INSTRUCTION MANUAL

Full HD 32-inch Double-screen Multi-format LCD Color Monitor

Model MLW-3226C

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 32 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.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

SA 1965   SA 1966

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER
(OR BACK).
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED
SERVICE PERSONNEL.

SA 1965

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.

SA 1966

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 prod-
uct. 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 many 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 (+35ºC or over) or cold (less than +5ºC), 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.

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 then. 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 (+35ºC or more) or cold (+5ºC 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.
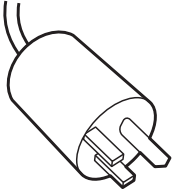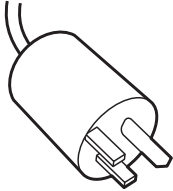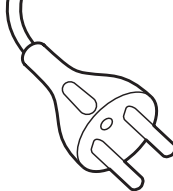
Contents

1. Precautions

- 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.

- The operator must not come in contact with an outside connection connector with a patient at the some time.

- The attachment for wall hangings, use an appliance enduring the weight of monitor.

* Because of the digital image device characteristics, images may look unnatural at high temperatures, this does not mean the monitor is faulty.

Warning on power connection.

	The United States	Canada	Continental Europe
Plug Type	NEMA 5-15P HOSPITAL GRADE	NEMA 5-15P HOSPITAL GRADE	CEE7 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	Bottom	Main power switch. | : ON ○ : 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.

Carrying Precautions

When you carry a Color LCD Display with optional stand (TS-322), keep a LCD display vertically during the transportation.
Please refer to Appearance view, with optional stand type illustrated in 8. Specifications.
The Color LCD Display equipment may fall, causing serious injury to children and adults, and serious damage to the equipment.

2. General Description

2.1 Features

- High-resolution image display
  A full high-definition panel with a resolution of 1920(H) x 1080(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 (1080P, 1080i, 720P), SDTV (NTSC, PAL), PC inputs (analog and digital), SD-SDI and HD-SDI signals can be applied.
- 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 and Canadian CSA22.2 No. 601.1 (cUL).
- MLW-3226C 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 (HD-15)
  Various types of signals - NTSC, PAL, 480P, 576P, 1080P, 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, 1080P, 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 monitor is standard equipped with an SDI unit to get images from SD-SDI (NTSC, PAL) and HD-SDI (1080P, 1080i, 720P) digital signals.

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, analog RGB (HD-15), and DVI-D signals.
- Power management function
  When no input signal is supplied for approximately 3 minutes, 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-322)
    The optional stand is available to place the monitor for desktop use.

3. Names of Parts

3.1 Names of Parts and Their Functions

Front
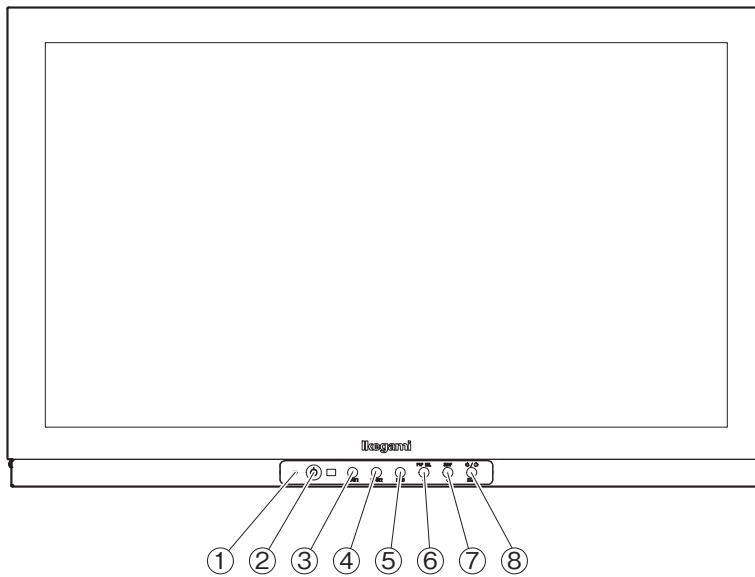
① Power indicator
② Standby power switch
③ Input 1
④ Input 2
⑤ MENU
⑥ PIP SEL /-
⑦ SWAP/+
⑧ ☼ Contrast/
   ◖ Brightness/Exit

Back
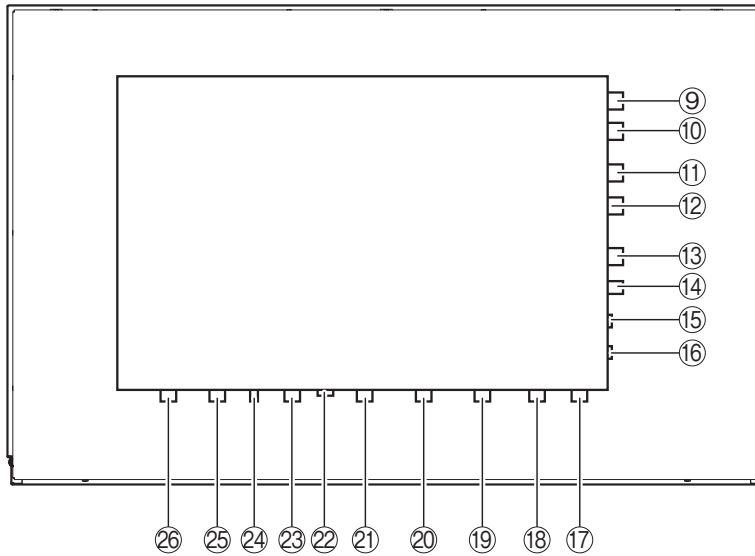
⑨ SDI1 input
⑩ SDI1 output
⑪ SDI2 input
⑫ SDI2 output
⑬ Video input
⑭ Video output
⑮ S-Video input
⑯ S-Video output
⑰ PC output
⑱ PC input
⑲ DVI2 output
⑳ DVI2 input
㉑ DVI1 input
㉒ DC5V output
㉓ Remote input
㉔ ⏚ Potential Equalization Terminal
   This symbol appears next to the display's Potential Equalization Terminal (ground post)
㉕ AC input
㉖ Power switch

Note : 1. Various signal inputs (Video and S-Video) are automatically terminated. With the main power off, however, the S-Video signal terminates itself on even when the output connector is connected.
2. The DC5V output is as follows (1A max.).

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4. Input Signal Connection

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 : Connected to PC input. (15P D-SUB connector)

4.4 PC Digital signal : Connected to DVI input.

4.5 NTSC/PAL/HD Digital Video : Connected to SDI input.

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.

4.6 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

```
1.                                      1.
2.TXD ─────────────────────────┐        2.RXD
3.RXD ─────────────────────────┼──────  3.TXD
4.                              │        4.
5.GND ─────────────────────────┼──────  5.GND
6.                                       6.
7.                                       7.RTS ┐
8.                                       8.CTS ┘
9.                                       9.
```
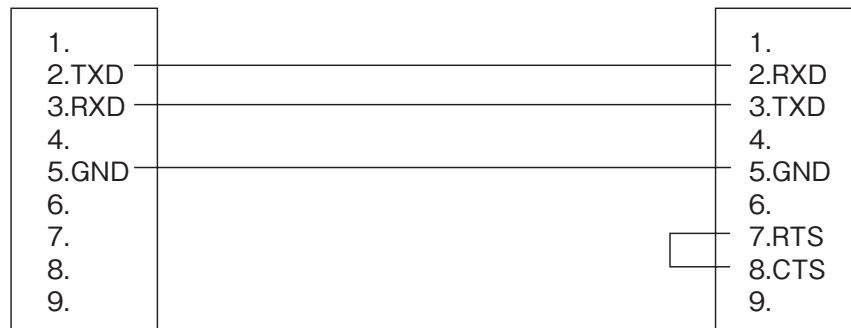
Do not connect anything to pins 1, 4, 6, 7, 8, or 9 on the monitor side (or else, a malfunction of the monitor may occur).

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

5.1 Key Operation

There are seven front keys as shown below.

Power Indicator   Standby SW   INPUT1   INPUT2   MENU   −/PIP SEL   +/SWAP   CONT/BRT/EXIT

The keys have the following functions.

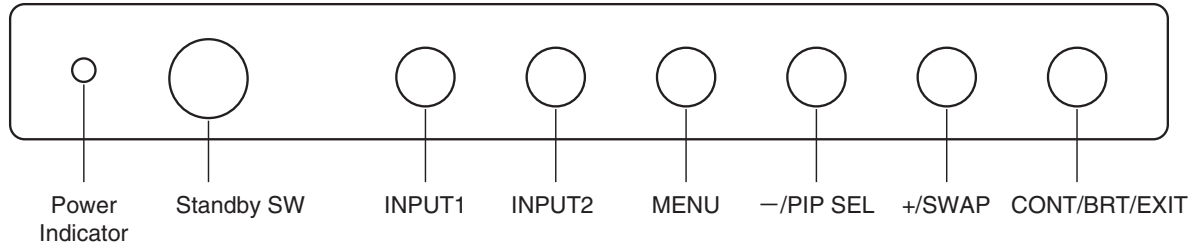|	
Standby SW	: Used to turn on and off the power.
INPUT1	: Switching of the input signal set to IN1
INPUT2	: Switching of the input signal set to IN2
MENU	: Used to display the menu.
-/PIP SEL	: Used to select the setting menu, to make adjustments and to switch between the main and sub PIP.
+/SWAP	: Used to select the setting menu, to make adjustments and to switch between the main and sub images.
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   Main and Sub Input Signal Screen Display

IN1 : Video 480i

Video S-Video PC DVI-1 DVI-2 SDI-1 SDI-2

IN2 : –

Multi   Preset   No.1
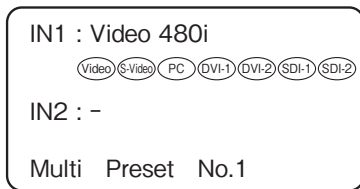
IN1: "Input" "Signal"
Signal input specified to IN1
When no input signal is set: INx : —
Multiple display : Preset display
At 1 input   : Single (IN1 ONLY)

5.2.2   Input Display

SDI	: SDI
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
	(59.94 Hz is expressed as 60 Hz.)
PC line	: VGA, SVGA, XGA, SXGA, WUXGA, 480i, 575i, 720P/50,
	720P/60, 1080i/50, 1080i/60, 1080P/50, 1080P/60
DVI line	: VGA, SVGA, XGA, SXGA, WUXGA, 480i, 575i, 720P/50,
	720P/60, 1080i/50, 1080i/60, 1080P/50, 1080P/60
With no signal being input	: No Sync

5.3 Settings and Key Operation

The setting function is for signals currently being inputted and selected.
Press the MENU key once, and the main-screen adjustments can be made. At the second push, the sub-screen adjustments can be made.

5.3.1   Direct Brightness/Contrast Settings and Adjustments

1) Contrast
   Press the "CONT/BRT" key, and the settings show up. The settings are adjusted with the "+" or "-" key. Press the "CONT/BRT" key again to save the current settings and to exit this mode.
2) Brightness
   Press the "CONT/BRT" key, and the settings show up. The settings are adjusted with the "INPUT1" or "INPUT2" key. Press the "CONT/BRT" key again to save the current settings and to exit this mode.

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 the main screen and sub screen, respectively. The last input signal is picked up in its shut-off state when the power is turned on again.
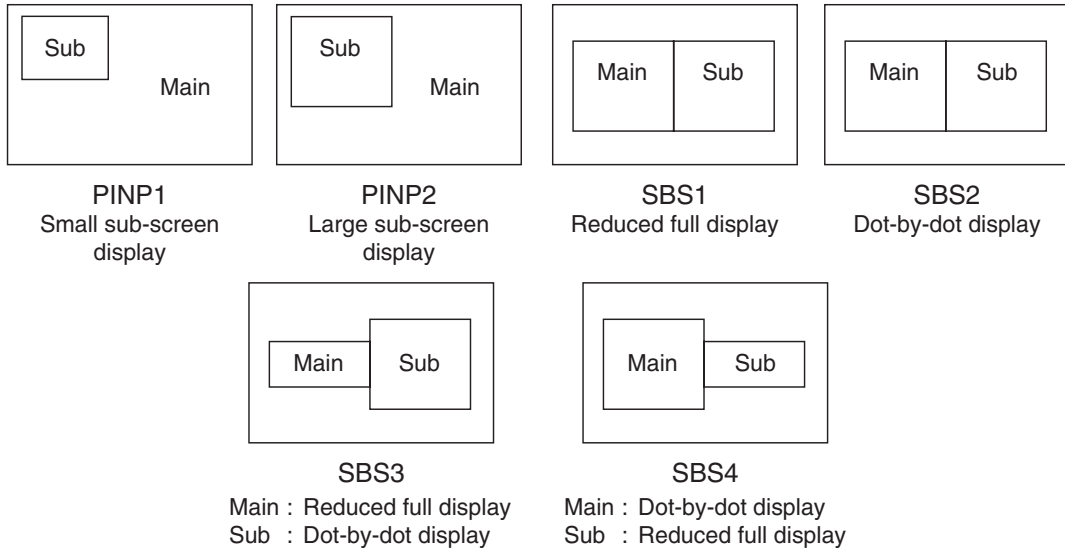INPUT1: Used to select the main-screen input, INPUT2: Used to select the sub-screen input.
The input being selected with INPUT1 cannot be selected with INPUT2. The Video and S-Video signals, PC and COMP signals, as well as OP-PC and OP-DVI signals cannot all be selected in pairs. For setting of input signals, use the "Memory Select Screen" screen as described under 5.10.

5.3.3 PIP SEL

The double-screen display selector key is pressed to change the display in the order of PinP1, PinP2, SBS1, SBS2, SBS3 and SBS4.

Switching operation is performed in the order stating from Single Screen → Multi-Preset No. 1 → Multi-Preset No. 2 → Multi-Preset No. 3 → Multi-Preset No. 4. Carry out the PIP setting (display setting) on the P-Pre Select Screen as described under 5.11.

```
┌─────────────┐    ┌─────────────┐    ┌─────────────┐    ┌─────────────┐
│ ┌────┐      │    │ ┌─────┐     │    │       │     │    │       │     │
│ │Sub │      │    │ │ Sub │     │    │ Main  │ Sub │    │ Main  │ Sub │
│ └────┘ Main │    │ └─────┘Main │    │       │     │    │       │     │
│             │    │             │    │       │     │    │       │     │
└─────────────┘    └─────────────┘    └─────────────┘    └─────────────┘
```

PINP1	PINP2	SBS1	SBS2
Small sub-screen display	Large sub-screen display	Reduced full display	Dot-by-dot display

```
        ┌─────────────┐         ┌─────────────┐
        │   ┌──────┐   │        │  ┌──────┐    │
        │   │   ┌──┼─┐ │        │  │  ┌───┼─┐  │
        │   │Main│Sub│ │        │  │Main│Sub│  │
        │   │   └──┼─┘ │        │  │  └───┼─┘  │
        │   └──────┘   │        │  └──────┘    │
        └─────────────┘         └─────────────┘
```

SBS3	SBS4
Main : Reduced full display	Main : Dot-by-dot display
Sub : Dot-by-dot display	Sub : Reduced full display

5.3.4 SWAP

In the double-screen display mode, this key is used to switch between the main and sub screens.

5.3.5 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.

5.4 Status Screen (Main, Sub)

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

Screen display

Status	User	Display	Image	Color	Memory	P-Pre

Signal Set. PC	RGB
DVI-1	RGB
DVI-2	RGB
User Memory	User1
Color Mode	User
Gamma	2.2
H/V.Frequency	＊＊.＊kHz / ＊＊.＊Hz
Product Code	MLW-3226C XXXXX

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

Switch behavior description

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.
・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 (Main, Sub)

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

Screen display

Status	User	Display	Image	Color	Memory	P-Pre

DPMS	ON	OFF/ON
BackLight	18	0-20
OSD Position	1	1-5
OSD Time Out	30s	OFF/10s/30s/60s
Signal Judge	OFF	OFF/ON
Chromaticity Diagram	N/A	
Logo	3s	OFF/1s-9s
Language	English	English/Chinese
Reverse	OFF	OFF/⇔/⇕/⇕⇔/COM
DVI-1 EQ	21 dB	09dB/14dB/18dB/21dB/24dB/26dB/30dB
DVI-2 EQ	21 dB	09dB/14dB/18dB/21dB/24dB/26dB/30dB
UNDO		

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

Switch behavior description

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 3 minutes. 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 20.

- 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.

- Logo : It is possible to select the logo display when the power is turned on:
OFF : No logo is displayed
1s-9s : Display time can be set up by 1s-9s.

・Language   : It is possible to switch the language used for displaying.
・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
       When double-screen display is used, only the normal display
       mode can be selected.
・DVI1-EQ/DVI2-EQ : This cable compensation function helps suppress noises when
       the DVI is connected using a long cable and suffers from noises.

5.6 Display Setting Screen (main)

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

Screen display

Status	User	Display	Image	Color	Memory	P-Pre

Aspect	Normal	Normal/Full/Clear
Over Scan	OFF	OFF/5%/10%
H.Position	0	-200 - +200
V.Position	0	-200 - +200
H.Size	0	-200 - +200
V.Size	0	-200 - +200
Keep Aspect	OFF	ON/OFF
Clock	50	0 - 100
Phase	Auto	Auto/1-48
AUTO	Cancel	Cancel/ADJ
UNDO		
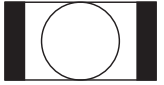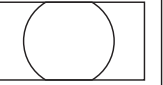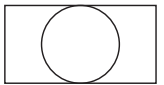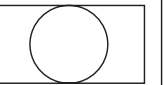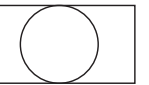
○ IN1: CH name - Signal name
   IN2: CH name - Signal name
Switch behavior description

Display setting screen description (main)
・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	1440×1080 display Black zones on both sides	1920×1080 display Cut off at top and bottom	720×540 display
HD	1920x1080 display	1920x1080 display	1920x1080 display

・Over Scan   : Used to select the display size with an overscan of 5% or 10%.
・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.

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・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.
・Keep Aspect : It is possible to change screen size without changing aspect ratio in
　　　　　　　V.Size.
・Clock : Adjusts the number of sampled dots for analog PC signal.
　　　　　　　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 PC signal.
　　　　　　　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 Display Setting Screen (sub)

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

Screen display

Status	User	Display	Image	Color	Memory	P-Pre

Aspect	N/A	N/A
Over Scan	OFF	OFF/5%/10%
H.Position	0	-200 - +200
V.Position	0	-200 - +200
H.Size	0	-200 - +200
V.Size	0	-200 - +200
Keep Aspect	OFF	ON/OFF
Clock	N/A	N/A
Phase	N/A	N/A
AUTO	Cancel	Cancel/ADJ
UNDO		

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

Switch behavior description

Display setting screen description (sub)
・Over Scan : Used to select the display size with an overscan of 5% or 10%.
・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 screen.
　　　　　　　Move toward the minus side to reduce the screen.
・Keep Aspect : It is possible to change screen size without changing aspect ratio in
　　　　　　　V.Size.
・AUTO : Automatically adjusts the display position and the size, the number of
　　　　　　　sampled dots, and the sampling point, depending on the input signal.

5.8 Image Setting Screen (Main, Sub)

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

Screen display

Status	User	Display	Image	Color	Memory	P-Pre

Contrast	50	0 - 100
Brightness	50	0 - 100
Sharpness	0	0 - 22
Edg Freq	Low	Low/Mid1/Mid2/High
Noise Reduction	OFF	OFF/Weak/Middle/Strong
Hue	0	-15 - +15
Chroma	64	0 - 128
Blue Only	OFF	OFF/ON
Video Setup	0	0/Mid/Hi（Video/S-Video only)
IP Mode	Still	Still/Motion/Still2/Motion2
UNDO		

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

Switch behavior description

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.

- ・Edg Freq　　　　 : Use to adjust the frequency of sharpness.

- ・Noise Reduction : Used to reduce noises.

- ・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.

- ・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%.

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　　　・IP Mode 　　　　 : Used to select the interlaced-to-progressive conversion mode.

　　　　　　　　　　　 Still 　　　 : Nomal moving video mode.

　　　　　　　　　　　 Motion 　 : Low delay moving video mode.

　　　　　　　　　　　 Still2 　　 : Still image mode.

　　　　　　　　　　　 Motion2 : Low delay still image mode.

　　　　　　　　　　　　　　　　　This mode can be selected for interlaced signals only.

5.9 Color Adjustment Screen (Main, Sub)

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	P-Pre

Color Mode	User	User/6500/9300
R.Gain	50	0 - 100
G.Gain	50	0 - 100
B.Gain	50	0 - 100
Gamma	2.2	1.8/2.0/2.2/2.4/2.6/D14/User
Signal Set. PC	RGB	RGB/YPbPr
DVI-1	RGB	RGB/YPbPr
DVI-2	RGB	RGB/YPbPr
UNDO		

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

Switch behavior description

　　 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.

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5.10 Memory Select Screen (Main, Sub)

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

Display screen

Status	User	Display	Image	Color	Memory	P-Pre

User Memory	User1		User1/User2/User3/User4/User5/User6/User7/User8
Input Control	IN1 IN2		
Video	○ ×		
S-Video	○ ×		Selectable : ○
PC	○ ×		Not selectable : ×
DVI-1	○ ×		
DVI-2	○ ×		
SDI-1	○ ×		
SDI-2	○ ×		
Factory Reset	Cancel		Cancel/User/Display/Color/ALL

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

Switch behavior description

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.
- ・ Factory Reset : Used to return all the modified settings to the factory ones.

5.11 P-Pre Select Screen (Main)

This is a function used for making the double-screen setting. It is necessary that Input Control setting should be made on the Memory Select Screen in advance as described under section 5.10.

Display screen

Status	User	Display	Image	Color	Memory	P-Pre

Preset No.	1		1/2/3/4
Active	OFF		OFF/ON
IN1 Select	VIDEO		-/Video/S-Video/PC/DVI-1/DVI-2/SDI-1/SDI-2
IN2 Select	-		-/Video/S-Video/PC/DVI-1/DVI-2/SDI-1/SDI-2
PinP Select	PinP1		PinP1/PinP2/SBS1/SBS2/SBS3/SBS4
PinP Position	1		1/2/3/4
UNDO			

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

Switch behavior description

P-Pre select screen description
- ・Preset No : Used to specify the Preset Number for double-screen setting. Four different types are available for setting.
- ・Active : Specifies a Preset Number to be Active or Inactive.
  If it is set to OFF, the double-screen display of that Preset Number is deactivated.
- ・IN1 Select : Specifies the input to be displayed on the Main screen.
  The items that can be selected are those are selected for IN1 on Memory Select Screen - Input Control (indicated by " ○ " symbol) as described under section 5.10.
  If "−"symbol is displayed, there is no selectable input available.
- ・IN2 Select : Specifies the input to be displayed on the Sub screen.
  The items that can be selected are those are selected for IN2 on Memory Select Screen - Input Control (indicated by " ○ " symbol) as described under section 5.10.
  If "−"symbol is displayed, there is no selectable input available.
- ・PinP Select : Used to set the double-screen display state:
  PinP1 : Smaller Sub screen display
  PinP2 : Larger Sub screen display
  SBS1 : Reduced full-size display
  SBS2 : Dot-by-dot display
  SBS3 : MAIN : Reduced full-size display
         SUB : Dot-by-dot display
  SBS4 : MAIN : Dot-by-dot display
         SUB : Reduced full-size display
- ・PinP Position : Used to set the Sub screen display positions for PINP1/PINP2.
  1: Upper left position of the screen
  2: Upper right position of the screen
  3: Lower left position of the screen
  4: Lower right position of the screen

5.12

6. Applicable Signals

6.1 Video Signals

Name	Input signal			
	Video/S-Video	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 (MHz)	Horizontal frequency (kHz)	Vertical frequency (Hz)	Horizontal sync polarity	Vertical sync polarity
640×480 60Hz	25.175	31.47	59.94	Negative	Negative
800×600 60Hz	40.00	37.88	60.32	Positive	Positive
1024×768 60Hz	65.00	48.36	60.00	Negative	Negative
1280×1024 60Hz	108.00	63.98	60.12	Positive	Positive
1600×1200 60Hz	162.00	75.0	60.0	Positive	Positive
1920×1200 60Hz	154.00	74.0	60.0	Positive	Negative

7. Troubleshooting

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.
- 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 on when the main power is turned off. Turn on the main power of all the monitors.

Hightlighted 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 R.Gain, G.Gain or B.Gain level on the color setting is to high.

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.

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.

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 Noise Reduction 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.
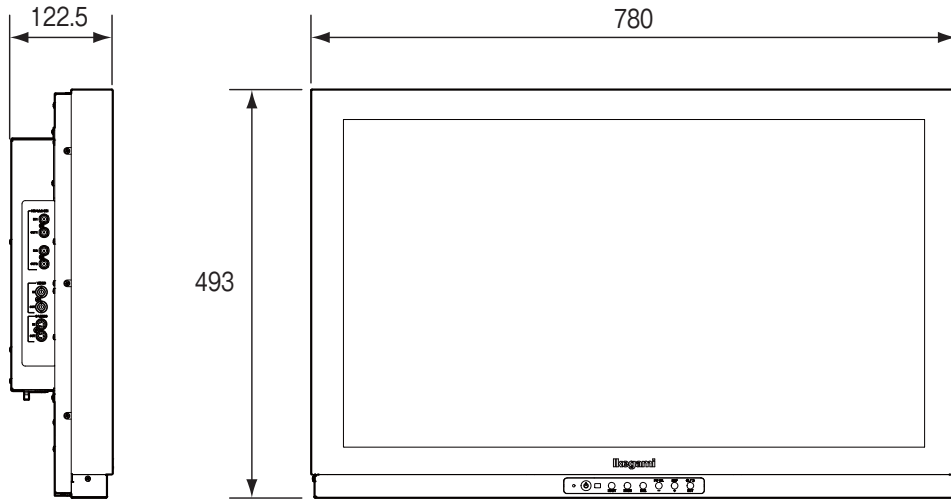
8. Specifications

| Model		MLW-3226C
LCD size		32-inch
Drive system		TFT active matrix system
Display dots		1920 (H) × 1080 (V)
Screen size		698 (H) mm × 392 (V) mm
View angle		Horizontal : 178°, Vertical : 178° (standard)
Contrast ratio		1300 : 1 (standard)
Display colors		1,073,741,824 colors
Video input	Video /S-Video	1 line each, with loop-through (SD)
	SDI	2 line, with loop-through (SD/HD)
Component input (HD-15)	RGB/YPbPr	1 line, with loop-through (Ext. Sync enable) (SD/HD)
PC/DVI input	Analog/Digital	Analog : 1 line Digital : 2 line (VESA Vf=60 Hz, VGA thru WUXGA/SD/HD)
Outside dimensions		780 (W) mm × 493 (H) mm × 122.5 (D) mm (without stand)
Unit weight		Approx. 13 kg (without stand)
Power consumption		About 160 W
Supply voltage		AC100-120V/200-240V 50/60 Hz 1.8A/0.9A
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 (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.

Appearance view

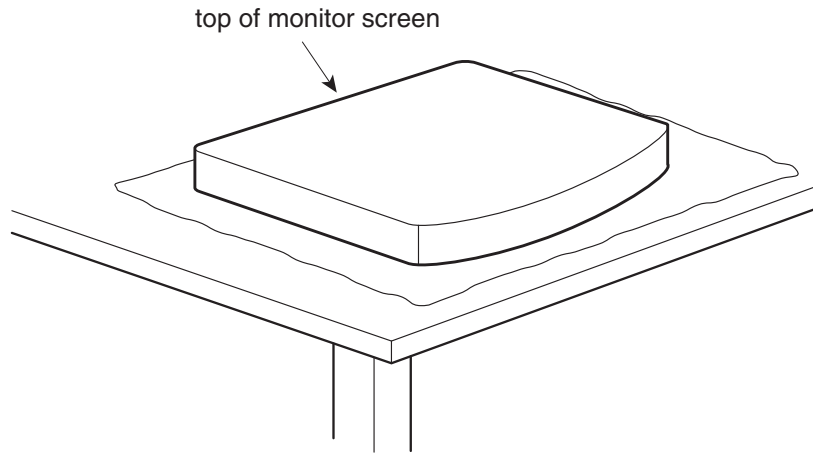## <without stand type>

<with optional stand type>
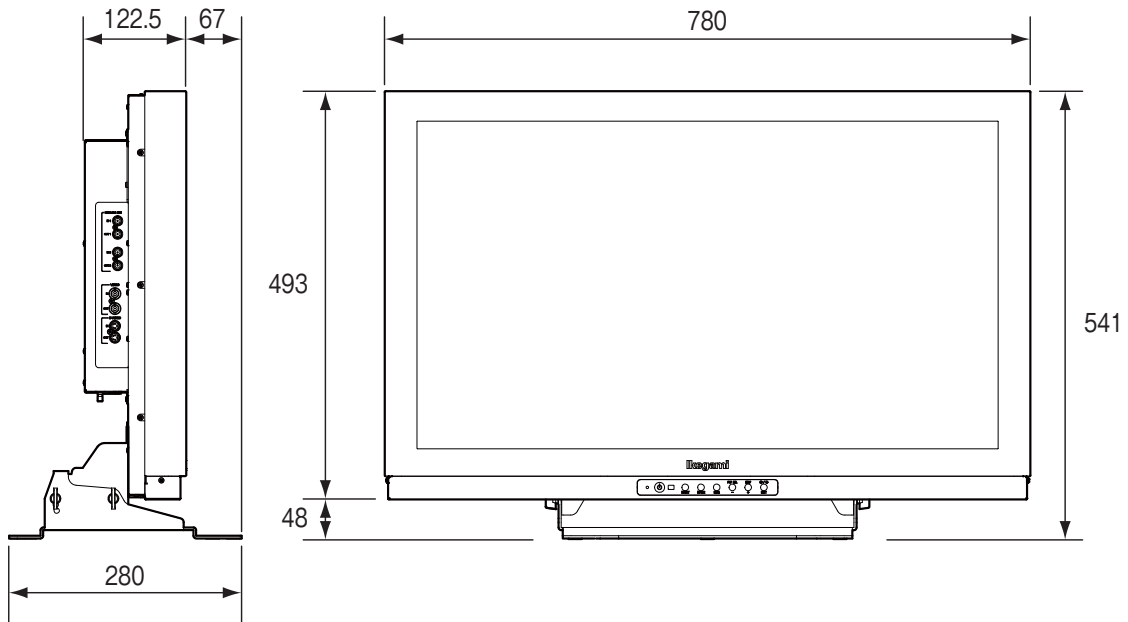
Specifications and design are subject to change for product improvements without notice.

9. Use the stand

- 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.

top of monitor screen

- 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.
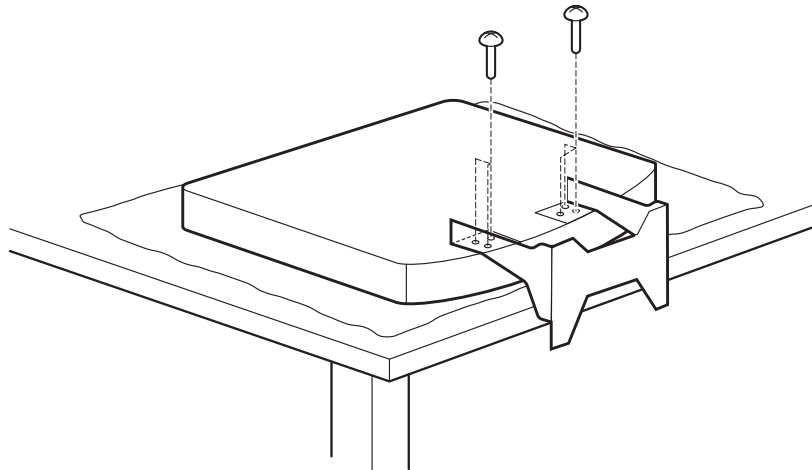
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