

User's Manual

**20.1" Color LCD
Model: LM910**

Part Number:

REV: A0








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1. SAFETY SYMBOLS & PRECAUTIONS

1.1. SAFETY SYMBOLS

This manual uses the safety symbols below. They denote critical information. Please read them carefully.

	WARNING Failure to abide by the information in a WARNING may result in serious injury and can be life threatening.
	CAUTION Failure to abide by the information in a CAUTION may result in moderate injury and/or property or product damage.
	Alert electrical hazard.
	Indicates a prohibited action.
	Indicates to ground for safety.

1.2. PRECAUTIONS


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

WARNING

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

Attempting to use a malfunctioning unit may result in fire, electric shock, or equipment damage.

Do not open the cabinet or modify the unit.

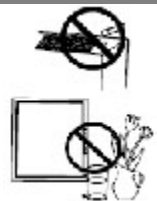
Opening the cabinet or modifying the unit may result in fire, electric shock, or burn. 

Refer all servicing to qualified service personnel.

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

Keep small objects or liquids away from the unit.

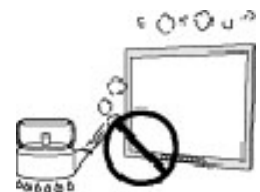
Small objects accidentally falling through the ventilation slots into the cabinet or spillage into the cabinet may result in fire, electric shock, or equipment damage. If an object or liquid falls/spills into the cabinet, unplug the unit immediately. Have the unit checked by a qualified service engineer before using it again.



Set the unit in an appropriate location.

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

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



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



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

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

To disconnect the power cord, grasp the plug firmly and pull.

Tugging on the cord may damage and result in fire or electric shock.



The equipment must be connected to a grounded main outlet.

Not doing so may result in fire or electric shock.



Use the correct voltage.

- The unit is designed for use with a specific voltage only. Connection to another voltage than specified in this User's Manual may cause fire, electric shock, or equipment damage.
- Do not overload your power circuit, as this may result in fire or electric shock.

Handle the power cord with care.

- The unit is designed for use with a specific voltage only. Connection to another voltage than specified in this User's Manual may cause fire, electric shock, or equipment damage.
- Do not overload your power circuit, as this may result in fire or electric shock.



Never touch the plug and power cord if it begins to thunder.

Touching them may result in electric shock.



Do not touch a damaged LCD panel directly with bare hands.

The liquid crystal that may leak from the panel is poisonous if it enters the eyes or mouth. If any part of the skin or body comes in direct contact with the panel, please wash thoroughly. If some physical symptoms result, please consult your doctor.



Follow local regulation or laws for safe disposal.

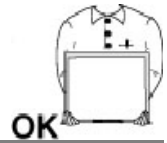
CAUTION

Handle with care when carrying the unit.

Disconnect the power cord and signal cables and remove the optional unit. Moving the unit with the cord or the option attached is dangerous. It may result in injury.

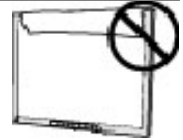
When handling the unit, grip the bottom of the unit firmly with both hands ensuring the panel faces outward before lifting.

Dropping the unit may result in injury or equipment damage.



Do not block the ventilation slots on the cabinet.

- Do not place any objects on the ventilation slots.
- Do not install the unit in a closed space.
- Do not use the unit laid down or upside down.
- Blocking the ventilation slots prevents proper airflow and may result in fire, electric shock, or equipment damage.



Do not touch the plug with wet hands.

Doing so may result in electric shock.



Use an easily accessible power outlet.

This will ensure that you can disconnect the power quickly in case of a problem.

Periodically clean the area around the plug.

Dust, water, or oil on the plug may result in fire.

Unplug the unit before cleaning it.

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

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

LCD PANEL

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

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

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

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

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

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

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

2. INTRODUCTION

Thank you very much for choosing this monitor.

2.1 Features

- VGA analog input
- DVI digital input compliant
- Resolutions up to SXGA 1600x 1200
- Power management system conforms to VESA DPMS standard.
- Supports DDC1/2B for Plug & Play compatibility.
- Advanced On Screen Display (OSD) control for picture quality adjustment

2.2 Package Contents

Please contact your local dealer for assistance if any of the listed items are missing or damaged.

- LCD Monitor
- D-sub Signal Cable
- DVI Cable
- Power cable
- User Manual

Note: Please retain the packing materials for future transference.

3 CABLE CONNECTION

3.1 Before Connecting

Before connecting your monitor to the computer, change the display screen settings (Resolution and frequency) in accordance with the charts below.

Note:

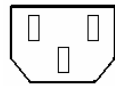
- The lower display modes like 640x 480, automatically enlarge to the maximum display mode (1600x 1200), and some lines of the characters may become fuzzy.
- When your computer and display support VESA DDC, the suitable resolution and the refresh rate are set by just plugging your display into the computer without any manual settings.

The monitor supports the following resolutions.

Resolution	Refresh rate	Dot Frequency	Remark
720 x 400	70Hz	202MHz (Max.)	PC Mode
640 x 480	60Hz		VGA
800 x 600	60Hz		VESA
1024 x 768	60Hz		VESA
1152 x 900	76Hz		VESA
1280 x 1024	60Hz		VESA
1600 x 1200	60Hz		VESA
1600 x 1200	75Hz		VESA

3.2 Connecting the Cables

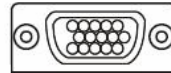
Note: Be sure that the power switches of both the computer and the monitor are OFF.



AC IN



DVI



D-SUB

Power cable connection:

Connect the power cord to the AC outlet, and connect the power to the monitor

DVI cable connection (Optional):

Plug the DVI signal cable to the DVI connector in the rear of the PC system, and plug the other end to the monitor. Secure cable connectors with screws.

VGA cable connection:

Plug 15-pin VGA signal cable to the VGA connector in the rear of the PC system, and plug the other end to the monitor. Secure cable connectors with screws.

Plug the power cord into the power connector on the rear of the monitor. Then, plug the other end of the cord into a power outlet.

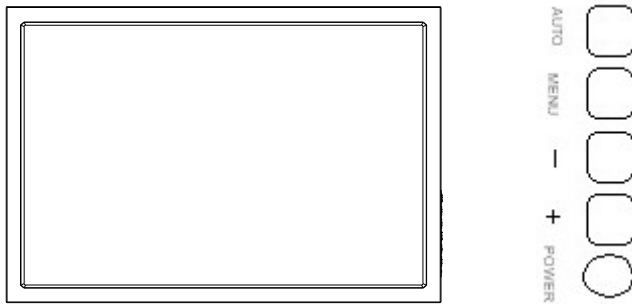
4. ADJUSTMENT

This touchmonitor will not likely require adjustment. Variations in video output and application may require adjustments to the touchmonitor to optimize the quality of the display.

For best performance, the touchmonitor should be operating in native resolution 1600 x 1200. Use the Display control panel in Windows to choose 1600 x 1200 resolution. Operating in other resolutions will degrade video performance.

All control adjustments are automatically memorized.

4.1 How to Use OSD Menu



- (1) **Auto** (Auto adjustment or exit)
- (2) **MENU** (Activate OSD menu)
- (3) - (Decrease setting value)
- (4) + (Increase setting value when activate function)
- (5) **POWER** (power on/off)

LED Indicator

LED indicator

Green.	Normal operation
orange	Standby mode
none	Off mode

Shortcut key

-	Backlight
+	Contrast

4.2 OSD MENU Adjustments and Settings

The following table shows all adjustment and setting menus.

Main Menu	Sub Menu	Reference
Input	Main Input	VGA / DVI
Image	Brightness	50
	Contrast	50
	Sharpness	12
	Aspect Ratio	Full / Full Aspect / Native / User / 5:4 / 4:3
	Mode Select	Overlap selection
Setup	Color temp	5500K, 6500K, 7500K, 8500K, 9300K, 10000K, USER
	Gamma	3.0, 2.8, 2.6, 2.4, 2.2, 2.0, 1.8
	OSD Position	Center / Top Left / Top Right Bottom Left / Bottom Right
	OSD Language	English / Chinese
	Auto Scan Input	On /off
	Factory Reset	Reset factory value
VGA	Auto Adjust	
	H-position	31
	V-position	31
	Clock	based on input signal
	Phase	
Status	FW version	Version information
	Main Format	
	Main Input	Display current input

4.3 Screen Adjustment

Screen adjustments for the LCD monitor should be used in suppressing screen flickering and also for adjusting the screen to its proper position. There is only one correct position for each display mode. It is also recommended to use the OSD Menu function when first installing the display or whenever changing the system.

Note: Allow the LCD monitor to stabilize for at least 20 minutes before making image adjustments. Making Adjusting must be VGA signal.

Adjustment Procedure

1. Adjust by <Auto Adjust> menu in the OSD Menu.

To automatically adjust the clock, phase, screen position and resolution.

Note:

The Auto sizing function is intended for use on the computer running Windows. It may not work properly when the computer is running on MS-DOS (Not windows) or the background color for the "wall paper" or "desktop" pattern is set to black.

If the appropriate screen cannot be made by using the Auto adjustment button, adjust the screen through the following procedures.

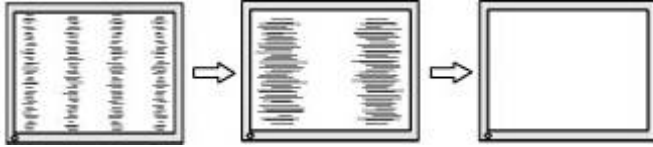
2. Adjust by using <VGA> menu in the OSD Menu.

(1) Vertical bars appear on the screen

→ Use the <Clock> adjustment.

Select the <Clock> and eliminate the vertical bars by using the UP and Down of the Control buttons.

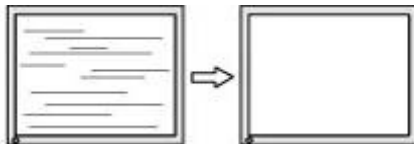
Do not continuously press the Control buttons, as the adjustment value will change quickly and make it difficult to locate the most suitable adjustment point. If the horizontal flickering, blur or bars appear, proceed to <Phase> adjustment as follows.



(2) Horizontal bars appear on the screen.

→ Use the <Phase> adjustment.

Select the <Phase> and eliminate the horizontal flickering, blurring or bars by using the Right and Left buttons.



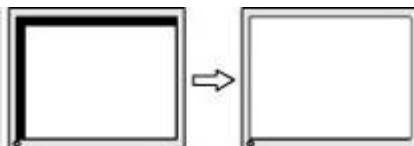
Note: Horizontal bars may not completely disappear from the screen depending on the computer.

(3) The screen position is incorrect.

→ Use the <Position> adjustment.




The <Position> adjustment moves the image to the correct position. Select <Position> and adjust the position by using the Up and Down buttons.

If vertical bars of distortion appear after finishing the <Position> adjustment, return to <Clock> adjustment and repeat the previously explained adjustment procedure. (Clock → Phase → Position)



5. TROUBLESHOOTING

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

Problems	Points to check with Possible Solutions
<p>1. No picture Indicator status: Off</p>	<p>Check that the power cord is correctly connected. If the problem persists, turn off the monitor power for a few minutes, then turn it back on and try again.</p> <ul style="list-style-type: none"> - when the signal is not inputted correctly, even if the monitor functions properly. - When the image is displayed correctly after a short time, there is no problem with the monitor. (Some PCs do not output the signal soon after powering on.) <p>Check that the signal cable is properly connected to the PC or graphics board.</p>
<p>Indicator status: Green</p>	<p>Check the "Brightness" setting.</p>
<p>2. Display position is incorrect.</p> 	<p>Adjust the image position using the <Position>. If the problem persists, use the graphics board's utility software to change the display position if available.</p>
<p>3. Vertical bars of distortion appear.</p> 	<p>Decrease the horizontal bars using the <Clock>.</p>
<p>4 Horizontal bars of distortion appear.</p> 	<p>Decrease the horizontal bars using the <Phase>.</p>
<p>5 The screen is too bright or too dark.</p>	<p>Adjust the <Brightness> (The backlight of the monitor has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer.)</p>
<p>6. Afterimages appear.</p>	<ul style="list-style-type: none"> - Do you use the screen saver or timer when displaying the same image for extended periods of time? - Afterimages are particular to monitors. Avoid displaying the same image for extended periods of time.
<p>7. The screen has defective pixels (e.g. slightly light or dark).</p>	<p>This is due to the characteristics of the panel itself, and not the product.</p>
<p>8. Touch doesn't work.</p>	<p>Make sure the touch cable is securely attached at both ends.</p>

6. CLEANING

Periodic cleaning is recommended to keep the monitor looking new and to prolong its operation lifetime.

Note: Never use thinner, benzene, alcohol (ethanol, methanol, or isopropyl alcohol), abrasive cleaners, or other strong solvents, as these may cause damage to the cabinet or LCD panel.

Cabinet

To remove stains, wipe the cabinet with a soft, lightly moistened cloth using a mild detergent. Do not spray wax or cleaner directly into the cabinet. (For details, refer to the manual of the PC.)

LCD Panel

The LCD surface can be cleaned with a soft cloth, such as cotton or lens paper.

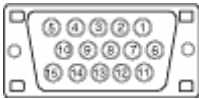
If necessary, stubborn stains can be removed by moistening part of a cloth with water to enhance its cleaning power.

7. SPECIFICATION

7.1 Specification

Display characteristics	
Size:	20.1"
Supported Color :	16.7M colors (8 Bit)
Native resolution:	1600×1200
Active Area:	408 x 306 mm
Aspect Ratio:	4:3
Pixel Pitch :	0.255 x 0.255 mm
Viewing angle:	178° V/H @ contrast ratio > 10 Typ.
Brightness:	250 cd/m ²
Contrast ratio:	800:1 Typ.
Lamp Life Time:	Min. 50,000 Hr
Response Time	TrR: 7ms Typ. ; TrD: 9ms Typ.
VESA DDC :	DDC 2B compliant
Inputs	
Analog signal:	15Pin D-sub
Digital signal:	DVI-D
AC Power :	Power receptacle CEE 6A
Power	
Power supply:	100-240Vac 50/60Hz
Power consumption:	60W max.
Power saving	5W max. (EPA, VESA compliant)
Physical	
Dimensions:	471×363×64 mm (without stand) 471×468×222 mm(with stand) The stand is height adjustable, the adjustable range is maximum 15cm
Weight:	6.5Kg (without Stand) 10 Kg (with stand)
Environmental	
Operating temperature:	0° to 40°C
Storage temperature:	-20° to 60°C

7.2 D-Sub 15pin Connector



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

7.3 DVI - Connector



PIN	Description	PIN	Description	PIN	Description
1	TMDS Data 2-	9	TMDS Data 1-	17	TMDS Data 0-
2	TMDS Data 2+	10	TMDS Data 1+	18	TMDS Data 0+
3	TMDS Data 2/4 Shield	11	TMDS Data 1/3 Shield	19	TMDS Data 0/5 Shield
4	NC*	12	NC*	20	NC*
5	NC*	13	NC*	21	NC*
6	DDC Clock (SCL)	14	+5V Power	22	TMDS Clock shield
7	DDC Data (SDA)	15	Ground (For +5V)	23	TMDS Clock+
8	NC	16	Hot Plug Detect	24	TMDS Clock-

7.4 Display port



PIN	Description	PIN	Description
1	ML Lane 3(n) In	11	GND
2	GND	12	ML Lane 0(p) In
3	ML Lane 3(p) In	13	GND
4	ML Lane 2(n) In	14	GND
5	GND	15	I/O AUX CH(p)
6	ML Lane 2(p) In	16	GND
7	ML Lane 1(n) In	17	I/O AUX CH(n)
8	GND	18	Out Hot Plug Detect
9	ML Lane 1(p) In	19	RIN Return
10	ML Lane 0(n) In	20	Power Out DP_PWR

7.5 Preset Timing

Timing		Dot Clock MHz	Signal Polarity		Frequency	
			H	V	FH (kHz)	FV (Hz)
PC Mode	720×400	28.3	-	-	31.5	70.0
VGA	640×480	25.2	-	-	31.5	60.0
VESA	800×600	40.0	+	+	37.9	60.0
VESA	1024×768	65.0	-	-	48.4	60.0
VESA	1152×900	108.0	-	-	71.8	76.0
VESA	1280×1024	108.0	+	+	64.0	60.0
VESA	1600×1200	162.0	+	+	75.0	60.0
VESA	1600×1200	202.0	+	+	93.7	75.0