

# INSTRUCTION MANUAL

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Full HD 24-inch Multi-format LCD Color Monitor

Model **MLW-2422C**



**Ikegami**

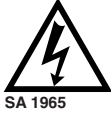
Ikegami Tsushinki Co., Ltd.

Thank you for choosing this Ikegami HD Monitor. Please read this Instruction manual carefully to keep your Ikegami products at peak performance for a longer service period. All Ikegami products are designed and manufactured with utmost care and craftsmanship to provide long life and high quality performance, if it is properly used and maintained as outlined in this manual.

This high performance LCD (Liquid Crystal Display Panel) monitor is equipped with the latest precision display panel of 24 inch diagonal size, which has an extremely accurate pixel arrangement for sharp reproduction and a lot of useful facilities and functions in a rugged but light weight and easy-to-use design to allow for a wide range of uses in many different applications for professional people.

This Ikegami product is made of ECO friendly components based upon the Company policy and corporate social responsibility to contribute towards the Global Environmental Solution for energy conservation and environmental sustainability, all the components used in this product are Non-hazardous, Toxic Free, Non-Lead and conform with Japan's Green Product regulation, EU's RoHS directive and other Environmental and hazardous chemical substances related regulations and laws.

|  |   |   |
|--|---|---|
| <br>SA 1965   | <b>CAUTION</b><br>RISK OF ELECTRIC SHOCK<br>DO NOT OPEN | <br>SA 1966 |
| <b>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).<br/>NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</b> |   |   |



The lightning flash with arrowhead inside a triangle is intended to warn the user that parts inside the product are dangerous and many cause electrical hazards.



The exclamation mark inside a triangle is intended to inform users that important operating and servicing instructions are provided with the equipment.

**WARNING: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS (REFER TO SERVICE LITERATURE).**

**NOTE:**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**CAUTION;**

ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE BODY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USERS AUTHORITY TO OPERATE THE EQUIPMENT.

**WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR WATER.**

### Instructions for Disposal of Electrical and Electronic Equipment in Private Households



**Disposal of used Electrical and Electronic Equipment**

**(Applicable in the European Union and other European countries with garbage separate disposal and collection methods)**

This symbol on the product, or in the related documents in the package, indicates that this product shall not be treated as normal household waste. Instead, it should be taken to a proper applicable collection point or depot for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will help prevent possible negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.

For more detailed information about recycling of this product, please contact your local city authority, your household waste disposal service or the place where you purchased the product.

# IMPORTANT SAFETY INSTRUCTIONS

## 1. General

- 1) Read all instructions provided.
- 2) Save these instructions for future use.
- 3) Follow all warnings and instructions marked on the monitor equipment.
- 4) Never insert objects of any kind into this monitor through cabinet slots as they may come in contact with dangerous voltage points or short out parts, resulting in fire or electrical hazards, Never spill liquid of any kind on the monitor.
- 5) Do not attempt to service this monitor yourself as operating or removing covers may expose you to a dangerous voltage or other hazards, Refer all servicing to qualified service personnel.
- 6) Do not use attachments not recommended by the monitor equipment manufacturer as they may result in the risk of fire, electric shock, or injury to persons.
- 7) This monitor has been pre-adjusted to meet the respective standard signals. So, it cannot be used with the signals of different standards.
- 8) When keeping or transporting the unit for a long time, pack it in the supplied carton or equivalent.

## 2. Power supply

- 1) This monitor equipment should be operated only from the type of power source indicated on the marking label.
- 2) This monitor equipment is provided with a three-wire grounding type plug with a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace either the plug or your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- 3) When connecting and disconnecting the power cable, be sure to hold the plug.
- 4) Do not allow anything to rest on the power cord. Do not place this monitor equipment where the cord will be abused by persons walking on it.
- 5) For added protection for this monitor equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the equipment due to lightning and power -line surges.
- 6) Do not overload wall outlets and extension cords as this can result in fire or electric shock.

## 3. Usage and location

- 1) Do not use this Color LCD Display equipment near water - for example, near a bath tub, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, or the like.
- 2) Do not place this Color LCD Display equipment on an unstable cart, stand, or table. The Color LCD Display equipment may fall, causing serious injury to children and adults, and serious damage to the equipment. Use only with a cart or stand recommended by the manufacture, or sold with the Color LCD Display equipment. Wall or shelf mounting should follow the manufacture's instructions, and should use a mounting kit approved by the manufacture. Color LCD Display equipment and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.
- 3) Slots and openings in the cabinet and the back or bottom are provided for vitiation, and to ensure reliable operation of the monitor and to protect it from overheating, these openings should never be blocked or covered. The openings should never be blocked by placing the Color LCD Display equipment on a bed, sofa, rug, or other similar surface. (This Color LCD Display equipment should never be placed near or over a radiator or heat register.) This Color LCD Display equipment monitor should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
- 4) Avoid operating or placing (keeping) in a hot (+35°C or over) or cold (less than +5°C), high vibration, or dusty place. Avoid operating or storing in a place exposed to direct sunlight.
- 5) If an image of extremely high brightness is displayed on the screen for a long time, the panel may get burned in.
- 6) The installation method which does not use a stand.
  - Pan  
Right & Left=0°
  - Tilt  
Down ≤ 5°, Up ≤ 15°
  - Condition of around  
It separates from the wall etc. by 10cm or more.



# IMPORTANT SAFETY INSTRUCTIONS

## 4. Cleaning

- 1) Unplug this Color LCD Display equipment from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 2) Do not use thinners or petroleum products for cleaning. Otherwise, the cabinet may deform or the paint may peel away .

## 5. Repair

- 1) Unplug this Color LCD Display monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a. When the power cord or plug is damaged or frayed.
  - b. If liquid has been spilled into the Color LCD Display.
  - c. If the Color LCD Display monitor has been exposed to rain or water.
  - d. If the Color LCD Display does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the Color LCD Display monitor to normal operation.
  - e. If the Color LCD Display monitor has been dropped or the cabinet has been damaged.
  - f. When the monitor exhibits a distinct change in performance - this indicates a need for service.
- 2) When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacture that have the same characteristics as the original parts.  
Unauthorized substitutions may result in fire, electric shock, or injury to persons.
- 3) Upon completion of any service or repairs to this monitor, ask the service technician to perform routine safety checks to determine that the Color LCD Display is in safe operating condition.
- 4) For repair service, contact **Ikegami**'s authorized sales representative or **Ikegami** service desk directly.

# OPERATING PRECAUTIONS

- 1) Never let this unit fall or subject it to strong shock.
- 2) Do not remove the cabinet unless necessary. High-voltage parts are contained in the cabinet and they are very dangerous if you touch them. Only qualified service engineers are allowed to adjust the internal parts of the cabinet.
- 3) This color monitor has been adjusted to signals conforming to each broadcasting standard. It cannot be used for signals of different broadcasting standards. Be sure to operate the colour monitor within the voltage range marked on its back.
- 4) If cabinet or screen is dirty, wipe with soft cloth. At this time, avoid using petroleum based products or thinner, otherwise the paint may peel away.
- 5) Note that, if video signals with high luminance are monitored on the LCD panel over a long period of time, the panel may burn in the image.
- 6) Avoid using or storing this unit in the following places:
  - Hot (+35°C or more) or cold (+5°C or less) places, especially where this unit may be exposed to the direct rays of the sun.
  - Humid and dusty places.
  - Places where there is considerable vibration.
  - Places exposed to rain or water.
  - When storing or transporting this unit, pack it in the supplied carton or equivalent.
- 7) If no image can be monitored even after performing user adjustment or the unit appears faulty, do not dismantle this unit by yourself. In such cases, contact the **Ikegami** service desk.
- 8) Should this unit fail within one year after delivery, it will be repaired free of charge unless the malfunction was caused by mishandling or misuse of the user. However, the fuses are not covered by the warranty.
- 9) The specifications and appearance of this unit may be subject to change for further improvement without prior notice.

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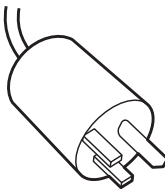
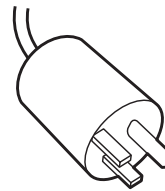
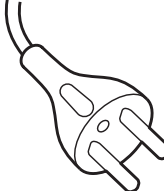
# 1. Precautions

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- When you open the cardboard box of the LCD monitor, please check that the indicated accessories and cables are present.  
It is recommended not to dispose of the packaging materials and to store them for later use if it becomes necessary to transport again for after-sales service, or maintenance purposes.
- Do not install this LCD monitor in a water-splashed or highly humid environment.
- Do not use the LCD monitor where the ambient temperature drops below +5°C or Rises above +35°C. The images and component parts may be adversely affected or the monitor may not function correctly.
- Do not open the case of the monitor body, unless it is absolutely necessary for setup or installation because there are precision electrical and electronic components inside and an accident may result.
- Do not put anything metallic or other foreign substances into the body, as a fire or electric shock may result.
- Be sure to turn off the power before installing or making connections.
- Do not install the monitor in places exposed to heat, vibrations and shocks.
- Be careful not to drop or give a strong shock to this monitor while transporting it.
- It is not recommended to touch the surface of LCD panel.
- Please ensure that this device and other devices dose not produce improper operation by the electromagnetic or other interference.
- \* Because of the digital image device characteristics, images may look unnatural at high temperatures, this does not mean the monitor is faulty.

## 1. Precautions

### Warning on power connection.






|                         | The United States   | Canada   | Continental Europe  |
|-------------------------|---|--|---|
| Plug Type               | NEMA 5-15P<br>HOSPITAL GRADE  | NEMA 5-15P<br>HOSPITAL GRADE   | CEE7<br>EURO  |
| Rated Voltage & Current | 10A/125V  | 10A/125V   | 10A/250V  |
| Safety Approval         | UL  | CSA  | VDE   |
| Plug Configuration      |  |  |  |
| Power Cord              | Type SJT  | Type SJT   | H05VV-F   |

Use a proper power cord for your local power supply.

### Requested from external connected equipment.

All the equipment connected to this unit shall be certified according to Standard IEC60601-1 applicable to the equipment.

### Symbols on the unit

| Symbol   | Location | This symbol Indicates                   |
|--|----------|---|
|           | Front    | Standby SW                              |
| Power<br> | Bottom   | Main power switch.<br>  : ON<br>○ : OFF |
|           | Front    | Brightness Control                      |
|           | Front    | Contrast Control                        |
|           | Bottom   | Potential Equalization Terminal         |



### **Maintenance**

- Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent, such as benzene.
- Do not rub, touch, or tap the surface of the screen with sharp or abrasive items such as a ball-point pen or screwdriver. This type of contact may result in a scratched picture panel.
- Clean the screen with a soft cloth, If you use a glass cleaning liquid. Do not use any type of cleaner containing an anti static solution or similar additive as this may scratch the screen's coating.

### **Concerning handling of EN60601-1-2 (EMI)**

This device requires installation of the following cores:

- When DVI signal is input: Attach the supplied SFT-59SN to the connector base section.
- When PC signal is input: Attach the supplied SFT-59SN to the connector base section.
- When S-Video signal is input: Attach the supplied SFT-59SN and TFT-152613N(2T) to the connector base section.

## 2. General Description

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### 2.1 Features

- High-resolution image display  
A full high-definition panel with a resolution of 1920(H) x 1200(V) dots is employed for displaying extremely fine images.
- Higher brightness and wider view angle  
The view angle is as wide as 178° from all directions. No matter where the monitor is set up, images can be comfortably viewed from different angles.
- Less afterimages  
The LCD panel has a higher response speed, which reproduces images with less afterimages.
- 10-bit signal processing  
Input signals are processed to 10-bit signals, enabling smoother gradation.
- Jaggy-less I/P conversion (Interlaced-to-Progressive conversion)  
The unit is equipped with a jaggy-less I/P converter in order to convert NTSC, PAL and HD interface signals to natural-looking images with unnoticeable jagged lines.
- Compatible with various types of signals  
HDTV (1080i, 720P), SDTV (NTSC, PAL), PC inputs (analog and digital), SD-SDI and HD-SDI signals can be applied. (The SD-SDI and HD-SDI inputs are optional.)
- User-preset memory  
The white balance, hue, and chroma values, etc. can be registered in the memory for retrieval by the user to provide eight different types of settings.
- Meeting many safety standards  
The medical-use monitor conforms to US UL60601-1, Canadian CSA22.2 No. 601.1 (cUL) and European EN60601-1 safety standards too.
- MLW-2422C is a monitor intended for use in a medical environment to display pictures from cameras or other system.

### 2.2 About Input Signals

- NTSC/PAL inputs (BNC and S terminal inputs)  
The unit handles NTSC and PAL composite video signals, as well as S-video signals, which are automatically identified to be displayed.
- RGB and component signal inputs (BNC)  
Various types of signals - NTSC, PAL, 480P, 576P, 1080i and 720P, for instance - can be readily handled for images.
- Analog RGB (HD-15) and DVI-D signal inputs  
Signals - VGA, SVGA, XGA, SXGA, UXGA, WUXGA, 480i, 575i, 1080i and 720P - can also be readily accepted for images.
- Input of external sync signals  
The unit can get in sync with external signals such as from cameras and sync signal generators.
- SDI signals  
The SDI unit can be optionally equipped for displaying digital signals such as SD-SDI (NTSC, PAL), and HD-SDI (1080i, 720P), etc.

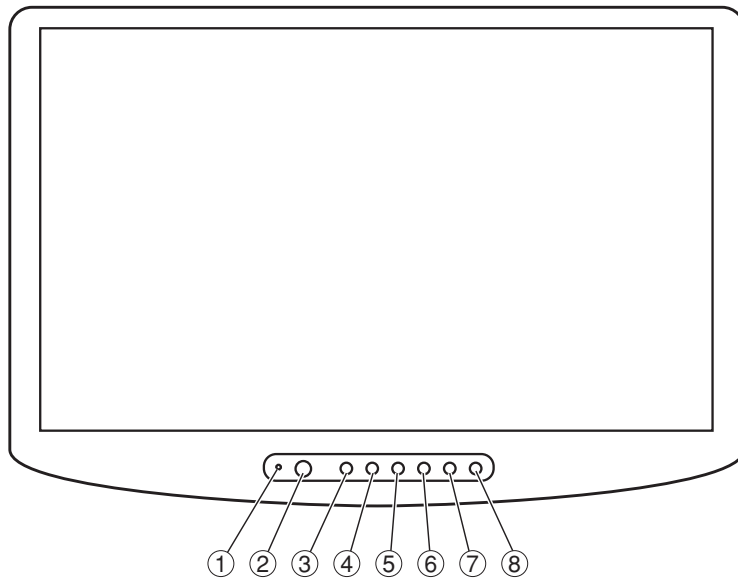
## 2.3 Functions

- Color temperature switching function  
The color temperatures can be chosen from 6500K, 9300K and user settings to select a color rendering to your taste.
- Gamma level switching function  
The gamma level can be selected, compatible with DICOM14, from 1.8 to 2.6 (in 0.2 increments),
- Aspect ratio switching function  
The display aspect ratio of video signals can be switched to either the 4:3 or 16:9 view angle size.
- User setting memory switching function  
Colors, brightness and other image quality-related settings are user-adjustable for eight different groups. They are readily switchable.
- Input signal selection function  
Input signals can be selected from input video, S-Video, RGBS (BNC), analog RGB, HG-15), and DVI-D signals.
- Power management function  
When no input signal is supplied for approximately 10 seconds, automatically the energy saving mode is enabled.
- External remote control function  
An externally connected device may be used to select input signals and to make various settings.
- Options
  - Stand (Model TS-261)  
The optional stand is available to place the monitor for desktop use.
  - Multi SDI input unit (Model M-MSDI2)  
This is an optional unit for adding a single system of SDI input.

### 3. Names of Parts

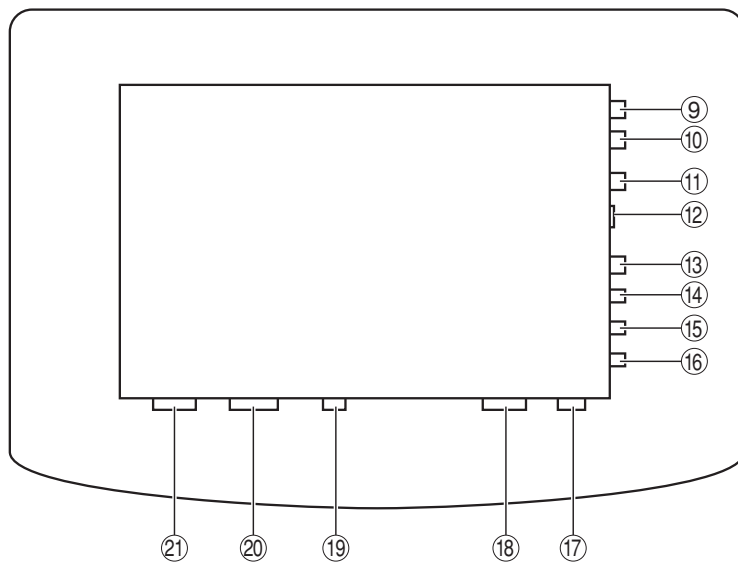
#### 3.1 Names of Parts and Their Functions

Front



- ① Power indicator
- ② Standby power switch
- ③ Input 1
- ④ Input 2
- ⑤ MENU
- ⑥ -
- ⑦ +
- ⑧ ☀ Contrast/  
● Brightness/  
Exit

Back



- ⑨ SDI input
- ⑩ SDI output
- ⑪ Video input/output
- ⑫ S-Video input/output
- ⑬ Y/G input/output
- ⑭ Pb/B input/output
- ⑮ Pr/R input/output
- ⑯ Sync input/output
- ⑰ PC (RGB) 1 input
- ⑱ DVI-D1 input
- ⑲ COM (Service Port)
- ⑳ AC input
- ㉑ Power switch
- ㉒ ⚡ Potential  
Equalization  
Terminal  
This symbol  
appears next to the  
display's Potential  
Equalization  
Terminal (ground  
post)

Note: Various signal inputs (Video, S-Video and RGB) are automatically terminated. With the main power off, however, the S-Video signal terminates itself off even when the output connector is not connected.

## 4. Input Signal Connection

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Connect the input signals in the following way.

**4.1 NTSC/PAL Analog Video** : Connected to the Video input.

**4.2 NTSC/PAL Analog S-Video:** : Connected to the S-Video input.

**4.3 RGB or YPbPr Analog signals** (BNC connector)

G/Y: Connected to Component G/Y input.

B/Pb: Connected to Component B/Pb input.

R/Pr: Connected to Component R/Pr input.

Sync: Connected to Component Sync input.

**4.4 PC Analog signal** : Connected to PC input. (15P D-SUB connector)

**4.5 PC Digital signal** : Connected to DVI input.

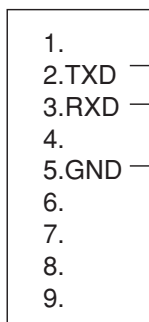
**4.6 NTSC/PAL/HD Digital Video** : Connected to SDI input. (option)

Note: Various signal inputs (Video, S-Video and RGB) are automatically terminated. Be sure to connect them to the input side because otherwise malfunction may occur.

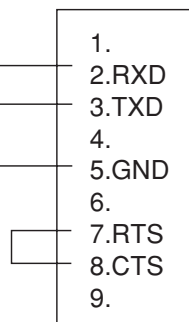
### 4-7. Remote Connection :

Remote control is possible with a remote control signal feed.

D-SUB 9 pin connector on  
LCD Monitor back



External PC/D-SUB  
9 pin Connector



Do not connect anything to pins 1, 4, 6, 7, 8, or 9 on the monitor side (or else, a malfunction of the monitor may occur).

Note: At the PC, Pins 7 and 8 must be loop-connected.

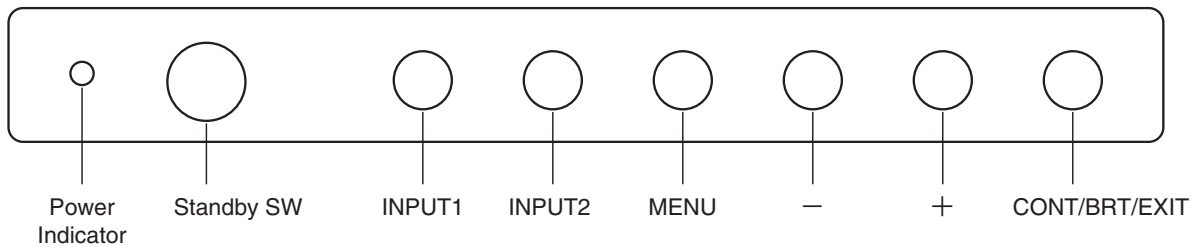
Be sure to use a shielded cable for a remote signal cable. Please contact the sales agent where you purchased the product for details.

# 5. Operation

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## 5.1 Key Operation

There are seven front keys as shown below.



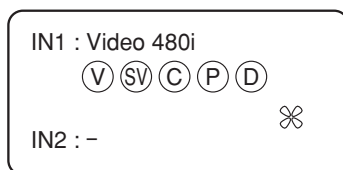
The keys have the following functions.

- Standby SW : Used to turn on and off the power.
- INPUT1 : Switching of the input signal set to IN1
- INPUT2 : Switching of the input signal set to IN2
- MENU : Used to display the menu.
- : Used to select the setting menu, to make adjustments.
- + : Used to select the setting menu, to make adjustments.
- CONT/BRT/EXIT : Used to put the contrast, brightness and other settings in memory and to exit.

If no operation is made within the OSD User Time Out setting, the pre-adjusted settings are resumed and the OSD disappears.

## 5.2 Display with a Signal Being Selected

### 5.2.1 Input Signal Screen Display



IN1: "Input" "Signal"

Signal input specified to IN1

When no input signal is set: IN2 : —

Fan indication ⌘: Abnormality: Stop using the unit and contact the sales agent.

### 5.2.2 Input Display

- SDI : SDI
- COMPONENT : COMP
- PC : PC
- DVI : DVI
- VIDEO : VIDEO
- S-VIDEO : S-VIDEO

### 5.2.3 Signal Name Display

|                               |  |
|-------------------------------|--|
| SD Video line                 | : 480i, 575i   |
| HD Video line                 | : 720P/50, 720P/60, 1080i/50, 1080i/60, 1080P/50, 1080P/60<br>(59.94 Hz is expressed as 60 Hz.)        |
| PC line                       | : VGA, SVGA, XGA, SXGA, WUXGA, 480i, 575i, 720P/50, 720P/60,<br>1080i/50, 1080i/60, 1080P/50, 1080P/60 |
| DVI line                      | : VGA, SVGA, XGA, SXGA, WUXGA, 480i, 575i, 720P/50, 720P/60,<br>1080i/50, 1080i/60, 1080P/50, 1080P/60 |
| With no signal<br>being input | : No Sync  |

## 5.3 Settings and Key Operation

The setting function is for signals currently being inputted and selected.

By pressing the Menu once, the Adjustment screen can be displayed.

### 5.3.1 Direct Brightness/Contrast/User Memory Settings and Adjustments

#### 1) Contrast

Press the “CONT/BRT/EXIT” key, and the settings show up. The settings are adjusted with the “+” or “-” key. Press the “CONT/BRT/EXIT” key again to save the current settings and to exit this mode.

#### 2) Brightness

Press the “CONT/BRT/EXIT” key, and the settings show up. The settings are adjusted with the “INPUT1” or “INPUT2” key. Press the “CONT/BRT/EXIT” key again to save the current settings and to exit this mode.

#### 3) User Memory

By pressing the “CONT/BRT/EXIT” key, the setting values can be displayed, allowing settings to be made by using the “MENU” key. Eight types of settings from Setting 1 to Setting 8 are possible. When the “CONT/BRT/EXIT” key again, the setting value is registered, and the setting procedure is terminated.

### 5.3.2 Input Signal Selection

At the first key operation, the current input signal is accepted. By using the key within 5 seconds, the input signal is switched over. The INPUT1 and INPUT2 keys are used to select input signal. The last input signal is picked up in its shut-off state when the power is turned on again.

For setting of input signals, use the “Memory Select Screen” screen as described under 5.9.

### 5.3.3 OSD Menu Operation

Press the MENU key, and the Status screen shown below appears. The tabs are selected with the “+” or “-” key and fixed with the “MENU” key. The selected tabs change color. All the new settings are saved by pressing the EXIT key once. Press the EXIT key again, and the operation is completed. If no saving takes place, select UNDO, press MENU first and then EXIT. The operation ends with the previous settings intact.

## 5. Operation

### 5.4 Status Screen

This screen is used to display the current input signal information and the monitor settings.

Screen display

| Status                     | User             | Display                     | Image | Color | Memory |
|----------------------------|------------------|-----------------------------|-------|-------|--------|
| Signal Set. Component      | RGB              |                             |       |       |        |
| PC                         | RGB              |                             |       |       |        |
| DVI                        | RGB              |                             |       |       |        |
| User Memory                | User1            |                             |       |       |        |
| Color Mode                 | User             |                             |       |       |        |
| Gamma                      | 2.2              |                             |       |       |        |
| Option Board               | No Option        |                             |       |       |        |
| H/V.Frequency              | **.*kHz / **.*Hz |                             |       |       |        |
| Product Code               | MLW-2422C        | XXXXX                       |       |       |        |
| IN1: CH name - Signal name |                  | Switch behavior description |       |       |        |
| IN2: CH name - Signal name |                  |                             |       |       |        |

Status setting screen description

The selected input signal and the setting status are displayed.

- **Signal Set.:** Used to display the format setting of each input signal; RGB or YPbPr.
- **User Memory:** Used to display the number of selected memory.
- **Color Mode:** Used to display the selected color setting.
- **Gamma:** Used to display the selected gamma level.
- **Option Board:** Used to display the added optional board.
- **H/V. Frequency:** Horizontal and vertical frequencies of the input video signal are displayed.
- **Product Code:** The model name is indicated.

### 5.5 User Setting Screen

This screen is used to make the power save, backlight, OSD position and other settings.

Screen display

| Status                     | User    | Display                     | Image | Color | Memory |
|----------------------------|---------|-----------------------------|-------|-------|--------|
| DPMS                       | ON      |                             |       |       |        |
| BackLight                  | 255     |                             |       |       |        |
| OSD Position               | 1       |                             |       |       |        |
| OSD Time Out               | 30s     |                             |       |       |        |
| Signal Judge               | OFF     |                             |       |       |        |
| Chromaticity Diagram       | Wide    |                             |       |       |        |
| Logo                       | ON      |                             |       |       |        |
| Language                   | English |                             |       |       |        |
| Reverse                    | OFF     |                             |       |       |        |
| DVI EQ                     | 21 dB   |                             |       |       |        |
| UNDO                       |         |                             |       |       |        |
| IN1: CH name - Signal name |         | Switch behavior description |       |       |        |
| IN2: CH name - Signal name |         |                             |       |       |        |

OFF/ON  
0-255  
1-5  
OFF/10s/30s/60s  
OFF/ON  
Wide/Normal  
OFF/ON  
English/Chinese  
OFF/↔/↑ / ↓ ↔/COM  
09dB/14dB/18dB/21dB/24dB/26dB/30dB



## User Setting Screen

- DPMS: When set at ON, the display power management function puts the unit in the power-save mode if a selected input has no signal and no key is operated for longer than 10 seconds. The backlight is automatically turned off.  
Power OFF/ON: To be resumed by feeding a signal or operating a key.
- BackLight: Used to change the backlight brightness of the LCD panel. The adjustable range is from 0 to 255.
- OSD Position: Used to select the on-screen display position. The numerical settings allow the following display positions.  
1: Upper right, 2: Top center, 3: Upper left, 4: Lower right, 5: Lower left
- OSD User Time Out: Used to set the time for the on-screen display to disappear. The OSD disappears in any of the following time settings. 10s: 10 seconds, 30s: 30 seconds, 60s: 60 seconds, OFF: No time setting  
With this function, the OSD turns itself off if the OSD setting key is not operated within a preset time.
- Signal Judge: It is possible to make setting for the detection of signal disconnection.  
OFF: Immediately after a no signal condition is detected, the signal disconnection process is activated.  
ON: When detections of signal disconnection occur continually, the signal disconnection process is activated.
- Chromaticity Diagram: Setting of the color gamut is possible.  
Wide: Colors are displayed in the Wide color gamut.  
Normal: Colors are displayed in the Normal color gamut.
- Logo: It is possible to select the logo display when the power is turned on:  
OFF: No logo is displayed  
ON: The Ikegami logo is displayed.
- Language: This switches the language between English and Chinese.
- Reverse: This is a function for inverting the screen display:  
OFF: Normal display; ⇔ : Horizontal flip display;  
⇕ : Vertical flip display;  
⇔⇕ : Vertical and horizontal flip display;  
COM: Externally controlled display
- DVI EQ: This cable compensation function helps suppress noises when the DVI is connected using a long cable and suffers from noises. The DVI EQ setting is to adjust the standard input.

## 5. Operation

### 5.6 Display Setting Screen

This screen is used to make the input signal display aspect ratio, horizontal and vertical display positions and sizes, and other settings.

Screen display

| Setting    | Value  | Range/Options     |
|------------|--------|-------------------|
| Aspect     | Normal | Normal/Full/Clear |
| Over Scan  | OFF    | OFF/10%/20%       |
| H.Position | 0      | -200 - +200       |
| V.Position | 0      | -200 - +200       |
| H.Size     | 0      | -200 - +200       |
| V.Size     | 0      | -200 - +200       |
| Clock      | 50     | 0 - 100           |
| Phase      | Auto   | Auto/1-48         |
| AUTO       | Cancel | Cancel/ADJ        |
| UNDO       |        |                   |

IN1: CH name - Signal name  
IN2: CH name - Signal name

Switch behavior description

Display setting screen description

- **Aspect:** Used to switch the video signal aspect ratio from Normal, Full and Clear. The switchable types depend on the type of input signal.

|          | Normal   | Full   | Clear                 |
|----------|--|--|-----------------------|
| NTSC/PAL | <br>1600x1200 display<br>Black zones on both sides     | <br>1920x1200 display<br>Cut off at top and bottom | <br>720x540 display   |
| HD       | <br>1920x1080 display<br>Black zones at top and bottom | <br>1920x1200 display<br>Cut off on both sides     | <br>1920x1080 display |

- **Over Scan:** Used to select the display size with an overscan of 10% or 20%.
- **H/V. Position:** Used to adjust the horizontal and vertical positions onscreen.  
Move toward the plus side to shift the screen to top right.  
Move toward the minus side to shift the screen to bottom left.
- **H/V. Size:** Used to adjust the horizontal and vertical sizes onscreen.  
Move toward the plus side to enlarge the display size.  
Move toward the minus side to reduce the display size.
- **Clock:** Adjusts the number of sampled dots for analog signals other than VIDEO/S-VIDEO and DVI signals.  
Increase the setting to get the sampling frequency higher. Decrease it to get the sampling frequency lower.  
Make this adjustment if vertical stripes or noises occur.

- **Phase:** Adjusts the sampling point for analog signals other than VIDEO/S-VIDEO and DVI signals.  
Make this adjustment if the rising edge of characters and the like look blurry or fine patterns suffer from noises.
- **AUTO:** Automatically adjusts the display position and the size, the number of sampled dots, and the sampling point, depending on the input signal.

## 5.7 Image Setting Screen

This screen is used to adjust the contrast, brightness and other video signal-related display conditions.

Screen display

| Status                     | User  | Display                     | Image | Color | Memory |
|----------------------------|-------|-----------------------------|-------|-------|--------|
| Contrast                   | 50    |                             |       |       |        |
| Brightness                 | 50    |                             |       |       |        |
| Sharpness                  | 0     |                             |       |       |        |
| Noise Reduction            | OFF   |                             |       |       |        |
| Smooth                     | OFF   |                             |       |       |        |
| Hue                        | 0     |                             |       |       |        |
| Chroma                     | 64    |                             |       |       |        |
| Blue Only                  | OFF   |                             |       |       |        |
| Video Setup                | 0     |                             |       |       |        |
| Video Filter Select        | 3D    |                             |       |       |        |
| IP Mode                    | Still |                             |       |       |        |
| UNDO                       |       |                             |       |       |        |
| IN1: CH name - Signal name |       | Switch behavior description |       |       |        |
| IN2: CH name - Signal name |       |                             |       |       |        |

0 - 100  
0 - 100  
0 - 22  
OFF/Weak/Middle/Strong  
OFF/Weak/Middle/Strong  
-30 - 30  
0 - 128  
OFF/ON  
0/Mid/Hi (Video/S-Video only)  
3D/Comb/Trap (Video/S-Video only)  
Still/Motion

Image setting screen description

- **Contrast:** Used to adjust the signal's white level gain.  
Increase the setting to get images brighter, and decrease it to get them darker.
- **Brightness:** Used to adjust the signal's black level gain.  
Increase the setting to get the black level higher, and decrease it to get it lower.
- **Sharpness:** Used to adjust the sharpness.  
Increase the setting to get images shaper, and decrease it to get them softer.
- **Noise Reduction:** Used to reduce noises.
- **Smooth:** Used to make images smoother.
- **Hue:** Used to adjust the hue.
- **Chroma:** Used to adjust the color density.  
Increase the setting to get the colors stronger, and decrease it to get them weaker.
- **Blue Only:** Set it to ON, and the blue color only appears.  
Feed the color bar signal and use this function, and the chroma and hue adjustments can be easily made.

## 5. Operation

- **Video Setup:** Used to select the setup level of composite and Y/C signals.  
 0: Offset set at 0%.  
 Mid: Offset set at 3%.  
 Hi: Offset set at 7.5%.
- **Filter Select:** Used to select a decoder filter.  
 This function works with the NTSC system only.  
 3D: Three-dimensional filter, Comb: Comb filter, Trap: Trap  
 The standard setting is 3D.
- **IP Mode:** Used to select the interlaced-to-progressive conversion mode.  
 Still: Usually use the unit in this mode.  
 Motion: Use this mode if the motion of images is fast.  
 This mode can be selected for NTSC, PAL and HD interlaced signals only.

## 5.8 Color Adjustment Screen

This is a function for adjusting colors and for setting the signal formats. The initial color temperature value for the user is set to 6500K. The color adjustment can be made by turning the GAIN control for each of the R/G/B values.

Display screen

| Status                | User | Display | Image | Color | Memory |
|-----------------------|------|---------|-------|-------|--------|
| Color Mode            | User |         |       |       |        |
| R.Gain                | 50   |         |       |       |        |
| G.Gain                | 50   |         |       |       |        |
| B.Gain                | 50   |         |       |       |        |
| Gamma                 | 2.2  |         |       |       |        |
| Signal Set. Component | RGB  |         |       |       |        |
| PC                    | RGB  |         |       |       |        |
| DVI                   | RGB  |         |       |       |        |
| UNDO                  |      |         |       |       |        |

IN1: CH name - Signal name  
 IN2: CH name - Signal name

Switch behavior description

User/6500/9300  
 0 - 100  
 0 - 100  
 0 - 100  
 1.8/2.0/2.2/2.4/2.6/D14/User  
 RGB/YPbPr  
 RGB/YPbPr  
 RGB/YPbPr

Color adjustment screen description

- **Color Mode:** The color temperature can be adjusted to User, 6500K or 9300K. The user's initial color temperature value is set to 6500K, and the color can be adjusted by varying the RGB Gain levels.
- **R. Gain:** Used to adjust the red color intensity.  
 Increase the setting to get higher red color intensity, and decrease it to get lower one.
- **G. Gain:** Used to adjust the green color intensity.  
 Increase the setting to get higher green color intensity, and decrease it to get lower one.
- **B. Gain:** Used to adjust the blue color intensity.  
 Increase the setting to get higher blue color intensity, and decrease it to get lower one.

- **Gamma Control:** Used to adjust the gamma level from 1.8 to 2.6 in 0.2 increments.  
 D14: Gamma level at DICOM Part 14.  
 User: Selectable from the user-preset gamma levels (factory option setting).
- **Signal Set.:** Used to set the format of each input signal. RGB or YPbPr can be set.

## 5.9 Memory Select Screen

This screen is used to make the user memory settings and to return them to the factory ones.

Display screen

The screenshot shows a menu interface with the following elements:

- Navigation Tabs:** Status, User, Display, Image, Color, Memory (selected).
- User Memory:** A dropdown menu currently showing "User1".
- Input Control Table:**

| Input Control | IN1                   | IN2                              |
|---------------|-----------------------|----------------------------------|
| Video         | <input type="radio"/> | <input checked="" type="radio"/> |
| S-Video       | <input type="radio"/> | <input checked="" type="radio"/> |
| Component     | <input type="radio"/> | <input checked="" type="radio"/> |
| PC            | <input type="radio"/> | <input checked="" type="radio"/> |
| DVI           | <input type="radio"/> | <input checked="" type="radio"/> |
| SDI           | <input type="radio"/> | <input checked="" type="radio"/> |
- Factory Reset:** A button labeled "Cancel".
- Legend:**
  - Selectable :
  - Not selectable :
  - OP not mounted : N/A
- Footer:**
  - IN1: CH name - Signal name
  - IN2: CH name - Signal name
  - Switch behavior description (indicated by a dashed box)

### Memory select screen description

- **User Memory:** Used to memorize up to eight different groups of settings.  
 All the settings made on the menu screens can be put in memory.
- **Input Control:** Used to set the inputs selectable for Input1 and Input2.  
 With the “○” sign, the input is selectable. With the “×” sign, it is not selectable.  
 When a relevant option is not mounted, the inputs are expressed with N/A.
- **Factory Reset:** Used to return all the modified settings to the factory ones.

## 6. Applicable Signals

### 6.1 Video Signals

| Name     | Input signal  |                   |     |    |       |
|----------|---------------|-------------------|-----|----|-------|
|          | Video/S-Video | RGB/<br>Component | SDI | PC | DVI-D |
| 480i/60  | ○             | ○                 | ○   | ○* | ○     |
| 575i/50  | ○             | ○                 | ○   | ○* | ○     |
| 480P/60  | —             | ○                 | —   | —  | —     |
| 575P/50  | —             | ○                 | —   | —  | —     |
| 1080i/60 | —             | ○                 | ○   | ○* | ○     |
| 1080i/50 | —             | ○                 | ○   | ○* | ○     |
| 720P/60  | —             | ○                 | ○   | ○  | ○     |
| 720P/50  | —             | ○                 | ○   | ○  | ○     |
| 1080P/60 | —             | —                 | —   | ○  | ○     |
| 1080P/50 | —             | —                 | —   | ○  | ○     |

\*Only G-Sync supported

### 6.2 D-SUB/DVI-D Computer Signals

| Resolution        | Dot clock<br>(MHz) | Horizontal<br>frequency<br>(kHz) | Vertical<br>frequency<br>(Hz) | Horizontal<br>sync<br>polarity | Vertical sync<br>polarity |
|-------------------|--------------------|----------------------------------|-------------------------------|--------------------------------|---------------------------|
| 640×480<br>60Hz   | 25.175             | 31.47                            | 59.94                         | Negative                       | Negative                  |
| 800×600<br>60Hz   | 40.00              | 37.88                            | 60.32                         | Positive                       | Positive                  |
| 1024×768<br>60Hz  | 65.00              | 48.36                            | 60.00                         | Negative                       | Negative                  |
| 1280×1024<br>60Hz | 108.00             | 63.98                            | 60.12                         | Positive                       | Positive                  |
| 1600×1200<br>60Hz | 162.00             | 75.0                             | 60.0                          | Positive                       | Positive                  |
| 1920×1200<br>60Hz | 154.00             | 74.0                             | 60.0                          | Positive                       | Positive                  |

## 7. Troubleshooting

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### **No image appears on the monitor screen.**

- Check to see if the AC power cord is tightly plugged in.
- Check to see if the unit's power switch is turned on.
- Check the input signal.
- Check to see if the input is selected as specified.
- Check to see if the signal is listed in the applicable signals chart.

### **Images on the monitor screen are improper.**

- Check to see if the input is fed into the selected input terminal.
- Check to see if the video signal cable is tightly connected.
- Check to see if the signal is listed in the applicable signals chart.
- Check to see if the signal is fed to the input side, not to the output side.

### **Images are too dark.**

- Check to see if the video signal level is as specified.
- Check to see if the brightness control is at minimum.
- Check to see if the contrast control is at minimum.
- Check to see if the backlight level on the User Setting Screen is too low.
- Check to see if the R. Gain, G. gain or B. Gain level on the Color Setting Screen is too low with RGB or components inputs.

### **Highlighted images are not accentuated.**

- Check to see if the input signal is connected to the IN side, not to the OUT side.
- Check to see if the contrast control is at maximum with high-level input signals.
- Check to see if the S-Video input is handled in the through-out configuration and if two or more units are connected with the main power off. The S-Video input is terminated off when the main power is turned off. Turn on the main power of all the monitors.

### **Images are too weak.**

- Check to see if the chroma near the proper value of 64.
- Check to see if the brightness level is too high.
- Check to see if the gamma level is appropriately at 2.2.
- Check to see if the R. Gain, G. Gain or B. Gain level on the Color Setting Screen is too low with RGB or component inputs.

### **Colors are not as specified.**

With Video or S-Video signal inputs

- Check to see if the brightness and contrast levels are as specified.
- Check to see if the chroma and hue levels on the Image Setting Screen are as specified.
- Check to see if the color temperature is selected and preset as specified.
- Check to see if the R. Gain, G. Gain or B. Gain level on the Color Setting Screen is as specified.

## 7. Troubleshooting

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### **The screen size is wrong.**

- Check to see if the signal is listed in the applicable signals chart described under section 6.
- On the Display Setting screen, set the AUTO. If the desired setting cannot be obtained, adjust H.Position, V.Position, H.Size, V.Size, and Clock.
- Adjust H.Position, V.Position, H.Size, V.Size, and Clock on the Display Setting screen.

### **Images are dislocated.**

- Check to see if the signal is listed in the applicable signals chart.
- On the Display Setting screen, set the AUTO. If the desired setting cannot be obtained, adjust H.Position, V.Position, H.Size, V.Size, and Clock.
- On the Display Setting Screen, readjust the H. Position, V. Position, H. Size, V. Size and Clock settings.

### **Images are distorted.**

- Check to see if the external sync signal is connected with the input signal.
- Look at the Display Setting Screen to see if the Clock setting is as specified.

### **Vertical stripes are found.**

- On the Image Setting Screen, readjust the Smooth settings.
- On the Display Setting Screen, readjust the Clock and Phase settings.

### **Too many noises appear.**

- On the Image Setting Screen, readjust the Noise Reduction settings.
- On the Display Setting Screen, readjust the Clock and Phase settings.

### **Others**

- When an input signal is switched to another one, the onscreen image may blink. This is not a unit failure, however.



## 8. Specifications

|   |                      |   |
|---|----------------------|---|
| Model   |                      | MLW-2422C   |
| LCD size  |                      | 24-inch   |
| Drive system  |                      | TFT active matrix system  |
| Display dots  |                      | 1920(H) x 1200(V)   |
| Screen size   |                      | 518(H) x 324(V) mm  |
| View angle  |                      | Horizontal: 178°, Vertical: 178° (standard)                                       |
| Contrast ratio  |                      | 1000 : 1 (standard)   |
| Display colors  |                      | 1,000,000,000 colors  |
| Video input   | Video/S-Video        | One line each, with loop-through (NTSC/PAL)                                       |
|   | SDI (option)         | One line, with loop-through (NTSC/PAL/HD)   |
| Component input   | RGB/YPbPr            | One line, with loop-through<br>(Ext. Sync enable) (NTSC/PAL/HD)                   |
| PC/DVI input  | Analog/Digital       | One line (VESA Vf=60 Hz, VGA thru WUXGA,<br>SD, HD)                               |
| Outside dimensions  |                      | 583(W) x 422(H) x 109(D) mm (without stand)                                       |
| Unit weight   |                      | Approx. 7.2 kg (without stand)  |
| Power consumption   |                      | About 120 W   |
| Supply voltage  |                      | AC100-120V/200-240V 50/60 Hz 1.4A/0.6A  |
| Operating temperature range   |                      | 5°C to 35°C   |
| Operating humidity range  |                      | 30-80% (no condensation)  |
| Transport/Storage   | Temperature          | -20°C ~ 60°C  |
|   | Humidity             | 30 ~ 90% (no condensation)  |
|   | Atmospheric pressure | 700 ~ 1060hPa   |
| Accessories   |                      | Power cord, Instruction Manual, Warranty card<br>(attached in Instruction Manual) |
| Protection against electric shock                                   |                      | Class I   |
| Degree of safety in the presence of flammable anesthetics or oxygen |                      | Not suitable for use in the presence of flammable anesthetics or oxygen.          |
| Mode of operation   |                      | Continuous  |
| Manufacturers   |                      | Ikegami Tsushinki Co., Ltd.   |

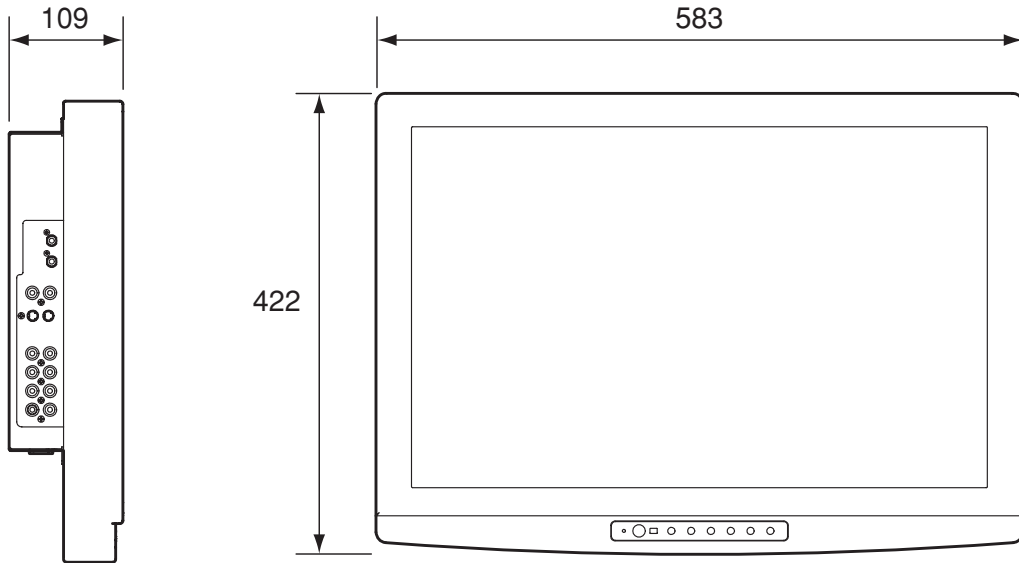
The SDI is optional.

## 8. Specifications

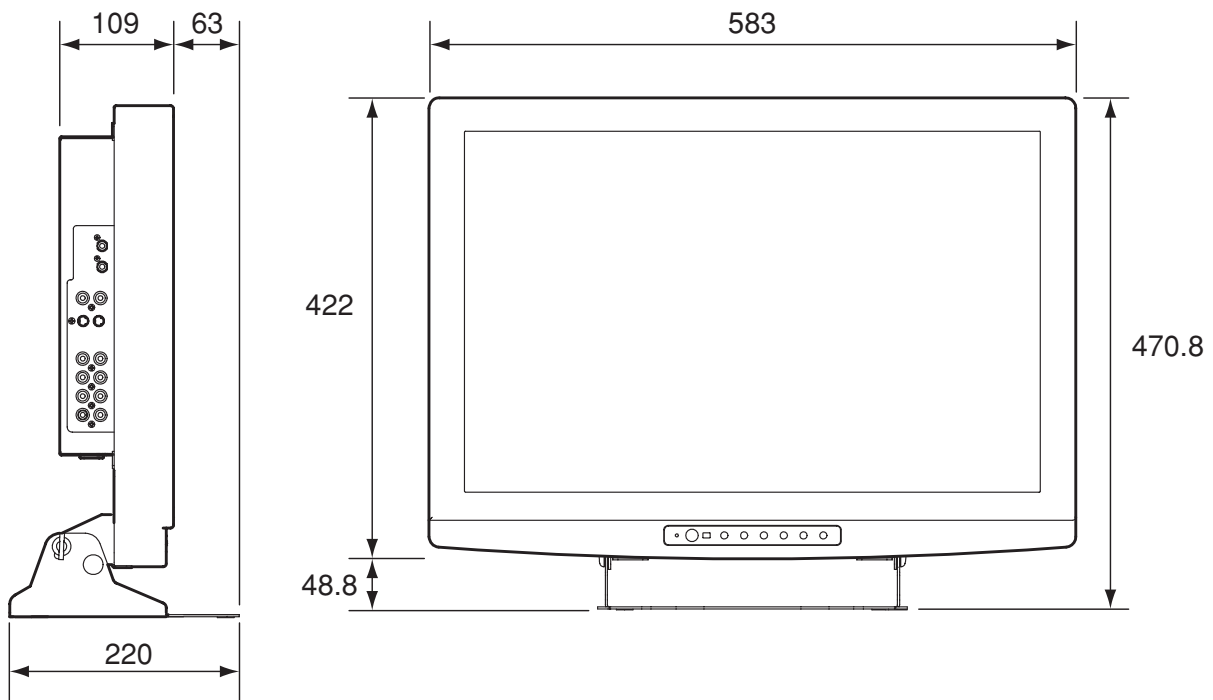
---

### Appearance view

<without stand type>



<with optional stand type>



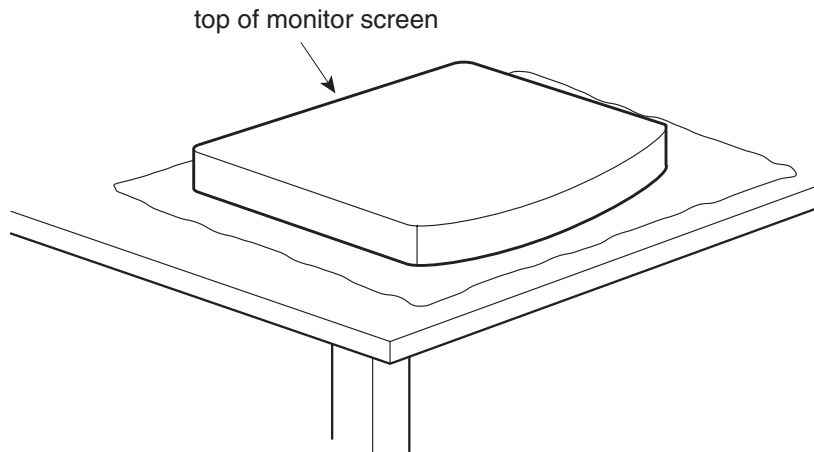
Specifications and design are subject to change for product improvements without notice.

## 9. Use the stand

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- Clean work area.

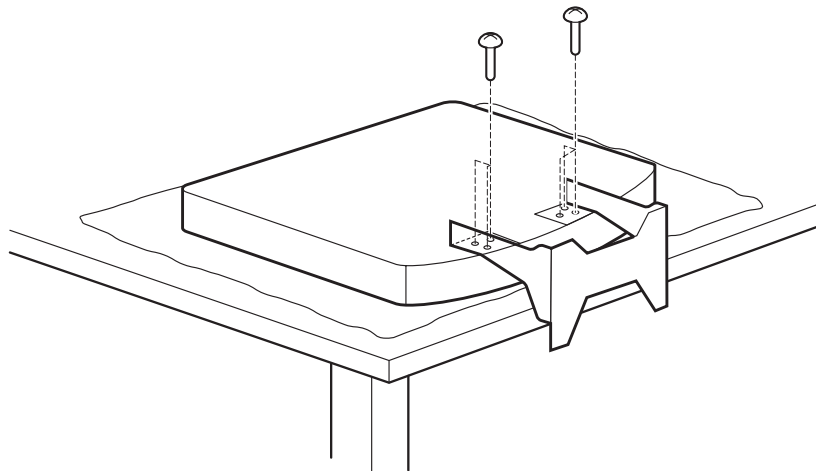
To protect monitor screen : wipe off work area and place monitor (Screen-side down) on a soft cloth or towel before proceeding with installation.



- Attach stand to monitor.

Start screws as far as possible by hand, the tighten with screwdriver.

If your monitor uses a screw size other than M4 x 8 mm, DO NOT use the M4 x 8 mm screws provided as they could result in damage to the monitor.



# Ikegami

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