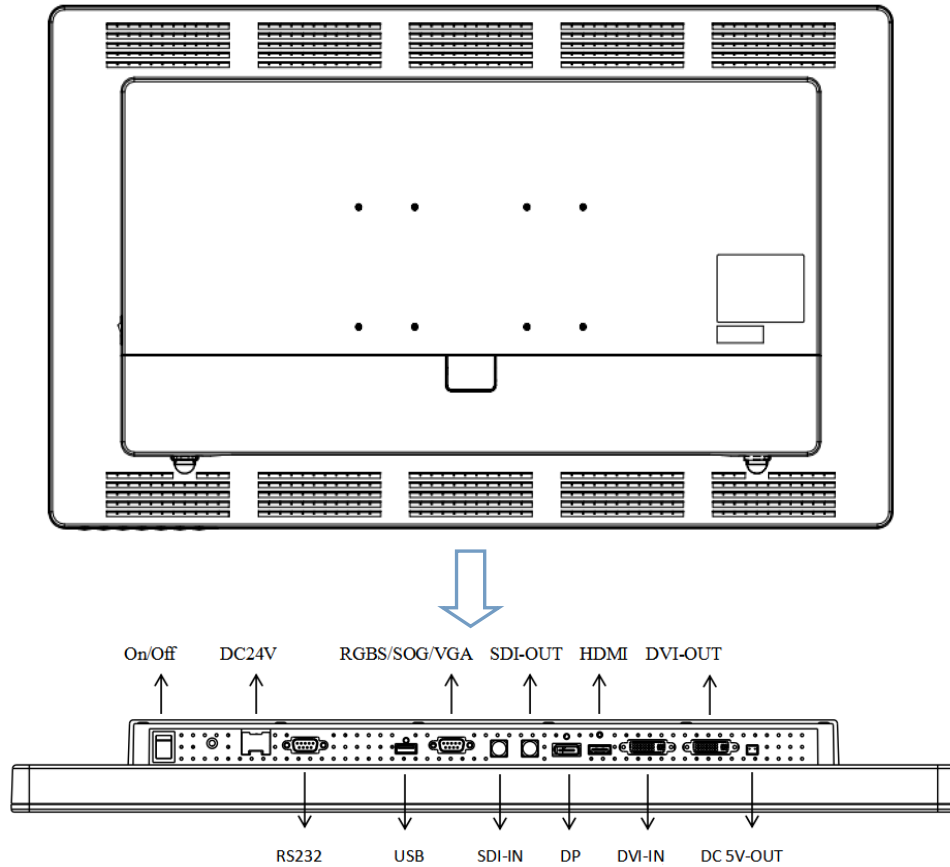
The power indicator of the monitor will become green. If images cannot appear, please refer to "Troubleshooting" for help. Turn off the computer and monitor after every use.

### 3 Parts, controls and connectors

#### 3.1 Front view



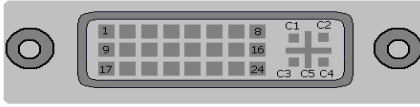
#### 3.2 Back view





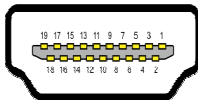
### 3.3 Connector pin assignments

#### ● DVI Connector



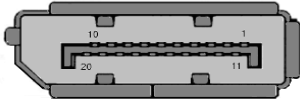
| Pin No. | Signal                 | Pin No. | Signal                  |
|---------|------------------------|---------|-------------------------|
| 1       | T.M.D.S. Data2-        | 16      | Hot Plug Detect         |
| 2       | T.M.D.S. Data2+        | 17      | T.M.D.S. Data0-         |
| 3       | DVI Signal Detect      | 18      | T.M.D.S. Data0+         |
| 4       | T.M.D.S. Data 4-       | 19      | T.M.D.S. Data0/5 Shield |
| 5       | T.M.D.S. Data 4+       | 20      | T.M.D.S. Data 5-        |
| 6       | DDC Clock              | 21      | T.M.D.S. Data 5+        |
| 7       | DDC Data               | 22      | T.M.D.S. Clock Shield   |
| 8       | No connect             | 23      | T.M.D.S. Clock+         |
| 9       | T.M.D.S. Data1-        | 24      | T.M.D.S. Clock-         |
| 10      | T.M.D.S. Data1+        | C1      | No connect              |
| 11      | T.M.D.S Data1/3 Shield | C2      | No connect              |
| 12      | T.M.D.S. Data 3-       | C3      | No connect              |
| 13      | T.M.D.S. Data 3+       | C4      | No connect              |
| 14      | +5V Power              | C5      | No connect              |
| 15      | Ground                 |         |                         |

#### ● HDMI Connector



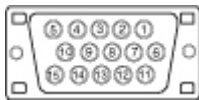
| Pin No. | Signal | Pin No. | Signal   |
|---------|--------|---------|----------|
| 1       | DATA2+ | 11      | GND      |
| 2       | GND    | 12      | CLK-     |
| 3       | DATA2- | 13      | NC       |
| 4       | DATA1+ | 14      | NC       |
| 5       | GND    | 15      | SCL      |
| 6       | DATA1- | 16      | SDA      |
| 7       | DATA0+ | 17      | GND      |
| 8       | GND    | 18      | +5V      |
| 9       | DATA0- | 19      | HOT_PLUG |
| 10      | CLK+   |         |          |

● DP Connector



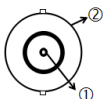
| Pin No. | Signal        | Pin No. | Signal          |
|---------|---------------|---------|-----------------|
| 1       | ML_Lane 3(N)  | 11      | GND             |
| 2       | GND           | 12      | ML_Lane 0(P)    |
| 3       | ML_Lane 3 (P) | 13      | GND             |
| 4       | ML_Lane 2(N)  | 14      | GND             |
| 5       | GND           | 15      | AUX CH(P)       |
| 6       | ML_Lane 2(P)  | 16      | GND             |
| 7       | ML_Lane 1(N)  | 17      | AUX CH(N)       |
| 8       | GND           | 18      | Hot Plug Detect |
| 9       | ML_Lane 1(P)  | 19      | Return          |
| 10      | ML_Lane 0(N)  | 20      | DP_PWR          |

● VGA Connector



| Pin | Signal      | Pin | Signal         | Pin | Signal      |
|-----|-------------|-----|----------------|-----|-------------|
| 1   | Red video   | 6   | Red ground     | 11  | NC          |
| 2   | Green video | 7   | Green ground   | 12  | Data (SDA)  |
| 3   | Blue video  | 8   | Blue ground    | 13  | H. Sync     |
| 4   | NC          | 9   | NO Pin         | 14  | V. Sync     |
| 5   | GND         | 10  | Ground Shorted | 15  | Clock (SCL) |

● SDI Connector



| Pin No. | Signal |
|---------|--------|
| 1       | SDI    |
| 2       | GND    |

● Power supply Connector

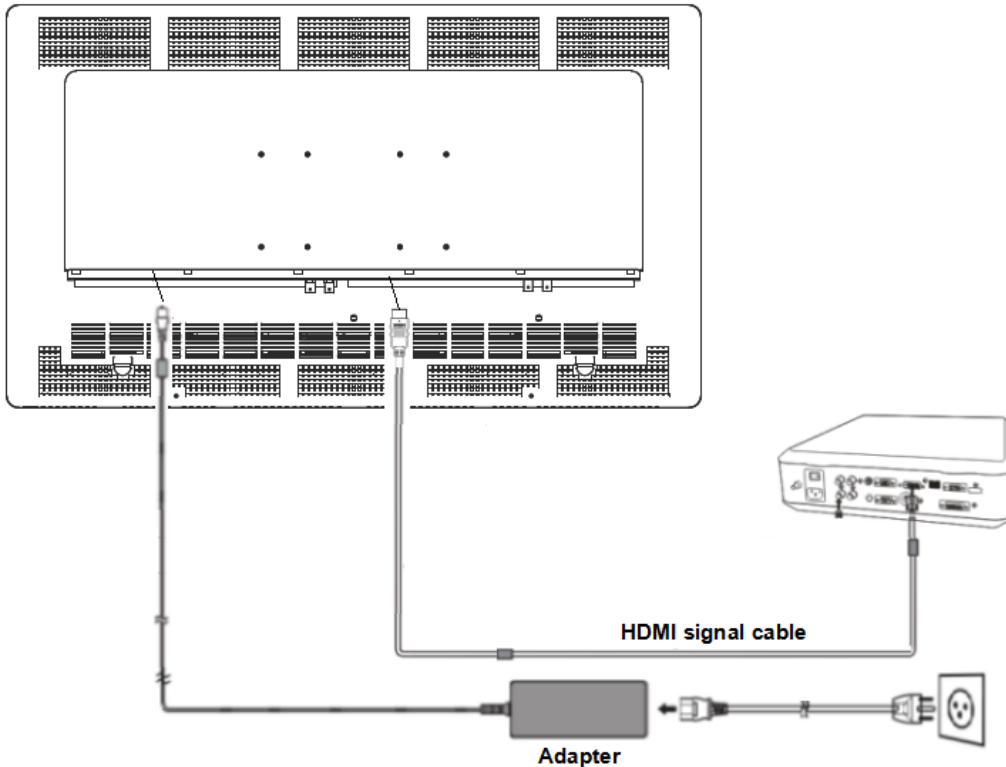
| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | +V (24V) | 4       | +V (24V) |
| 2       | Earth    | 5       | NC       |
| 3       | -V (GND) | 6       | -V (GND) |

## 4 Connection and Quick start

**Note:** Please make sure that the **power switch** of endoscopic equipment and display are **OFF**

### 4.1 Connection

Please reference the connection figure showing below.



### 4.2 Quick start

Turn on the display power, and the power indicator will turn on, start the endoscope host and format the output signal to:

Resolution : **1920 ×1080** Refresh ratio: **60Hz**.

If no image display on the screen, please refer to the "failure analysis" to get help.



**Please use the enclosed power cord to connect the standard power outlet.**

Please ensure that the monitor's power plug can be fully inserted into the socket. Make sure the power cord used within the rated voltage. Or it may result in fire or electric shock.

Unplug the power cord and disconnect from the power grid.

**Equipment must be connected to a outlet that grounded good.**

Or it may result in fire or electric shock.



**Please turn on the monitor and then computer power.**

The monitor's power indicator will light (green). If the image does not appear, refer to the "failure analysis" for help. After each use, turn off the computer and the monitor.

**Note:**

This monitor can run for a long time, but life will be reduced. Recommended 10-minute break every hour.

## 5 Operation

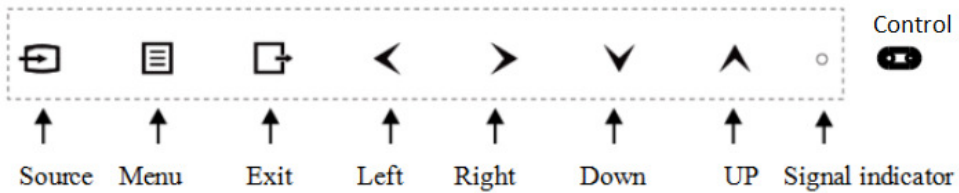
### 5.1 Signal indicator

| Color  | Display mode                |
|--------|-----------------------------|
| Green  | Operating mode              |
| Orange | Standby mode                |
| None   | Power Off or No power input |

### 5.2 Shortcuts

| Key     | Function                |
|---------|-------------------------|
| < Left  | Adjust contrast values  |
| > Right | Adjust backlight values |

### 5.3 Key function



| Keys    | Function  |
|---------|---|
| Source  | Active Input source menu / switch to next input |
| Menu    | Active the Main menu / confirm the selection    |
| EXIT    | Exit menu / return                              |
| Left    | Press to move, select items or adjust value     |
| Right   |   |
| Down    |   |
| Up      |   |
| Control | Key Locked/Unlock: Press and hold  key          |

## 5.4 OSD MENU

| Main Menu     | Option                     | Description   |       |    |
|---------------|----------------------------|---|-------|----|
| Input         | Main Input                 | DVI /VGA /SDI /HMDI /DP /RGB  |       |    |
|               | PIP Mode                   | Off /Side by Side /Small PIP /Large PIP                                 |       |    |
| Image         | Main/Pip Select            | Main /PIP   |       |    |
|               | Brightness                 | Adjust brightness:(0-100)   |       |    |
|               | Contrast                   | Adjust contrast:(0-100)   |       |    |
|               | Saturation                 | Adjust saturation:(0-100)   |       |    |
|               | Sharpness                  | Adjust sharpness:(0-24)   |       |    |
|               | Aspect Ratio               | Full Screen /Native Mode /Fill  |       |    |
|               | Zoom                       | 80,85,90,95,100,105,110,115,120   |       |    |
| Setup         | Color Temp                 | 10000K/9300K/8500K/7500K/6500K/5500K/User                               |       |    |
|               |                            | R   | 0-100 | 50 |
|               |                            | G   | 0-100 | 50 |
|               |                            | B   | 0-100 | 50 |
|               | Gamma                      | DICOM/2.6/2.4/2.2/2.0/1.8/Video   |       |    |
|               | Mirror/Rotation            | Off/Mirror/Rotation   |       |    |
|               | Auto Scan Input            | On/Off  |       |    |
|               | Video Level                | Auto /Limit /Full   |       |    |
|               | RGB/YPbPr SEL              | Set input channel to YPbPr or RGB                                       |       |    |
| Factory Reset | Restore to factory default |   |       |    |
| OSD           | Language                   | English / 中文 /Español /Português /Français /Deutsche /Italiano /русский |       |    |
|               | OSD Position               | Menu position selection:<br>Bottom Center /Bottom Right                 |       |    |
| VGA           | Auto Adjust                | Auto adjust the image position, clock and phase                         |       |    |
|               | H-Position                 | Adjust the horizontal position of the image                             |       |    |
|               | V-Position                 | Adjust the vertical position of the image                               |       |    |
|               | Clock                      | Adjust the frequency of the display's pixel clock                       |       |    |
|               | Phase                      | Adjust the phase of the display's pixel clock                           |       |    |
| Status        |                            | Display    FW Version<br>Main Input<br>Main Format                      |       |    |

## 6 Technical specification

| <b>Monitor characteristics:</b>    |  |
|------------------------------------|--|
| Panel technology                   | 27", TFT, color, LCD screen, anti-glare, IPS,hard coating<br>Optical adhesive bonding, high transparency and low reflection, anti condensation and anti fog.       |
| Active area (H x V)                | 597.89 (H) x 336.31 (V) mm   |
| Pixel pitch                        | 0.3114(H) x 0.3114(V) mm   |
| Resolution                         | 1920 (RGB) x 1080  |
| Refresh rate                       | 60 Hz  |
| Luminance                          | 1000 cd/m <sup>2</sup> (typical)   |
| Contrast ratio                     | 1000:1 (typical)   |
| Viewing angle (CR > 10)            | Horizontal: 178° (typical)   |
|                                    | Vertical: 178° (typical)   |
| Backlight                          | WLED   |
| Lifetime of backlight              | 30000 hours(minimal)   |
| Response time                      | T <sub>GTG</sub> :14ms(typical)  |
| <b>Power supply:</b>               |  |
| DC IN                              | 24 V, 5.0 A (supplied from AC adapter)   |
| Power consumption                  | < 90 W   |
| Standby                            | < 0.5 W  |
| <b>Control and connection:</b>     |  |
| Front                              | Power indicator<br>Touch keypad  |
| Back                               | DVI -IN *1<br>DVI -OUT *1<br>VGA -IN *1<br>SDI -IN *1/OUT *1<br>DP *1<br>HDMI *1<br>RS232 *1<br>DC 5V/0.8A-OUT*1<br>Ground stud*1<br>DC socket*1<br>Power switch*1 |
| <b>Mechanical characteristics:</b> |  |
| Housing components                 | Plastic  |
| cover glass                        | Glass protection: surface treatment AR+AF,high Translucency, low reflection.   |
| Ventilation openings               | Natural heat dissipation   |
| Protection level                   | IP65 (Front) 、 IP20 (back)   |

| <b>Safety regulations:</b>                       |  |                  |
|--|--|------------------|
| Safety standards                                 | CCC: GB4943.1-2011、GB17625.1-2012、GB/T9254.1-2021<br>CE: EN60601-1-2、EN IEC61000-3-2、EN61000-3-3 |                  |
| Protection class                                 | Protection class I   |                  |
| <b>Dimension:</b>                                |  |                  |
| Without packing(D x W x T)                       | 645.26 mm x 391.86 mm x 62.5 mm  |                  |
| With packing (D x W x H)                         | 783 mm x 245 mm x 541 mm   |                  |
| <b>Weight</b>                                    |  |                  |
| Monitor  | Net weight   | 9.6 kg ± 0.5 kg  |
|  | Gross weight   | 14.2 kg ± 0.5 kg |
| Monitor+ Stand                                   | Net weight   | 13.4 kg ± 0.5 kg |
|  | Gross weight   | 18 kg ± 0.5 kg   |
| <b>Climatic conditions:</b>                      |  |                  |
| Operational temperature                          | 5°C ~ 35°C(Recommended 20°C ~ 30°C)  |                  |
| Operational humidity                             | 15% ~ 85% Relative humidity, no condensation   |                  |
| Operational pressure                             | 70KPa ~106KPa  |                  |
| Transport and storage temperature                | -20°C ~ 60°C   |                  |
| Transport and storage humidity                   | 10% ~ 90% Relative humidity, no condensation   |                  |
| Storage and transport atmospheric pressure range | 70KPa ~106KPa  |                  |

**Electromagnetic Emission:**

The LCD Monitor is intended to be used in professional healthcare facility environments such as clinics and hospitals

The requirements special precautions regarding EMC and during installation. You need to carefully read the EMC Information and the “PRECAUTIONS” section of this document, and observe the following instructions when installing and operating the product.

Anyone who connects additional equipment to the signal input parts or signal output parts when configuring a medical system is responsible for ensuring that the system complies with the requirements of IEC/EN60601-1-2.

The LCD Monitor is intended for use in the electromagnetic environment specified below.

The customer or the user of the LCD Monitor should assure that it is used in such an environment.

## Declaration - Electromagnetic Emission

| Description of Test Item  | Compliance   | Limits Performance Criteria | Results |
|---|--|-----------------------------|---------|
| Conducted Disturbance at Mains Terminals CISPR 11   | Class B  | Normal                      | Pass    |
| Radiated Disturbance CISPR 11   | Class B  | Normal                      | Pass    |
| Harmonic Current Emissions IEC 61000-3-2  | Class D  | Normal                      | N/A     |
| Voltage Fluctuation and Flicker IEC 61000-3-3   | Section 5  | Normal                      | Pass    |
| IMMUNITY (EN 60601-1-2:2015, IEC 60601-1-2:2014)  |  |                             |         |
| Description of Test Item  | Compliance level                                   | Performance Criteria        | Results |
| Electrostatic Discharge (ESD) IEC 61000-4-2   | ± 8 kV contact<br>± 15 kV air                      | Normal                      | Pass    |
| Radio-Frequency, Continuous Radiated Disturbance IEC 61000-4-3  | Level: 3 10 V/m<br>80 MHz to 2.5 GHz               | Normal                      | Pass    |
| EFT/B Immunity IEC 61000-4-4  | Level 3: ± 2 kV for power supply lines             | Normal                      | Pass    |
| Surge Immunity IEC 61000-4-5  | ± 1 kV line(s) to lines<br>± 2 kV line(s) to earth | Normal                      | Pass    |
| Conducted RF Immunity IEC 61000-4-6   | Level 2 0.15-80 MHz @ 3 VRMS                       | Normal                      | Pass    |
| Power Frequency Magnetic Field IEC 61000-4-8  | Level 4, 30 A/m                                    | Normal                      | Pass    |
| Voltage Dips, >95% Reduction,<br>Voltage Dips, 30% Reduction,<br>Voltage Interruptions IEC 61000-4-11 |  | Normal                      | Pass    |



## 7 Supported signal format

- DVI

| Video Formats | Horizontal Frequency (kHz) | Vertical Frequency (Hz) | Pixel Clock (MHz) |
|---------------|----------------------------|-------------------------|-------------------|
| 720×400       | 31.50                      | 70.0                    | 28.322            |
| 640×480       | 31.50                      | 60.0                    | 25.175            |
| 800×600       | 37.90                      | 60.0                    | 40.000            |
| 1024×768      | 48.40                      | 60.0                    | 65.000            |
| 1280×1024     | 64.00                      | 60.0                    | 108.00            |
| 1920×1080     | 56.25                      | 50.0                    | 148.50            |
| 1920×1080     | 67.50                      | 60.0                    | 148.50            |

- VGA

| Video Formats | Horizontal Frequency (kHz) | Vertical Frequency (Hz) | Pixel Clock (MHz) |
|---------------|----------------------------|-------------------------|-------------------|
| 720×400       | 31.50                      | 70.0                    | 28.322            |
| 640×480       | 31.5                       | 60.0                    | 25.175            |
| 800×600       | 37.9                       | 60.0                    | 40.00             |
| 1024×768      | 48.40                      | 60.0                    | 65.00             |
| 1280×1024     | 64.00                      | 60.0                    | 108.00            |
| 1920×1080     | 56.25                      | 50.0                    | 148.50            |
| 1920×1080     | 67.50                      | 60.0                    | 148.50            |

- DP/HDMI

| Video Formats | Horizontal Frequency (kHz) | Vertical Frequency (Hz) | Pixel Clock (MHz) |
|---------------|----------------------------|-------------------------|-------------------|
| 720×400       | 31.50                      | 70.0                    | 28.322            |
| 640×480       | 31.50                      | 60.0                    | 25.175            |
| 800×600       | 37.9                       | 60.0                    | 40.000            |
| 1024 × 768    | 48.40                      | 60.0                    | 65.00             |
| 1280 × 1024   | 64.00                      | 60.0                    | 108.00            |
| 1920 x 1080   | 56.25                      | 50.0                    | 148.50            |
| 1920 × 1080   | 67.50                      | 60.0                    | 148.50            |

- RGB/YPbPr

| Video Formats | Horizontal Frequency (kHz) | Vertical Frequency (Hz) | Pixel Clock (MHz) |
|---------------|----------------------------|-------------------------|-------------------|
| 480i/60Hz     | 15.734                     | 59.940                  | 13.5              |
| 576i/50Hz     | 15.625                     | 50.0                    | 13.5              |
| 480p/60Hz     | 31.469                     | 59.940                  | 27.0              |
| 576p/50Hz     | 31.25                      | 50.0                    | 27.0              |
| 720p/50Hz     | 37.50                      | 50.0                    | 74.250            |
| 720p/60Hz     | 45.00                      | 60.0                    | 74.250            |
| 1080i/50Hz    | 28.125                     | 50.0                    | 74.250            |
| 1080i/60Hz    | 33.750                     | 60.0                    | 74.250            |
| 1080p/30Hz    | 33.75                      | 30.0                    | 74.250            |
| 1080p/50Hz    | 56.250                     | 50.0                    | 148.50            |
| 1080p/60Hz    | 67.500                     | 60.0                    | 148.50            |

- SDI

|                                       |
|---------------------------------------|
| 1) 480/ 60I, 59.94I                   |
| 2) 576/ 50I                           |
| 3) 720/ 50p, 60p, 59.94p              |
| 4) 1080/ 25PsF, 25p                   |
| 5) 1080/ 30p, 29.97p, 30PsF, 29.97PsF |
| 6) 1080/ 50I                          |
| 7) 1080/60I, 59.94I                   |
| 8) 1080/50p                           |
| 9) 1080/60p, 59.94p                   |

## 8 Cleaning and Disinfection

Regular cleaning is recommended to keep the appearance of the monitor clean and prolong the service life.




Gently wipe the dirt on the monitor shell or screen with a piece of microfiber cloth dipped with a small amount of water (tap water, distilled water or mineral water) or chemical reagent (70% - 75% alcohol).

Note:

- Please turn off the power first When cleaning the LCD Monitor.
- It is forbidden to use dry fiber cloth to wipe the monitor glass to prevent static electricity generated on the glass surface, which may cause damage to the monitor.
- Don't often use chemical reagent to wipe the LCD monitor; Frequent use of alcohol, disinfectant and other chemical reagents to wipe the LCD monitor may cause the shell or screen to lose luster and fade, thereby reducing the image quality.
- Don't spray detergent directly on the surface of the LCD monitor to prevent the liquid from penetrating into the equipment, damaging the internal circuit and causing equipment failure.
- The detergent should be tested and inspected before use, the other detergent that have not been tested and inspected may damage the monitor shell or screen.

## 9 Troubleshooting






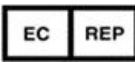























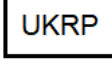
If a problem persists even after applying the suggested remedies, contact a dealer.

| Problems   | Points to check with Possible Solutions   |
|--|---|
| <b>1. No picture</b><br>Indicator status: Off  | Check that the power cord is correctly connected. If the problem persists, turn off the monitor power for a few minutes, then turn it back on and try again.  |
| Indicator status: Green  | Check the <Backlight> shortcut key setting.   |
| Indicator status: Orange   | Try pressing the keys on the computer keyboard or clicking the mouse.   |
| <b>2. Display position is incorrect.</b><br>        | Adjust the image position by using the <H-Position> and <V-Position>. If the problem persists, use the graphics board's utility software to change the display position if available.   |
| <b>3. Vertical bars of distortion appear.</b><br>   | Decrease the horizontal bars by using the <Clock>.  |
| <b>4. Horizontal bars of distortion appear.</b><br> | Decrease the horizontal bars by using the <Phase>.  |
| <b>5. The screen is too bright or too dark.</b>  | Adjust <Backlight> shortcut key (The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer.)  |
| <b>6. After image phenomena appear</b>   | <ul style="list-style-type: none"> <li>- Make sure that whether you have used the screen saver or timer when displaying the same image for extended periods of time or not.</li> <li>- Afterimages are particular to LCD monitors. Avoid displaying the same image for extended periods of time.</li> </ul> |
| <b>7. The screen has defective pixels</b>  | This is due to the characteristics of the panel itself, and not the LCD product.  |
| <b>8. Shiatsu traces left on the screen</b>  | Keep the screen background white can solve this problem.  |

## 10 Appendix

### 10.1 Markings and symbols

The markings and symbols on the monitor, power supply and packing have the following meanings (nonrestrictive list).

|   |   |  |   |
|---|---|--|---|
|    | Caution   |    | Earth (ground)  |
|    | Warning: dangerous voltage  |    | Batch number  |
|    | Date of manufacture   |    | Authorized representative in the European Community               |
|    | Manufacturer  |    | Refer to instruction manual/ booklet                              |
|    | Product code  |    | Product ID  |
|    | Medical device  |    | RoHS mark   |
|   | "WEEE (Waste Electrical and Electronic Equipment)". The waste products should be handled legally.               |   | Fragile, handle with care   |
|  | Class II equipment  |  | This way up   |
|  | Keep dry  |  | Temperature limitation  |
|  | Maximum number of identical packages that may be stacked, where "n" stands for the number of permitted packages |  | Humidity limitation   |
|  | Atmospheric pressure limitation   |  | Indicates complies with Part 15 of the FCC rules.                 |
|  | CE mark   |  | Indicates the device is approved according to the CCC regulations |
|  | TUV approval mark   |  | Marking according to ACPEIP (China-RoHS) (name plate)             |
|  | Energy Conservation Certification   |  | Magnetic Resonance (MR)-Unsafe                                    |
|  | UKCA mark   |  | UK Responsible Person   |

## 10.2 Conformity declaration

This equipment is in conformity with the provisions of the CCC standard.

This equipment satisfies the following two conditions:

(1) The device will not bring dangerous interference;

(2) The device will not be influenced by outer interference and cause unpredictable results.

1. To avoid interference with radio or TV receiving, please use the power adapter and cable matched; Use other cable and power adapter may interfere the other electronic equipment;

2. This equipment has passed the standards of CCC; the device will have a wireless electromagnetic wave, incorrect installation and using will cause interference with wireless communication systems.

3. We don't guarantee that the equipment will never produce interference when it is installed. You can judge whether the equipment can disturb radio or the television reception by the way to switch this equipment power source. Please do the following steps if there is interference to the other devices when running this equipment:

- Adjust the angle and position of the radio or the television reception antenna;
- Increase the distance between this equipment and the radio or the television reception antenna;
- This equipment doesn't share the same the power input circuit with the radio or the television reception antenna;
- Please consult the professional person if any problem;

Other ancillary equipment is connected to our monitor must also be passed CCC standards. When configures a medical system, any device is connected to the input or output of the equipment must comply with medical equipment standards IEC 60601-1. If you are unsure, please ask professional technician for help.

### European Authorised Representative



SUNGO Europe B.V.  
Olympisch Stadion 24,  
1076DE Amsterdam, Netherlands



### 10.3 RoHS information

The following product pollution control information is provided according to SJ/T11364-2006 Marking for Control of Pollution caused by Electronic Information Products.

#### Explanation of Pollution Control Label



This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese standard SJ/T11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products. The number in the symbol is the Environment-friendly Use Period (EFUP), which indicates the period during which the toxic or hazardous substances or elements contained in electronic information products will not leak or mutate under normal operating conditions so that the use of such electronic information products will not result in any severe environmental pollution, any bodily injury or damage to any assets. The unit of the period is "Year". In order to maintain the declared EFUP, the product shall be operated normally according to the instructions and environmental conditions as defined in the product manual, and periodic maintenance schedules specified in Product Maintenance Procedures shall be followed strictly.

Consumables or certain parts may have their own label with an EFUP value less than the product.

Periodic replacement of those consumables or parts to maintain the declared EFUP shall be done in accordance with the Product Maintenance Procedures.

This product must not be disposed of as unsorted municipal waste, and must be collected separately and handled properly after decommissioning.

| Component part               | Hazardous substances' name |    |    |        |     |      |      |     |     |      |
|------------------------------|----------------------------|----|----|--------|-----|------|------|-----|-----|------|
|                              | Pb                         | Hg | Cd | Cr(VI) | PBB | PBDE | DEHP | BBP | DBP | DIBP |
| Outer Shell                  | ○                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |
| Panel/Fluorescent Tube       | x                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |
| Circuit Board Assembly       | x                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |
| Adapter                      | x                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |
| Housing, Chassis             | ○                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |
| Power Cord/Signal Cable etc. | x                          | ○  | ○  | ○      | ○   | ○    | ○    | ○   | ○   | ○    |

\*: Circuit board assembly includes PCB, components and parts that it consists of, such as resistors, capacitors, ICs and connectors etc.

○: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006

Data listed in the table represents best information available at the time of publication.

Applications of hazardous substances in this medical device are required to achieve its intended clinical uses, and/or to provide better protection to human beings and /or to environment, due to lack of reasonably (economically or technically) available substitutes.

# 用户手册

DSH-270WA

液晶显示器



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## 1 介绍

### 1.1 关于产品

DSH-270WA 是一款高性能全高清医用显示器。本产品采用先进的显示技术，专门为在医学环境中使用而设计。真实精确的影像还原，高亮度、高对比度、宽视角显示性能，保证其在微创及手术室环境下的显示效果，为医生进行细节观察提供可靠的支持。多种视频输入输出接口，完全符合各种内镜、手术室及 ICU 的要求。

### 1.2 关于使用说明书

该说明书解释了 DSH-270WA 的功能和合理的使用方法。为了确保说明书的清晰性，请注意它并不包含产品的所有详细信息。

该说明书包含了为确保你个人安全及防止损坏你财产的所必须看的重要信息，请仔细阅读这些安全信息和产品信息，以便你能够安全和有效地使用机器。

该说明书仅适用于 DSH-270WA。

为了确保今后使用，请注意收藏好本说明书。

对于说明书内容的任何更新或改变，不会再另行通知。

### 1.3 包装清单

在购买机器的同时，请检查是否有以下类似的物品。注意以下图片仅是为了参考，并不代表就是该物，但能代表是与这相同类别的物品。

#### 1.3.1 标准件

液晶显示器 1 台

适配器 1 个



液晶显示器



适配器

### 1.3.2 可选项

合格证  
 DP 信号线  
 BNC 信号线  
 DVI 信号线  
 保修卡  
 尼龙扎带

■1 张  
 □1 条  
 ■1 条  
 ■1 条  
 ■1 张  
 ■1 张  
 ■3 条

螺钉  
 电源线  
 CD  
 等电位线  
 HDMI 信号线  
 装箱清单

■4 颗  
 ■1 条  
 ■1 张  
 ■1 条  
 □1 条  
 ■1 张



合格证



DP 信号线



BNC 信号线



DVI 信号线



保修卡



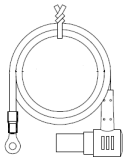
底座螺钉



电源线



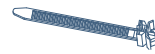
CD



等电位线



HDMI 信号线



尼龙扎带



装箱清单

## 2 安全信息

为确保人员安全与正确维护，请仔细阅读本节内容以及设备上注意声明。



**警告**

|   |  |
|---|--|
| <p><b>如果设备开始冒烟并伴有焦糊味，或者发出奇怪的噪音，请立刻切断电源，然后与销售商联系以获得帮助。</b></p> <p>使用有故障的设备可能导致起火、电击或设备损坏。<br/>提供给操作者以安全终止 ME 设备操作的信息。</p>  |  |
| <p><b>不要拆开机壳或者修改设备。</b></p> <p>拆开机壳或修改设备可能导致起火、电击或烧毁设备。<br/>只有经过培训的人才能使用它。</p>  |  |
| <p><b>由合格的维修人员进行各种维修。</b></p> <p>不要自行维修此显示器。拆开机壳或修改设备可能导致起火、电击或设备损坏。</p>  |  |
| <p><b>将小件物体或液体放置在远离设备的地方。</b></p> <p>若小件物体意外地通过通风槽掉进机壳或者液体流进机壳，可能导致起火、电击或设备损坏。若物体或液体掉进/流进机壳，请立即拔掉设备电源插头。请让合格的维护工程师对其进行检查后，才能重新使用该设备。</p>  |  |
| <p><b>本显示器可以长时间开机，但使用寿命会减少。</b></p> <p><b>建议由受过培训的人员操作设备。</b></p> <p><b>该设备在患者使用过程中不予维修或维护。</b></p>   |  |
| <p><b>请将设备放置在坚固而稳定的平面上。</b></p> <p>若设备放置在不适当的平面上，可能发生坠落情况，导致人员受伤或设备损坏。若设备坠落，请立即断开电源，并向销售商寻求帮助。请不要继续使用已损坏的设备。使用已损坏的设备可能会导致起火或电击。</p>   |  |
| <p><b>请将设备放置在适当的位置。</b></p> <p>否则可能导致起火、电击或设备损坏。</p> <ul style="list-style-type: none"><li>◆ 不要将设备放置在室外。</li><li>◆ 不要将设备放置在交通工具里（轮船、飞机、火车、汽车等）。</li><li>◆ 不要在有易燃空气的环境中使用。</li><li>◆ 不要将设备放置在粉尘或潮湿的环境中。</li><li>◆ 不要将设备放置在水蒸汽可直接接触屏幕的位置上。</li><li>◆ 不要将设备放置在供暖设备或加湿器旁。</li></ul> |  |
| <p><b>使用所附的电源线，连接在标准电源插座上。</b></p> <p>确保电源线保持在额定电压范围内，不这样做有可能导致火灾或电击。</p>   |  |
| <p><b>为避免引起窒息危险，请将塑料包装袋放置在远离婴儿和小孩的地方。</b></p>   |  |
| <p><b>请使用附带电源线并连接至标准电源插座上。</b></p> <p>请保证显示器的电源插头能够完全插入插座。确保电源电压维持在电源线额定电压 <b>OK</b> 内，否则可能会导致起火或电击。</p>  |  |
| <p><b>若需要断开电源线，请抓紧插头然后拔出。</b></p> <p>拉扯电源线会损坏并可能导致起火或电击。</p>  |  |
| <p><b>设备必须连接到良好接地的电源插座上。</b></p> <p>为避免电击危险，必须仅将此设备连接到具有保护性接地的电源。</p>   |  |

**请使用正确电压。**

- ◆ 本设备仅适用于特定电压。若将设备连接到本手册没有提及的其它电压上，则可能导致起火、电击或设备损坏。
- ◆ 电路不要过载，否则可能会导致起火或电击。

**请谨慎使用电源线。**

- ◆ 不要将电源线压在设备或其它重物的下面。
- ◆ 不要用力拉扯或缠绕电源线。
- ◆ 若电源线损坏，请停止使用。使用已损坏的电源线可能会导致起火或电击。



**打雷时绝对不要接触插头与电源线。**

接触插头与电源线可能导致电击。



**不要用裸手接触已损坏的液晶屏。**

从屏中泄漏出的液晶如果进入眼睛或口中，将对人体产生毒副作用。如果皮肤或人体的任何部分直接接触到屏，请进行全面清洗。若发生病症，请向医生咨询。



**请遵守本地有关法规进行安全的废料处理。**

制造商将根据要求提供电路图，组件清单，说明，校准说明或其他信息，以帮助维修人员修理由制造商指定为维修人员可维修的机器设备部分。



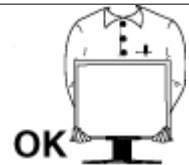
**注意**

**在设备运输时请小心处理。**

移动设备时请断开电源线与线缆。在线缆保持连接的状况下移动设备是非常危险的，可能导致人员受伤。

**在搬动设备时，请用双手紧紧抓住设备底部，确保显示屏在抬起前屏面朝外。**

若设备坠落，可能导致人员受伤或设备损坏。



**不要堵塞机壳上的通风槽。**

- ◆ 不要在通风槽上放置任何物品。
- ◆ 不要把设备安装在一个封闭的空间内。
- ◆ 不要在平放或倒放的状态下使用设备。

堵塞机壳上的通风槽会阻碍正常的空气流通，可能导致起火、电击或设备损坏。



**不要用湿手接触插头。**

否则可能导致电击。



**定期清洁插头周边。**

插头上的灰尘、水渍或油污可能会导致起火。

**在清洁前，请拔出电源插头。**

在带电状况下清洁设备可能会导致电击。

**请使用随附的电源线连接标准电源插座。**

请确保将显示器的电源插头完全插入插座，确保电源线使用在额定电压范围内，否则可能会导致火灾或触电；拔下电源线，然后断开电网连接。

设备必须连接到接地良好的电源插座，否则可能会导致火灾或触电。



若计划将设备闲置一段时间，请在关闭电源开关后将电源线与插座断开，以保证安全与节约能源。

未维修或保养的机器设备不能用于患者。

该设备不能在富氧环境下使用。

该装置不能与易燃麻醉剂一起使用。

该装置不能与易燃剂一起使用。

未经制造商授权，不得修改本设备。

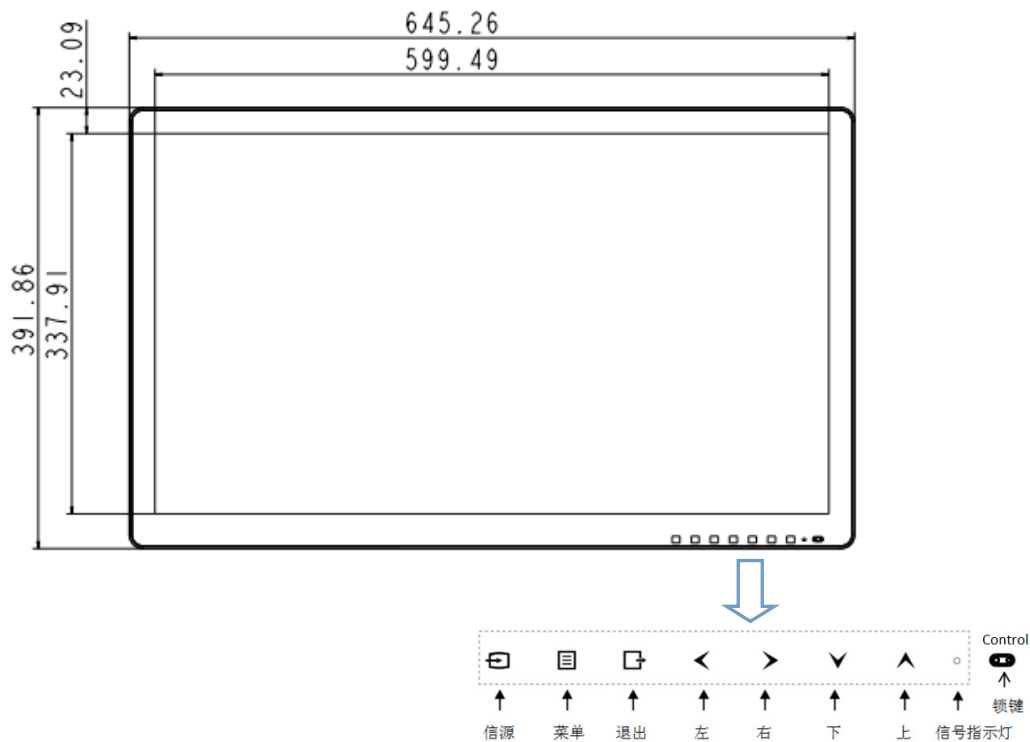
不要将医用电气设备放置在难以操作的位置。

## LCD面板

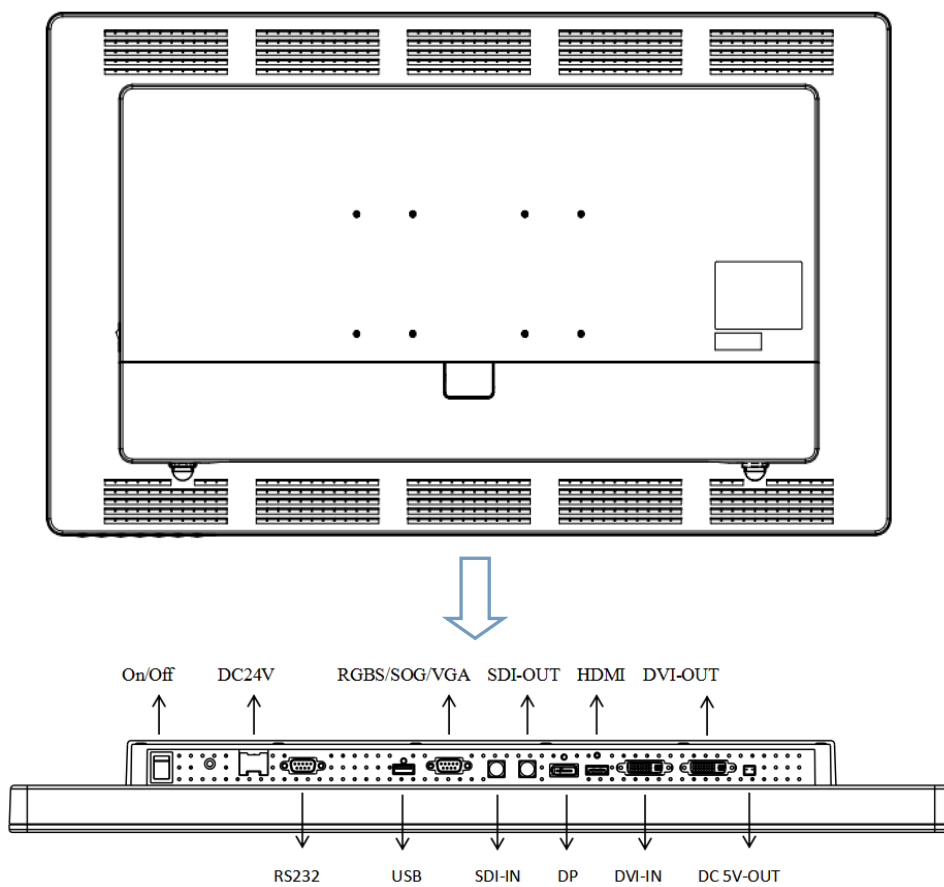
|   |
|---|
| 如果显示器的温度较低，在移入房间或房间温度迅速升高时，显示器内外可能形成凝露。此时，待凝露消失后才能打开显示器，否则会导致显示器损坏。           |
| 为了避免因长期使用导致亮度改变和保持稳定的亮度，建议显示器在略低一些的亮度下使用。                                     |
| 屏幕上可能存在有瑕疵的像素。这些像素看起来可能稍微有点亮或暗。这是由于显示屏本身的特性决定的，与产品质量无关。                       |
| 显示屏的背光灯有一定的使用寿命。当屏幕变暗或开始抖动时，请联系销售商。   |
| 不要用力挤压显示屏或面框边缘，这可能导致屏幕损坏。   |
| 不要用尖锐物体（比如铅笔或钢笔）划或压显示屏，这样可能会导致显示屏损坏。不要用纸巾擦拭显示屏，这样会造成划伤。                       |
| 当长时间显示同一图像后变换屏幕图像时，可能会出现残影。使用屏幕保护或者定时器，避免长时间显示同一图像。                           |
| 显示器可以长时间开机，但使用寿命会缩短。建议每小时应休息 10 分钟。   |
| 有序地打开显示器和计算机的电源。<br>显示器的电源指示灯将变为绿色。 如果无法显示图像，请参阅“故障排除”以获取帮助。 每次使用后请关闭计算机和显示器。 |

### 3 视图和接口

#### 3.1 前视图

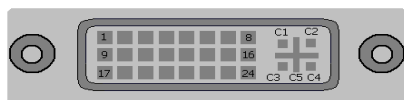


#### 3.2 后视图



### 3.3 信号接口

#### ● DVI接口



| 引脚 | 信号                      | 引脚 | 信号                      |
|----|-------------------------|----|-------------------------|
| 1  | T.M.D.S. Data2-         | 16 | Hot Plug Detect         |
| 2  | T.M.D.S. Data2+         | 17 | T.M.D.S. Data0-         |
| 3  | DVI Signal Detect       | 18 | T.M.D.S. Data0+         |
| 4  | T.M.D.S. Data 4-        | 19 | T.M.D.S. Data0/5 Shield |
| 5  | T.M.D.S. Data 4+        | 20 | T.M.D.S. Data 5-        |
| 6  | DDC Clock               | 21 | T.M.D.S. Data 5+        |
| 7  | DDC Data                | 22 | T.M.D.S. Clock Shield   |
| 8  | No connect              | 23 | T.M.D.S. Clock+         |
| 9  | T.M.D.S. Data1-         | 24 | T.M.D.S. Clock-         |
| 10 | T.M.D.S. Data1+         | C1 | No connect              |
| 11 | T.M.D.S. Data1/3 Shield | C2 | No connect              |
| 12 | T.M.D.S. Data 3-        | C3 | No connect              |
| 13 | T.M.D.S. Data 3+        | C4 | No connect              |
| 14 | +5V Power               | C5 | No connect              |
| 15 | Ground                  |    |                         |

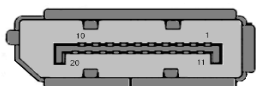
#### ● HDMI接口



| 引脚 | 信号     | 引脚 | 信号       |
|----|--------|----|----------|
| 1  | DATA2+ | 11 | GND      |
| 2  | GND    | 12 | CLK-     |
| 3  | DATA2- | 13 | NC       |
| 4  | DATA1+ | 14 | NC       |
| 5  | GND    | 15 | SCL      |
| 6  | DATA1- | 16 | SDA      |
| 7  | DATA0+ | 17 | GND      |
| 8  | GND    | 18 | +5V      |
| 9  | DATA0- | 19 | HOT_PLUG |
| 10 | CLK+   |    |          |

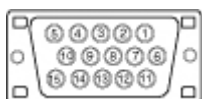


● DP 接口



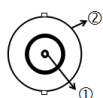
| 引脚 | 信号            | 引脚 | 信号              |
|----|---------------|----|-----------------|
| 1  | ML_Lane 3(N)  | 11 | GND             |
| 2  | GND           | 12 | ML_Lane 0(P)    |
| 3  | ML_Lane 3 (P) | 13 | GND             |
| 4  | ML_Lane 2(N)  | 14 | GND             |
| 5  | GND           | 15 | AUX CH(P)       |
| 6  | ML_Lane 2(P)  | 16 | GND             |
| 7  | ML_Lane 1(N)  | 17 | AUX CH(N)       |
| 8  | GND           | 18 | Hot Plug Detect |
| 9  | ML_Lane 1(P)  | 19 | Return          |
| 10 | ML_Lane 0(N)  | 20 | DP_PWR          |

● VGA 接口



| 引脚 | 信号          | 引脚 | 信号             | 引脚 | 信号          |
|----|-------------|----|----------------|----|-------------|
| 1  | Red video   | 6  | Red ground     | 11 | NC          |
| 2  | Green video | 7  | Green ground   | 12 | Data (SDA)  |
| 3  | Blue video  | 8  | Blue ground    | 13 | H. Sync     |
| 4  | NC          | 9  | NO Pin         | 14 | V. Sync     |
| 5  | GND         | 10 | Ground Shorted | 15 | Clock (SCL) |

● SDI 接口



| 引脚 | 信号  |
|----|-----|
| 1  | SDI |
| 2  | GND |

● 电源接口

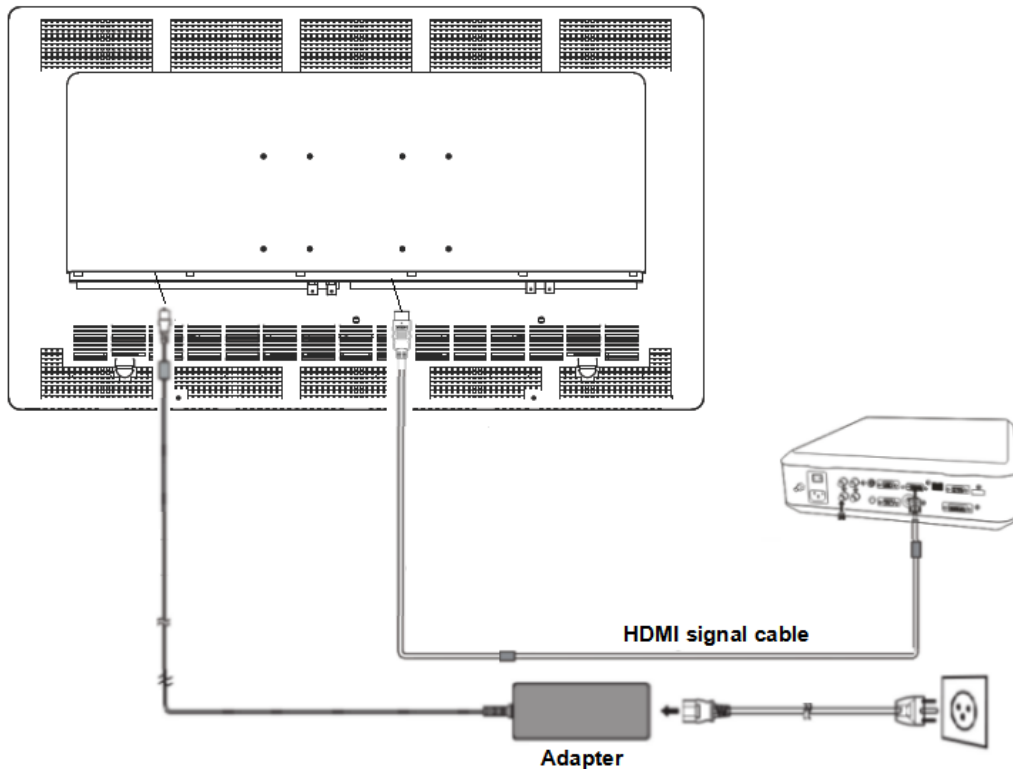
| 引脚 | 功能定义     | 引脚 | 功能定义     |
|----|----------|----|----------|
| 1  | +V (24V) | 4  | +V (24V) |
| 2  | Earth    | 5  | NC       |
| 3  | -V (GND) | 6  | -V (GND) |

## 4 连接与开机

**注意：**确保内镜主机与显示器的**电源开关**均处于**关闭**状态。

### 4.1 连接

1.将所有电缆连接到相应的连接器，如下图所示。



### 4.2 开机

打开显示器电源，显示器的电源指示灯将会变亮，启动内镜主机并把输出信号格式设置为：

分辨率：1920 x 1080，刷新率：60Hz

如果无法出现图像，请参考“故障分析”以获得帮助。



**警告**

**请使用附带电源线并连接至标准电源插座上。**

请保证显示器的电源插头能够完全插入插座。确保电源线在额定电压内使用。否则可能会导致起火或电击。

**设备必须连接至接地良好的电源插座上。**

否则可能会导致起火或电击。



## 5 操作

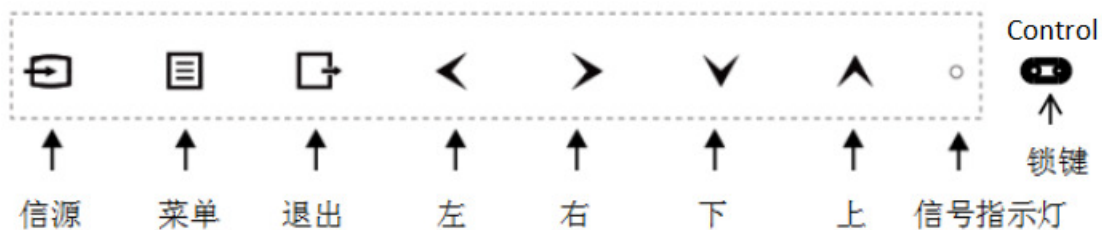
### 5.1 信号指示灯

| 颜色 | 显示器模式    |
|----|----------|
| 绿色 | 工作模式     |
| 橙色 | 待机模式     |
| 无  | 关机模式/无电源 |

### 5.2 快捷键

| 按键  | 功能     |
|-----|--------|
| ◀ 左 | 对比度调节  |
| ▶ 右 | 背光亮度调节 |

### 5.3 按键功能



| 按键      | 功能            |
|---------|---------------|
| 信源      | 启用信源菜单/切换下一信源 |
| 菜单      | 启用菜单/确认选择     |
| 退出      | 退出菜单/返回       |
| ◀ 左     | 按下可选择项目或调整值   |
| ▶ 右     |               |
| ▼ 下     |               |
| ▲ 上     |               |
| Control | 按键解锁/锁定：按住  键 |

## 5.4 按键菜单

下表列出了屏幕菜单的所有调节与设置。

| 主菜单    | 子菜单          | 参考  |       |    |
|--------|--------------|---|-------|----|
| 输入     | 主信源          | DVI /VGA /SDI /HMDI /DP /RGB /YPbPr                                     |       |    |
|        | PIP 模式       | 关/双屏/画中画（大）/画中画（小）  |       |    |
| 图像     | 主从选择         | 主/PIP   |       |    |
|        | 数字亮度         | 数字亮度调节:(0-100)  |       |    |
|        | 对比度          | 对比度调节:(0-100)   |       |    |
|        | 饱和度          | 饱和度调节:(0-100)   |       |    |
|        | 锐利度          | 锐利度调节:(0-24)  |       |    |
|        | 高宽比          | 全屏/原始大小/比例全屏  |       |    |
|        | 缩放           | 80,85,90,95,100,105,110,115,120   |       |    |
| 设置     | 色温           | 10000K/9300K/8500K/7500K/6500K/5500K/用户                                 |       |    |
|        |              | R   | 0-100 | 50 |
|        |              | G   | 0-100 | 50 |
|        |              | B   | 0-100 | 50 |
|        | 伽玛           | DICOM/2.6/2.4/2.2/2.0/1.8/Video   |       |    |
|        | 镜像/旋转        | 关/镜像/旋转   |       |    |
|        | 自动扫描信源       | 开/关   |       |    |
|        | 视频水平         | 自动/限制/全部  |       |    |
|        | RGB/YPbPr 选择 | 信号选择切换 YPbPr / RGB  |       |    |
| 恢复出厂设置 | 恢复出厂默认参数     |   |       |    |
| OSD    | 语言           | English / 中文 /Español /Português /Français /Deutsche /Italiano /русский |       |    |
|        | 菜单位置         | 底部中间/右下角  |       |    |
| VGA    | 自动调整         | 自动调整屏幕图象位置、时钟和相位  |       |    |
|        | 水平位置         | 设定画面往左或往右移动   |       |    |
|        | 垂直位置         | 设定画面往上或往下移动   |       |    |
|        | 时钟           | 设定画面采样的时钟，消除竖条纹   |       |    |
|        | 相位           | 设定画面采样的相位，消除抖动、模糊或横条纹   |       |    |
| 状态     |              | 显示 软件版本<br>主信源<br>主格式   |       |    |

## 6 参数规格

| <b>显示器特性:</b>  |  |
|----------------|--|
| 屏幕工艺           | 27”TFT, 彩色, 液晶显示屏, IPS, 防眩, 硬涂层, 光学胶贴合, 高透低反, 防冷凝, 防雾气 |
| 有效显示区域 (H x V) | 597.89 (H) x 336.31 (V) mm                             |
| 像素间距           | 0.3114(H) x 0.3114(V) mm                               |
| 分辨率            | 1920 x 1080  |
| 刷新率            | 60 Hz  |
| 对比度            | 1000:1 (典型值)   |
| 亮度             | 1000 cd/m <sup>2</sup> (典型值)                           |
| 可视角 (CR > 10)  | 水平 178° (典型值)  |
|                | 垂直 178° (典型值)  |
| 背光             | WLED   |
| 背光寿命           | 30000 小时(最小值)  |
| 响应时间           | T <sub>GTG</sub> : 14ms(典型值)                           |
| <b>电源:</b>     |  |
| 直流输入           | 24V, 5.0 A (由电源适配器供电)                                  |
| 正常功耗           | < 90W  |
| 节能功耗           | < 0.5W   |

| <b>控制和连接:</b> |  |
|---------------|--|
| 前/下部          | 电源指示灯<br>触摸按键  |
| 后部            | DVI -IN *1<br>DVI -OUT *1<br>VGA*1<br>SDI -IN *1/OUT *1<br>DP *1<br>HDMI *1<br>RS232 *1<br>DC 5V/0.8A-OUT*1<br>接地螺柱*1<br>DC 插座*1<br>电源开关*1 |
| <b>机械特性:</b>  |  |
| 外壳成分          | 塑料、玻璃  |
| 保护玻璃          | 表面 AR+AF 处理, 高透低反  |
| 散热方式          | 自然散热   |
| 防护级别          | IP65 (前)、IP20 (后)  |

|                  |  |               |
|------------------|--|---------------|
| <b>安规:</b>       |  |               |
| 安全标准             | CCC: GB4943.1-2011、GB17625.1-2012、GB/T9254.1-2021<br>CE: EN60601-1-2、EN IEC61000-3-2、EN61000-3-3 |               |
| 防护等级 (电气)        | Protection class I   |               |
| 尺寸:              |  |               |
| 不带包装 (D x W x T) | 645.26 mm x 391.86 mm x 62.5 mm  |               |
| 带包装 (D x W x H)  | 783 mm x 245 mm x 541 mm   |               |
| 重量:              |  |               |
| 显示器              | 净重   | 9.6 ± 0.5 kg  |
|                  | 毛重   | 14.2 ± 0.5 kg |
| 显示器+底座           | 净重   | 13.4 ± 0.5 kg |
|                  | 毛重   | 18 ± 0.5 kg   |
| <b>气候条件:</b>     |  |               |
| 工作温度             | 5°C~ 35°C(建议 20°C ~ 30°C)  |               |
| 工作湿度             | 15% ~ 85%相对湿度, 无冷凝   |               |
| 工作气压             | 70KPa ~ 106KPa   |               |
| 运输和贮藏温度          | -20°C ~ 60°C   |               |
| 运输和贮藏湿度          | 10%~ 90%相对湿度, 无冷凝  |               |
| 运输和贮藏气压          | 70KPa ~ 106KPa   |               |

**电磁辐射:**

液晶显示器用于专业医疗设施环境，如诊所和医院。

该要求包括有关 EMC 和安装期间的特殊预防措施。

请需要仔细阅读 EMC 信息和本文档的“注意事项”部分，并在安装和操作产品时遵守以下说明。在配置医疗系统时，将附加设备连接到信号输入部件或信号输出部件的任何人都有责任确保系统符合 IEC/EN60601-1-2 的要求。

液晶显示器适用于以下规定的电磁环境。

液晶显示器的客户或用户应确保其在此类环境中使用。

**Declaration - Electromagnetic Emission**

| Description of Test Item  | Compliance   | Limits Performance Criteria | Results |
|---|--|-----------------------------|---------|
| Conducted Disturbance at Mains Terminals CISPR 11   | Class B  | Normal                      | Pass    |
| Radiated Disturbance CISPR 11   | Class B  | Normal                      | Pass    |
| Harmonic Current Emissions IEC 61000-3-2  | Class D  | Normal                      | N/A     |
| Voltage Fluctuation and Flicker IEC 61000-3-3   | Section 5  | Normal                      | Pass    |
| <b>IMMUNITY (EN 60601-1-2:2015, IEC 60601-1-2:2014)</b>   |  |                             |         |
| Description of Test Item  | Compliance level                                   | Performance Criteria        | Results |
| Electrostatic Discharge (ESD) IEC 61000-4-2   | ± 8 kV contact<br>± 15 kV air                      | Normal                      | Pass    |
| Radio-Frequency, Continuous Radiated Disturbance IEC 61000-4-3  | Level: 3 10 V/m<br>80 MHz to 2.5 GHz               | Normal                      | Pass    |
| EFT/B Immunity IEC 61000-4-4  | Level 3: ± 2 kV for power supply lines             | Normal                      | Pass    |
| Surge Immunity IEC 61000-4-5  | ± 1 kV line(s) to lines<br>± 2 kV line(s) to earth | Normal                      | Pass    |
| Conducted RF Immunity IEC 61000-4-6   | Level 2 0.15-80 MHz @ 3 VRMS                       | Normal                      | Pass    |
| Power Frequency Magnetic Field IEC 61000-4-8  | Level 4, 30 A/m                                    | Normal                      | Pass    |
| Voltage Dips, >95% Reduction,<br>Voltage Dips, 30% Reduction,<br>Voltage Interruptions IEC 61000-4-11 |  | Normal                      | Pass    |

## 7 支持的信号格式

- DVI

| 信号模式      | 行频(kHz) | 场频(Hz) | 点频 (MHz) |
|-----------|---------|--------|----------|
| 720×400   | 31.50   | 70.0   | 28.322   |
| 640×480   | 31.50   | 60.0   | 25.175   |
| 800×600   | 37.90   | 60.0   | 40.000   |
| 1024×768  | 48.40   | 60.0   | 65.000   |
| 1280×1024 | 64.00   | 60.0   | 108.00   |
| 1920×1080 | 56.25   | 50.0   | 148.50   |
| 1920×1080 | 67.50   | 60.0   | 148.50   |

- VGA

| 信号模式      | 行频(kHz) | 场频(Hz) | 点频 (MHz) |
|-----------|---------|--------|----------|
| 720×400   | 31.50   | 70.0   | 28.322   |
| 640×480   | 31.5    | 60.0   | 25.175   |
| 800×600   | 37.9    | 60.0   | 40.00    |
| 1024×768  | 48.40   | 60.0   | 65.00    |
| 1280×1024 | 64.00   | 60.0   | 108.00   |
| 1920×1080 | 56.25   | 50.0   | 148.50   |
| 1920×1080 | 67.50   | 60.0   | 148.50   |

- DP/HDMI

| 信号模式        | 行频(kHz) | 场频(Hz) | 点频 (MHz) |
|-------------|---------|--------|----------|
| 720×400     | 31.50   | 70.0   | 28.322   |
| 640×480     | 31.5    | 60.0   | 25.175   |
| 800×600     | 37.9    | 60.0   | 40.000   |
| 1024 × 768  | 48.40   | 60.0   | 65.00    |
| 1280 × 1024 | 64.00   | 60.0   | 108.00   |
| 1920 × 1080 | 56.25   | 50.0   | 148.50   |
| 1920 × 1080 | 67.50   | 60.0   | 148.50   |



- RGB/YPbPr

| 信号模式       | 行频(kHz) | 场频(Hz) | 点频 (MHz) |
|------------|---------|--------|----------|
| 480i/60Hz  | 15.734  | 59.940 | 13.5     |
| 576i/50Hz  | 15.625  | 50.0   | 13.5     |
| 480p/60Hz  | 31.469  | 59.940 | 27.0     |
| 576p/50Hz  | 31.25   | 50.0   | 27.0     |
| 720p/50Hz  | 37.50   | 50.0   | 74.250   |
| 720p/60Hz  | 45.00   | 60.0   | 74.250   |
| 1080i/50Hz | 28.125  | 50.0   | 74.250   |
| 1080i/60Hz | 33.750  | 60.0   | 74.250   |
| 1080p/30Hz | 33.75   | 30.0   | 74.250   |
| 1080p/50Hz | 56.250  | 50.0   | 148.50   |
| 1080p/60Hz | 67.500  | 60.0   | 148.50   |

- SDI

|                                       |
|---------------------------------------|
| 1) 480/ 60I, 59.94I                   |
| 2) 576/ 50I                           |
| 3) 720/ 50p, 60p, 59.94p              |
| 4) 1080/ 25PsF, 25p                   |
| 5) 1080/ 30p, 29.97p, 30PsF, 29.97PsF |
| 6) 1080/ 50I                          |
| 7) 1080/60I, 59.94I                   |
| 8) 1080/50p                           |
| 9) 1080/60p, 59.94p                   |

## 8 清洁和消毒


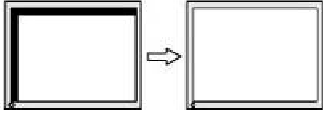

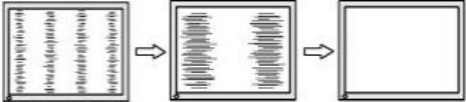

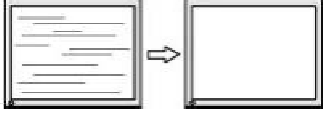
建议定期清洁，以保持显示器外观清洁，同时延长使用寿命。

用一块蘸有少量水（自来水、蒸馏水或矿泉水）或者化学试剂（浓度为 70%-75% 的酒精）的超细纤维布轻轻擦拭显示器外壳或面板上的污物。

### 注意：

- 当清洁液晶显示器时，请先关闭电源。
- 严禁用干纤维布擦拭显示器玻璃，防止与玻璃表面产生静电，对显示器造成损伤。
- 请勿经常使用化学清洁剂擦拭显示器；经常使用酒精、消毒液等化学试剂擦拭显示器可能导致机壳或屏幕失去光泽、褪色，进而降低图像质量。
- 请勿直接向显示器表面喷洒清洁剂，以防液体渗透到设备内部，损坏内部电路，导致设备故障。
- 只能使用经过测试检验的清洁剂，使用其它未经测试检验的清洁剂可能损坏显示器机壳或屏幕。

## 9 故障分析及维修






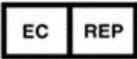
























| 问题   |   | 可能解决方案的要点  |
|--|---|--|
| 1. 无画面   | 指示灯状态：<br>无   | 检查电源线是否正确连接。如果问题仍然存在，关闭显示器电源，几分钟后重新打开。                           |
|  | 指示灯状态：<br>橙色  | 检查信号线的连接是否正确、到位；<br>通过按键菜单查看软件设置的信号通道是否与实际接线一致，按照实际连线情况调节菜单信号通道。 |
|  | 指示灯状态：<br>绿色  | 尝试按下计算机键盘上的按键或点击鼠标，确认信号源是否正常。                                    |
| 2. 显示位置不当。<br>    | 通过<H Position> 和<V Position>菜单选项，使用“向上”与“向下”键调节图像位置。如果问题仍然存在，使用图形卡设定程序更改显示位置。（VGA 信号）<br>  |  |
| 3. 出现竖条纹<br>      | 通过< Clock>菜单选项，然后使用“向上”和“向下”键来消除条纹。<br>不要连续按下控制键，否则调节值回快速变化而难以选择最佳值。如果出现抖动、模糊或横条纹，请按下一步骤进行<Phase>调节。（VGA 信号）<br>                           |  |
| 4. 出现异常横条纹。<br> | 通过<Phase>菜单选项，然后使用“向上”和“向下”键来消除抖动、模糊或横条纹。如果位置调节后出现竖条纹，请返回<Clock>调节，重复前面介绍过的步骤。（ Clock → Phase →<H Position> 和<V Position>）<br>（VGA 信号）<br> |  |
| 5. 屏幕太亮或太暗。  | 通过显示器菜单，条件背光亮度值（背光/Backlight）（液晶显示器的背光灯有一定的使用寿命，当屏幕变暗或开始抖动时，请咨询经销商）。  |  |
| 6. 出现残影。   | - 请确认在长时间显示同一图像时，是否使用屏幕保护程序或定时器。<br>- 残影是液晶显示器本身特性所致，应避免长时间显示同一图像。  |  |
| 7. 屏幕存在有瑕疵的像素。   | -这是显示屏本身特性所致，不是液晶显示器的问题。  |  |
| 8. 指压痕迹留在屏幕上   | -保持屏幕背景白色可以解决此问题。   |  |

注意，若采用以下推荐的解决方案后仍无法解决问题，请联系经销商或请专业人员进行维修处理，切勿自行拆机。

## 10 附录

### 10.1 标记和符号

在机器、电源或外包装上的符号及标记具有以下的意义（非限制性清单）。

|   |                 |  |                           |
|---|-----------------|--|---------------------------|
|    | 小心，注意           |    | 安全接地标志                    |
|    | 警告：高压危险         |    | 批号                        |
|    | 生产日期            |    | 欧代地址                      |
|    | 制造商             |    | 参考说明书/用户手册                |
|    | 产品代码            |    | 产品序列号                     |
|    | 医疗器械            |    | RoHS 标志                   |
|   | 废弃电气和电子设备应该合法处理 |   | 易碎，小心轻放                   |
|  | 二类设备            |  | 向上放置                      |
|  | 保持干燥，防潮         |  | 温度                        |
|  | 最大堆积层数          |  | 湿度                        |
|  | 大气压强            |  | FCC 认证标志                  |
|  | CE 认证标志         |  | CCC 认证标志                  |
|  | TUV 认证标志        |  | 中国电子信息产品控制管理方法（中国 RoHS）标志 |
|  | 节能认证标志          |  | 磁共振（MR）-不安全               |
|  | UKCA 认证标志       |  | 英国负责人标识                   |

## 10.2 符合声明

本设备运行满足下列两个条件：

- (1) 本设备不会带来有危险性的干扰；
- (2) 本设备不会受到外部干扰的影响而产生不可预测的结果。

为避免干扰无线电或电视接收，请使用本显示器配套的电缆和电源适配器，使用其它电缆和电源适配器可能造成对其它电子设备的干扰；

本设备会发出无线电磁波，如未按说明安装和使用本设备可能会干扰无线通信系统；

不能保证本设备正常安装时永远不会产生干扰，是否会干扰无线电或电视接收设备可以通过开关本设备电源来判断，用户可以用下列办法解决干扰问题：

- 调整无线电或电视接收天线的角度和位置；
- 加大本设备与无线电或电视接收器的距离；
- 本设备与无线电或电视接收器不使用同一个电源回路；
- 向专业技术人员寻求帮助。

配置医疗系统时，任何与本设备信号输入输出相联的设备都必须符合医疗设备标准IEC60601-1。如果不能确定，请向专业技术人员寻求帮助。

### European Authorised Representative



### 10.3 RoHS信息

根据SJ/T11364-2006《电子信息产品污染控制标识要求》，特提供以下关于污染控制方面的信息。

#### 电子信息产品污染控制标志说明



该标志表明本产品含有超过中国标准SJ/T11363-2006《电子信息产品中有毒有害物质的限量要求》中限量的有毒有害物质。标志中的数字为本产品的环保使用期限，表明该产品在正常使用条件下，有毒有害物质不会发生外泄或突变，用户使用该产品不会对环境造成严重污染或对其人身、财产造成严重损害。单位为年。

为保证所声明的环保使用期限，应按照产品手册中所规定的环境条件和方法进行正常使用，并严格遵守所规定的定期维修和保养要求。

产品中的消耗件和某些零部件可能有其单独的环保使用期限标志，并且其环保使用期限可能比整个产品本身的环保使用期限短。应到期按产品维修程序更换那些消耗件和零部件，以保证所声明的整个产品的环保使用期限。

本产品在使用寿命结束时不可作为普通生活垃圾处理，应被单独收集妥善处理。

有毒有害物质或元素的名称及含量：

| 部件名称     | 有毒有害物质或元素 |       |       |              |            |              |                        |                |               |                  |
|----------|-----------|-------|-------|--------------|------------|--------------|------------------------|----------------|---------------|------------------|
|          | 铅(Pb)     | 汞(Hg) | 镉(Cd) | 六价铬 [Cr(VI)] | 多溴联苯 (PBB) | 多溴联苯醚 (PBDE) | 邻苯二甲酸二(2-乙基己基)酯 (DEHP) | 邻苯二甲酸苄基酯 (BBP) | 邻苯二甲酸丁酯 (DBP) | 邻苯二甲酸二异丁酯 (DIBP) |
| 外壳       | ○         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |
| 液晶显示屏/灯管 | X         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |
| 电路板组件*   | X         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |
| 电源适配器    | X         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |
| 机架、底盘    | ○         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |
| 电源线/连接线  | X         | ○     | ○     | ○            | ○          | ○            | ○                      | ○              | ○             | ○                |

\*: 电路板组件包括印刷电路板及其构成的零部件，如电阻、电容、集成电路、连接器等。

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。

X: 表示该有毒物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。但是上表打“X”的部件，符合欧盟RoHS法规要求（属于豁免的部分）。此表所列数据为发布时所能获得的最佳信息。

由于缺少经济上或技术上合理可行的替代物质或方案，此医疗设备运用以上一些有毒有害物质来实现设备的预期临床功能，或给人员或环境提供更好的保护效果。