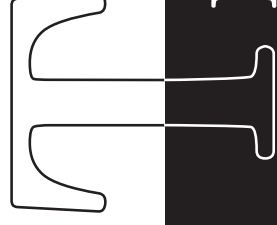
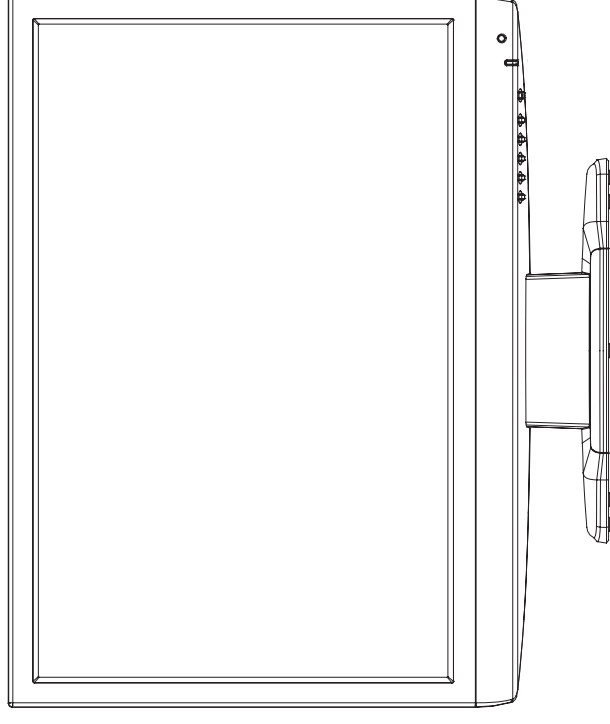


22" WIDE LCD Monitor



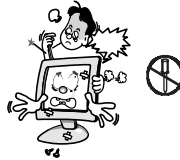
FT LCD MONITOR

User's Manual Manual del usuario

1. Please read the cautions carefully before using this product.	1, 2
2. Product feature	3
3. Product installation	4
4. Names and operation of control buttons	5, 6
5. OSD MENU Selection and operation	7
6. MENU function	8, 9
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8 Timing guide	11
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10. Product specification	13
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Do not scratch the screen of the LCD monitor with sharp materials such as nails and pens.



The interior part of the monitor is composed of electric elements. If the monitor is broken, do not try to disassemble it, because it is necessary to contact appropriate technical services in order to have the product repaired.



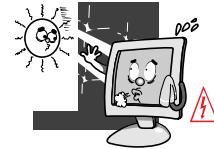
Take care of the LCD monitor so that it is not damaged by the external impact.



Take care not to use damaged cords and keep this product out of reach of children and persons who are not involved in using the product.



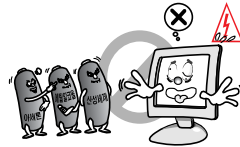
Disconnect the power cable when the monitor is not used during a long period of time while you are away from home.



Do not use this product near the windows receiving direct sunlight or direct natural light.



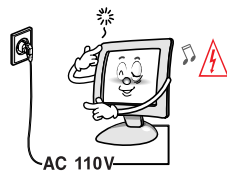
Choose a fresh and dry area and protect the monitor from extreme conditions of temperature and humidity, dust and smoke. Adequate temperature = 0-40°C. Adequate humidity = 30-80 RH.



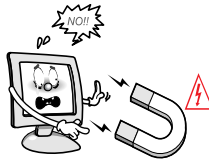
The LCD monitor screen can be damaged in the case that you clean the surface by using acetone, ethyl alcohol or acid detergent.



Do not install the monitor in a sloping place that is not safe due to the fact that the product can fall down and be broken, thus doing harm to other persons.



Check the power voltage before connecting to the AC power cable.



Take care so that the monitor is not in contact with magnetic materials, metals and inflammable substances.

Please comply with the rules to prevent injury and property damage.

► **Introduction**

Thank you for purchasing our monitor.

Our monitor is a high-resolution monitor that has features of electromagnetic wave blocking, reduction in electricity consumption and efficient use of space.

This manual has been prepared to help you using this product adequately.

It is recommendable to read this manual before using this product.

► **Product features**

- 1) This product (MV220) has 22-inch flat surface (Color Active Matrix TFT LCD) with pixel size of 0.285 mm (H) x 0.285 mm (V) for ultra-precision, high resolution image.
- 2) MV220 uses 22-inch TFT LCD (Thin Film Transistor - Liquid Crystal Display) panel and supports 1680 x 1050 maximum resolution.
- 3) MV220 is a monitor whose deflection frequency is transformed automatically up to 30~80KHz horizontally, 56~75Hz vertically.
- 4) MV220 is compatible with IBM PC and Apple Macintosh. (A different adaptor is necessary for apple macintosh)
- 5) MV220 features high definition display with its component input. (HD ready).
The component input makes you enjoy movies and video game with high-definition display. (max. 720p)
- 6) MV220 has a power saving function less than 48W in power ON mode, less than 2W in stand by, and 1W in power off.
- 7) MV220 supports DDC, Plug & Play mode.

note

What is 'Component input'?

Component is a input port for high definition display signals, which is separated 3 signals with Brightness (Y), Color differences (Pb, Pr) and and each signal is carried by 3 pieces of wire.



In the case of some system requirements, it may not be compatible with Plug & Play.

► Checking the product

Please check if the product contains the following items.
If there are items missing, please contact our technical services.

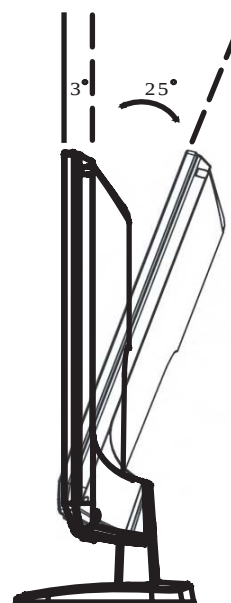
1. TFT LCD monitor
2. User's manual (including product warranty card)
3. AC to DC adaptor
4. Power cable
5. Signal cable (15Pin D-SUB cable)
6. Audio cable

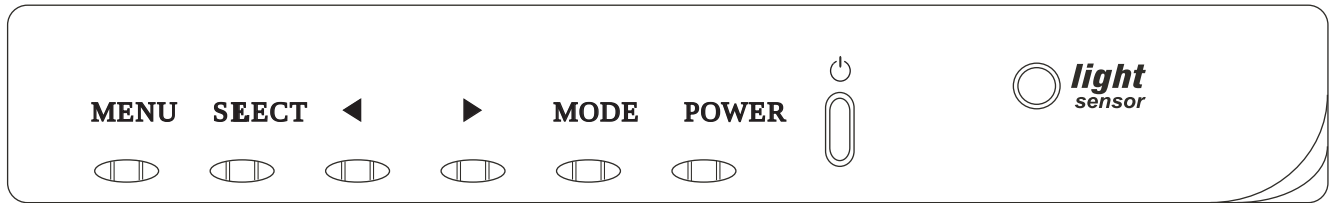
► Installation

1. Please, turn on MV220, before connecting any device to it.
2. Connect adaptor cable to DC power-on on the rear side of MV220, then connect power cord to adaptor.
3. MV220 has 15pin D-SUB port, DVI-D and Component port.
Connect the cables properly to your PC between D-sub, DVI, Component.
4. Turn on your PC and MV220.
5. Seeing MV220's working, you can adjust display condition with pushing control buttons on front side of MV220.
6. As user's convenience, you can adjust the display angle of MV220 under 3 degree to front, at under 25 degree to backward.
7. Please, turn it off, if you want stop using MV220.

Caution

- **Adjusting LCD panel angle**
 - Do not hold or press down on the monitor's screen while adjusting angle since LCD panel maybe damaged or break if severe.
 - Do not lean backward excessively so that the monitor does not fall backwards.
 - Be careful of potential damage to the stand while adjusting angle.





► Function of the buttons

'MENU'

Show the menu screen or makes it disappear, Moreover

'SELECT'

Select category within the menu window or excutes automatic screen adjustment.

- '◀' / '▶'

Moves to the desired category within the menu window or adjusts the value of selected category and adjust sound volume.

Volume  50

'MODE'

Changes the modes, the orders being changed are same as below.

RGB → DVI → COMPONENT

'POWER'

If you push it, MV220 will turn on, flashing power indicator which shows the current state of power. If you push the button again, MV220 turns off.

Also power indicator flashes in following cases

1. On the power saving function working
2. No signal input but cables connected
3. No signal input because of the disconnection of cable
4. All signal is out of range MV220 allowing

LIGHT SENSOR

Adjusts the value "AUTO BRIGHTNESS" (Please refer to next page)



You can listen to any sound out of MV220 with using it.



Auto Brightness Control

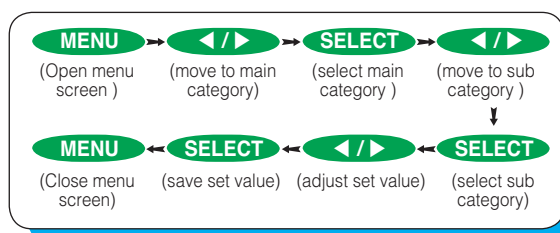
The product offers built-in function that automatically adjusts to optimized brightness depending on the brightness of the area at the vicinity. (At the time of purchase, this is set as On.)

* Refer to the screen category of the MENU function for detailed method of use. (Page 10)

OSD MENU Selection and operation

ENG

You can select the OSD menu in the OSD window using all the control buttons at the bottom of the screen. To change the current settings or adjust them for the desired settings, follow the following steps.



1. Press the Menu button to open the OSD menu window.
2. Press the ◀ / ▶ button to move the item of desired main menu.
3. If you highlight the desired menu item, press the Select button.
4. Press the ◀ / ▶ button to move the desired submenu item.
5. If you highlight the submenu item, press the Select button.
6. Press the ◀ / ▶ button to modify the current value.
7. Press the Select button to save the modified value.
8. Push MENU button to exit to sub category, main category and menu screen in this order.



Note The OSD window will disappear within a few seconds if there is no input in the OSD window. It does not appear when there is no input signal.

Main menu is configured as follows.

1. Screen
Factor in the brightness of the environment at the vicinity to adjust the brightness of monitor, and also adjusts to the level desired by user, Manually adjusts screen location, modulation and frequency.
2. Color
Manually, adjusts screen brightness, luminosity, color temperature and color proportion.
3. OSD
Adjusts the language used, the position of the menu screen, the display time of the menu screen and the saturation of the menu screen.
4. Others
Adjusts the language on the menu screen, and initializes menu value. User is able to select input signal, and adjust On/Off and value of audio function.

 Screen

PICTURE		
	Auto Bright	OFF
	Bright Value	≈ 50 ≈
	H Position	≈ 69 ≈
	V Position	≈ 88 ≈
	Phase	≈ 58 ≈
	Clock	≈ 49 ≈
	Auto Adjust	NO
RGB 1680×1050 60.2HZ		

Automatic brightness: Turns automatic brightness function On/Off

Brightness adjustment: Adjusts standard value for automatic brightness function (0-100)

Horizontal location: Adjusts horizontal location on screen (0-100)

Vertical location: Adjusts vertical location on screen (0-100)

Modulation: Adjusts focus on the screen (0-100)

Frequency: Adjusts pixel's horizontal size (0-100)

Automatic screen adjustment: Automatically adjusts screen's location, modulation and frequency.

 Color

COLOR		
	Brightness	≈ 70 ≈
	Contrast	≈ 70 ≈
	Color Temp	User
	Red	≈ 50 ≈
	Green	≈ 50 ≈
	Blue	≈ 50 ≈
	Auto Color	NO
RGB 1680×1050 60.2HZ		

Brightness: Adjusts brightness (0-100)

Luminosity: Adjusts luminosity (0-100)

Level of color force: Adjusts to color vision desired by user.
(blue.red.user)

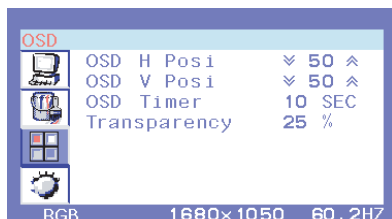
Red: Adjusts share of red (0-100)

Green: Adjusts share of green (0-100)

Blue: Adjusts share of blue (0-100)

Automatic color adjustment: Automatically adjusts screen's color.

 OSD



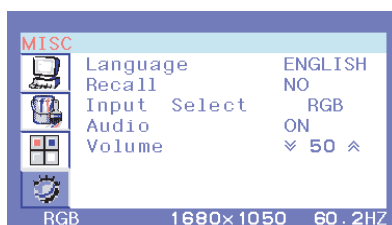
OSD Horizontal Adjustment: Adjusts OSD menu screen's horizontal location.(0-100)

OSD Vertical Adjustment: Adjusts OSD menu screen's vertical location. (0-100)

OSD Marking Time: Adjusts OSD menu screen's marking time within the screen Possible to set the time for disappearance of OSD menu screen up to 40 seconds when OSD operation button is not pushed on. (10,20,30,40)

Transparency: Adjusts transparency at the OSD menu screen background. (0~100)

 Others



Language: Changes language on the OSD menu. Six languages are available. (English, German, French, Spanish, Korean and Japanese)

Initialization:Initializes all functions.

Input signal : User can select input signal depending on installed device. (RGB,DVI)

Sound: Turns audio function On/Off.

Volume: Adjusts size of sound.(0-100)

Reference

60Hz is the optimized mode on the DVI mode's 1680*1050 resolution.
Parts of the category are provided in the DVI mode's screen, color menu.

● Explanation of message for utilization

ENG

Auto Adjust

◆ Auto Adjustment

Appears when automatic screen adjustment is executed on RGB mode.

Auto Color

◆ Auto color Adjustment

Appears when automatic color Adjustment is executed on RGB mode.

Auto Brightness

◆ Auto Brightness

Appears when automatic brightness function is executed.



RGB
No Signal



DVI
No Signal



COMPONENT
No Signal

◆ No Signal (RGB, DVI, COMPONENT)

Appears when there is no PC input signal
Check cable connection .

OUT OF FREQUENCY

◆ OUT OF FREQUENCY

Appears when Video Mode is out of the permissible range.

POWER SAVER MODE

◆ POWER SAVER MODE

Appears when PC input signal is absent.
This message disappears automatically after five seconds.
Check PC power

Timing guide

This product is a multi-frequency monitor.

It functions in horizontal frequencies from 30kHz to 80kHz and vertical frequencies from 56Hz to 75Hz. Due to its design based on microprocessor, it offers the functions of automatic synchronization and automatic size.

This monitor is equipped with 12 programmed configurations that are shown in the timing table. The followings are the ten configurations.

Preset		Resolution		Frequency		Clock (MHz)	Polarity (H/V)
		Horizontal	Vertical	Horizontal	Vertical		
MAC	M1	640	480	35.0kHz	67Hz	30.240	-/-
	M2	832	624	49.7kHz	75Hz	57.284	-/-
IBM	M3	640	350	31.5kHz	70Hz	25.175	+/-
	M4	640	480	31.5kHz	60Hz	25.175	-/-
	M5	720	400	31.5kHz	70Hz	28.322	-/+
VESA	M6	640	480	37.5kHz	75Hz	31.500	-/-
	M7	640	480	37.9kHz	73Hz	31.500	-/-
	M8	800	600	35.2kHz	56Hz	36.000	+/-, +/-
	M9	800	600	37.9kHz	60Hz	40.000	+/+
	M10	800	600	48.1kHz	72Hz	50.000	+/+
	M11	800	600	46.9kHz	75Hz	49.500	+/+
	M12	1024	768	48.4kHz	60Hz	65.000	-/-
	M13	1024	768	56.5kHz	70Hz	75.000	-/-
	M14	1024	768	60.0kHz	75Hz	78.750	+/+
	M15	1152	864	67.5kHz	75Hz	108.000	+/+
	M16	1280	1024	64.0kHz	60Hz	108.00	+/+
	M17	1280	1024	80.0kHz	75Hz	135.00	+/+
	M18	1440	900	55.9kHz	60Hz	106.5	-/+
	M19	1680	1050	65.3kHz	60Hz	146.250	-/+

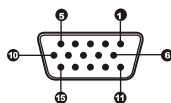
* MV220 supports total 4 modes of display such as 480i, 480p, 720i, 720p in the component mode.

Input signal detail

ENG

This signal input terminals are for 15Pin D-SUB, DVI-D, Component.
Please, connect the cables of each signal to your PC's input signal port.

► 15Pin D-SUB



Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Red Ground	11	Ground
2	Green	7	Green Ground	12	SDA
3	Blue	8	Blue Ground	13	Horizontal-Sync.
4	No Connection	9	No Connection	14	Vertical-Sync.
5	Ground	10	Ground	15	SCL

► DVI-D



Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S Data 2-	9	T.M.D.S Data 1-	17	T.M.D.S Data 0-
2	T.M.D.S Data 2+	10	T.M.D.S Data 1+	18	T.M.D.S Data 0+
3	T.M.D.S Data 2/4 Shield	11	T.M.D.S Data 1/3 Shield	19	T.M.D.S Data 0/5 Shield
4	T.M.D.S Data 4-	12	T.M.D.S Data 3-	20	T.M.D.S Data 5-
5	T.M.D.S Data 4+	13	T.M.D.S Data 3+	21	T.M.D.S Data 5+
6	DDC Clock	14	+ 5V Power	22	T.M.D.S Clock Shield
7	DDC Data	15	Ground	23	T.M.D.S Clock+
8	Reserved	16	Hot Plug Detect	24	T.M.D.S Clock-

► Component

Pin	Signal	Pin	Signal	Pin	Signal
1	Y : Luminance(Green)	2	Proportions Blue(Blue)	3	Proportions Red(Red)



Please, turn off the monitor, before connecting the signal out of the system.

Product specifications

Product specifications

LCD	Type	22" diagonal viewable screen TFT(Thin Film Transistor) Active matrix panel
	Pixel Pitch	R, G, B vertical stripe
	Display Color	16,777,216 colors
	Surface Condition	Anti glare coating
Viewing Angle	H / V	170° / 160°
Contrast ratio	Typ.	1000 : 1
Brightness	Typ.	300cd/m ²
Reponse Time	Typ.	5ms
Compatibility	PC	IBM 486, Pentium or PS/2 and compatibles
Refresh rate	Max.	1680 x 1050 @ 60Hz for optimal display
Connectors	Input signal	15-Pin D-SUB, DVI-D, COMPONENT
	Power	DC 12V In
Voltage / Power	Input	AC 100~240V, 50~60Hz
	Output	DC 12V
	Consumption	48W (MAX)
Screen size	Max.	337.920 mm (H) x 270.336 mm (V)
Feature	Temperature	33°F ~ 104°F (0°C ~ 40°C)
	Humidity	20%RH ~ 90%RH (no condensation)
	Altitude	To 10,000 feet
Storage Condition	Temperature	-14°F ~ 104°F (-20°C ~ 40°C)
	Humidity	5%RH ~ 90%RH (no condensation)
Dimension		520.0 mm (W) x 427.0 mm (D) x 437 mm (D)
Weight	Unit / Box	6.0kg / 7.5kg
Function	Speaker	5W x 2 (MAX)
	Audio in / out	Stereo Mini Jack 3.5 mm

- The design & specifications of MV220 are subject to be changed without any previous notice to improve its quality. -

► **No power.**

- Flip the power switch ON. The Power LED turns on.
- Make sure AC power cord is securely connected to the power jack and to a power outlet.

► **Power on but no screen image.**

- Make sure the video cable attached with this monitor is tightly secured to the video output port on the back of the computer
- Adjust the brightness and contrast.

► **Image is unstable, unfocused.**

- Use AUTO-TUNE to adjust automatically.
- If the image is still unstable after AUTO-TUNE processing, please adjust PHASE manually to get image focused.
- Check whether the resolution or refresh rate in windows display setting is beyond supported range (please refer to the specification of supported mode.)

► **Flickering**

- Not enough power is being supplied to the Monitor.
Connect the Monitor to a different outlet. If a surge protector is being used, there may be too many devices plugged in.
- See Timing Guide in this manual with a list of refresh rates and frequency settings showing the recommended setting for the Monitor.

► **Wrong or abnormal colors.**

- If any colors (Red, Green, or Blue) are missing, check the video cable to make sure it is securely connected. Loose pins in the cable connector could cause a bad connection.
- Connect the Monitor to another computer.
- Check the graphics card for proper sync scheme (or sync polarities) to match the Monitor's specifications.

► **Double (split) screen image**

- Make sure your graphics card is set to Non-Interlaced mode.

► **Entire screen image rolls (scrolls) vertically.**

- Make sure the input signals are within the LCD monitor's specified frequency range. (Maximum : 1680 X 1050 @ 60Hz)
- Connect the video cable securely.
- Try the Monitor with another power source.

- **Control buttons do not work.**
- Press only one button at a time.

ABOUT THE LCD

The LCD contains over 3,932,160 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots on the screen is an intrinsic characteristic of TFT LCD technology and is not an LCD defect.
If you display a fixed pattern for more than 10 hours, its image may remain on the screen in overlap mode when you display something else.

FCC NOTE

:This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,

INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.