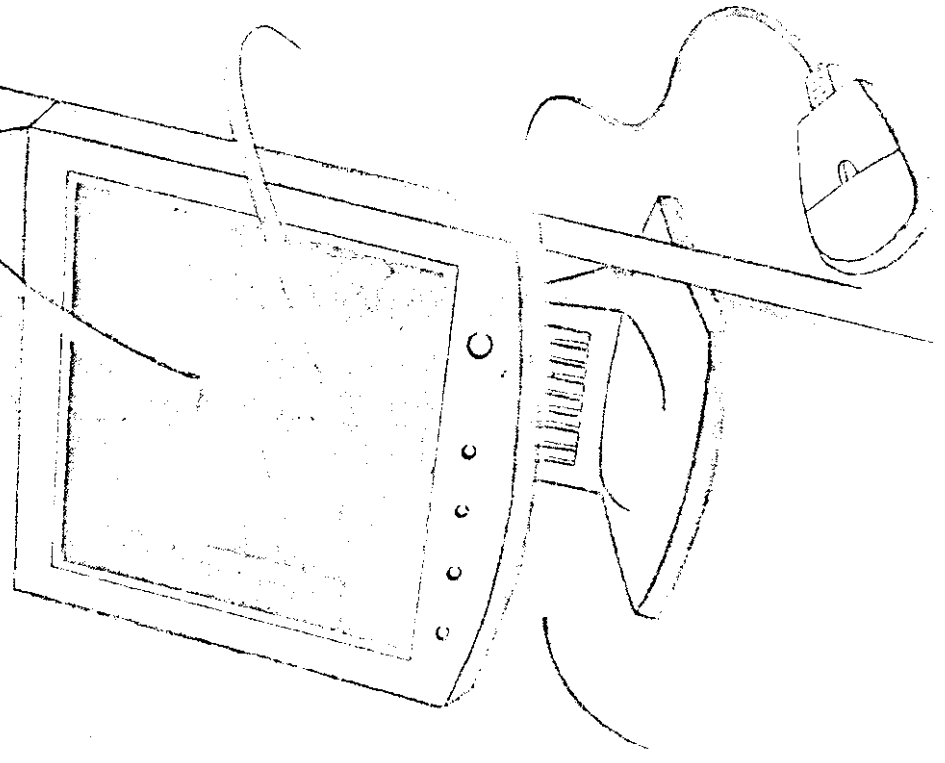


ATTACHMENT A. USER'S MANUAL

DeluxScan[®]-EM1400

User's Gui



DE LUX SCAN



**Federal Communications Commission
Radio Frequency Interference Statement**

Warning: "Change of modifications not expressly approved by the party responsible for compliance with the FCC's Rules (The FCC "Grantee") could void the guarantee"

*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 when 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 residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*

WARNING

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.





DeluxScan[®] LM1400

DECLARATION OF CONFORMITY

WE *HYUNDAI ELECTRONICS INDUSTRIES CO., LTD.*
Ami-ri Bubal-Eub Ichon-Si Kyungki-Do
467-860

declare under our sole responsibility that the product:

Kind of equipment : **COLOR LCD MONITOR**

Type-Designation : **HLM1400**

*to which this declaration relates is in conformity with the following standard(s)
or other normative document(s)*

Safety : *EN60950 : 1992 + A1, A2, A3*

EMC : *EN 55 022/1994, EN50 082-1 /1992*

IEC 801-2/1991, IEC 801-3/1984, IEC 801-4/1998

*following the provisions of the Low Voltage Directive 73/23/EEC,
93/68/EEC and the EMC Directive 89/336/EEC.*

Accredited test laboratory :
TÜV Product Service GMBH
RIDER Str. 31
D-80339 Munchen GERMANY

following the provisions of the EMC Directive 89/336/EEC.

Accredited test laboratory :
TÜV Rheiland
Am Grauen Stein
51105 Koln

Korea / Jun / 20, 1998

HONG KI, KIM

(Place and date of issue)

(Name and signature of authorized person)



Contents

1. <i>How to get the most enjoyment with monitor</i> ----	2
• <i>Features</i>	
• <i>General Safety precautions</i>	
• <i>Maintenance</i>	
2. <i>Installation</i> -----	5
2-1. <i>Packing List</i>	
2-2. <i>Control description</i>	
2-3. <i>Connecting with external equipment</i>	
2-4. <i>Video input terminal</i>	
3. <i>Microcontroller features</i> -----	8
4. <i>Power management</i> -----	9
5. <i>Preset Mode chart</i> -----	10
6. <i>On screen controls & LED indicator</i> -----	12
7. <i>Specifications</i> -----	18





DeluxScan® LM1400

1. How to get the most enjoyment with monitor

This is a 14.1" color LCD monitor(Model: HLM1400) to display signals from personal or micro computers.

This manual has been prepared to assist you in becoming familiar with your new display monitor.

• *Features*

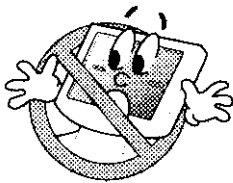
- . 14.1" viewable XGA(1024 × 768) resolution LCD module*
- . Unlimited Color Display*
- . DPMS(Display Power Management Signaling)*
- . OSD(On Screen Display) controls, Multi Language OSD Menu*
- . Self test function*
- . Implement the DDC 1/2B features*

This monitor includes DDC 1/2B features.

DDC 1/2B(Display Data Channel 1/2B) is a communication channel over which the monitor automatically informs the host system of its capabilities.

DDC 1/2B uses a formerly unconnected signal pins in the 15-pin VGA connector.

The system will perform "Plug&Play" feature if both monitor and host systems support DDC 1/2B protocol.

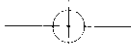


Note

Some computer systems are not compatible with the DDC standard.

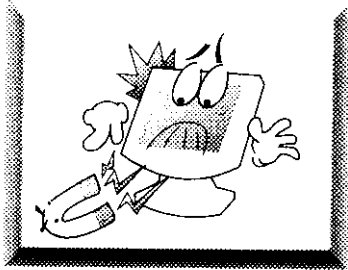
If your monitor is displaying a wrong resolution, please check your computer system including a DDC compatible video card and contact HYUNDAI Service Center.



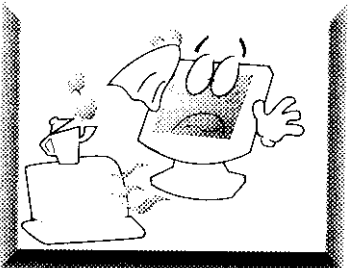


- *General Safety precautions*

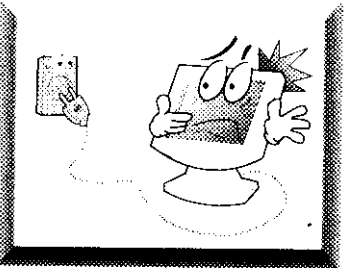
This Monitor has been engineered and manufactured to assure your safety, and you can prevent your safety from serious electrical shock and other hazards by keeping in mind the following attentions.



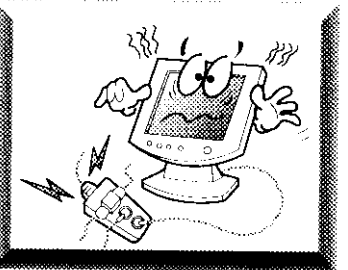
- 1.** *Do not place heavy, wet or magnetic on the monitor or the power cord. Never cover the ventilation openings with any material and never touch them with metallic or inflammable materials.*



- 2.** *Avoid operating the monitor in the place extremely heated, humid or affected by dust.*
 - Temperature : 5~35°C
 - Humidity : 30~80RH



- 3.** *Be sure to turn the monitor off before plugging the power cord into the socket of power source. Make sure that the power cord and the other cords are securely and rightly connected.*

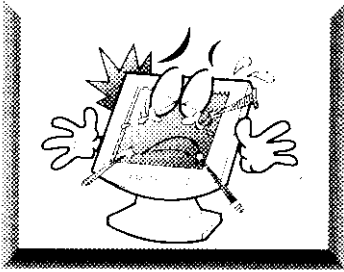


- 4.** *Overloaded AC outlets and extension cords are dangerous. So are frayed power cords and broken plugs. They may result in a shock or fire hazard. Call your service technician for replacement.*

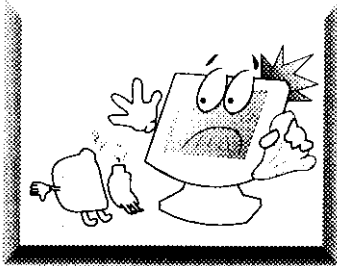




DeluxScan® LM1400

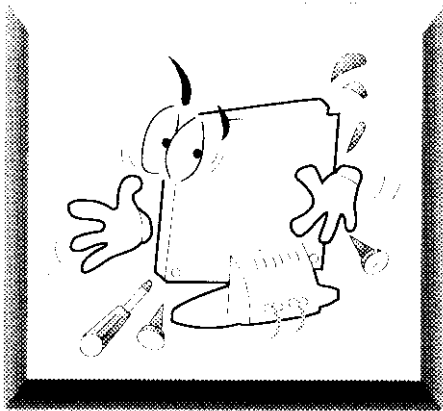


5. Do not use the sharp tool such as pin or pencil to avoid the scratch on the LCD surface.



6. Do not use the solvent such as benzene to clean the monitor. It will damage to LCD surface.

• Maintenance

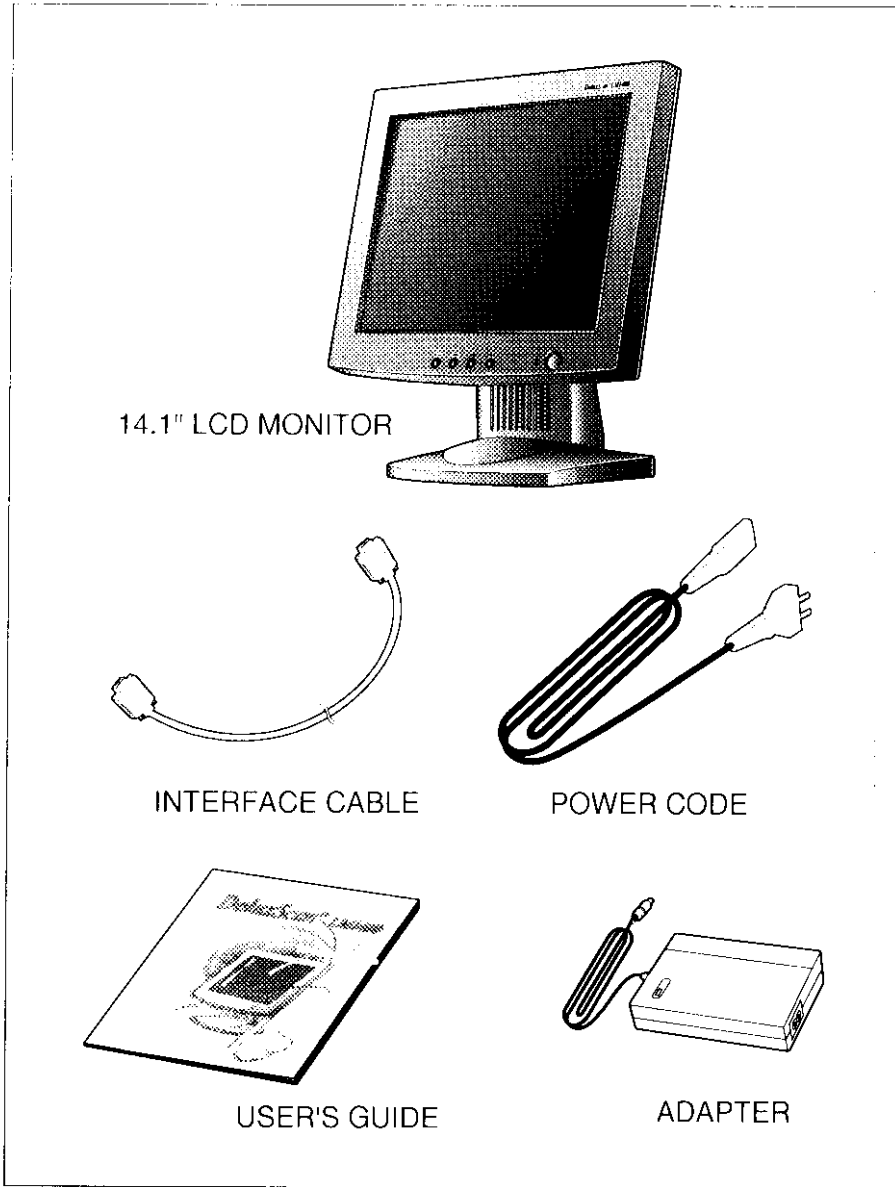


Do not open the monitor. There are no user serviceable components inside. There is dangerous high voltages in side, even when power is off. If the display monitor does not operate properly, remove the power cord from the wall outlet, and contact your dealer. Any with any electrical equipment, careless user and unprofessional maintenance are able to cause serious electrical shock and other hazards.



2. Installation

2-1. Packing List

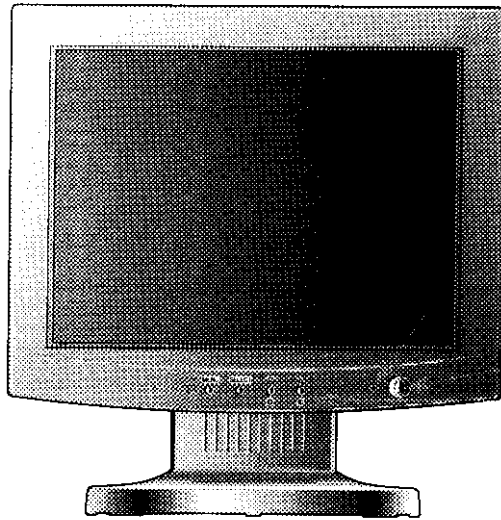




DeluxScan® LM1400

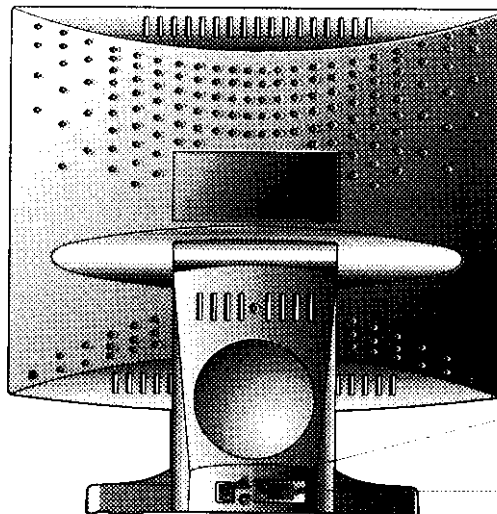
2-2. Control description

- *Front View*



POWER LED
POWER KNOB
FUNCTION KNOB

- *Rear View*



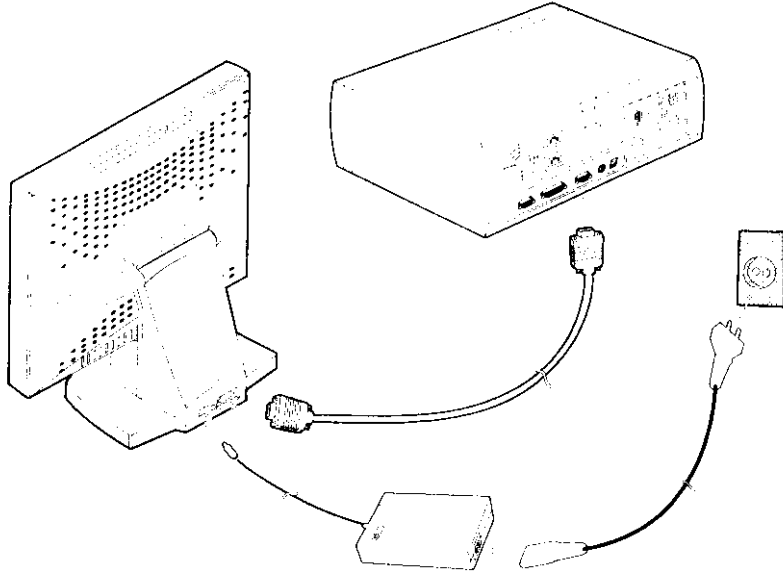
18V DC INPUT JACK
15PIN D-SUB CONNECTOR



2-3. Connecting with external equipment

- **Cautions**

Be sure to turn off the power of your computer before connecting the Monitor.

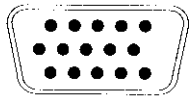


2-4. Video input terminal

A 15 pin D-sub connector is used as the input signal connector.

Pin and input signals are shown in the table below.

Pin number	Signal name	Pin number	Signal name	Pin number	Signal name
1	RED	2	GREEN	3	BLUE
4	GROUND	5	DDC-Return	6	RED-Ground
7	GREEN-Ground	8	BLUE-Ground	9	N.C
10	Logic-Ground	11	Ground	12	SDA(DDC)
13	H-sync	14	V-sync	15	SCL(DDC)





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3. Microcontroller features

The microcontroller automatically detects the video board installed in your system. When you turn on the monitor, the Micro controller first checks the display mode memory stored in the user setting area and the factory presetting area.

- **Display modes memory**

The microcontroller has the memory capacity to store 25 different display modes including timing formats and display settings. This memory capacity is divided into two parts. One is the user setting area, the other is the factory presetting area.

- **User setting area**

The user can add nonstandard modes. If you adjust display Image, the image is saved automatically. Then the microcontroller always detects and displays the last mode stored in the user setting area when the monitor is turned on.

The user setting area maintains the last 10 display modes set by the user in its memory. When the user setting area is full(10 modes are registered), if new nonstandard timing is registered, the oldest timing settings will be deleted.

- **Factory presetting area**

There are 15 display modes stored in this area. These display modes are preset at the factory and include most of the display modes currently available(see Timing Chart of this manual).

You can also retrieve the factory preset mode by selecting the RECALL menu.

- **Automatic save**

The monitor automatically saves the setting value after certain times(5, 8, 12, 20, 30sec) of adjusting OSD menu.

4. Power management

This monitor equipped with DPMS(Display Power Management Signaling) function which automatically leads the monitor to the state of power saving that consumes just a little power less than 5Watt, when the computer is left unattended.

Although the monitor can be left in power-saving mode for longer periods, we recommend that you turn it off after your daily work.

- **Operation**

The DPMS function requires support from the computer system of any software DPMS function applied, currently being used. If the keyboard(or mouse) is left unattended for a certain period, the program or system will set the sync signals to DPMS modes. The DPMS function has three status.

The recommended signals, power consumption and recovery times are shown in the table below.

Status	Signal			Power Consumption	Recovery Time	LED Indicator
	Hsync	Vsync	Video			
On	Pulse	Pulse	Active	30Watt	-	Green
Standby	No Pulse	Pulse	Blank	Less than 10Watt	Within 2sec	Alternating Green/Orange(1sec)
Suspend	Pulse	No Pulse	Blank	Less than 10Watt	Within 2sec	Alternating Green/Orange(0.5sec)
Off	No Pulse	No Pulse	Blank	Less than 5Watt	Within 2sec	Orange

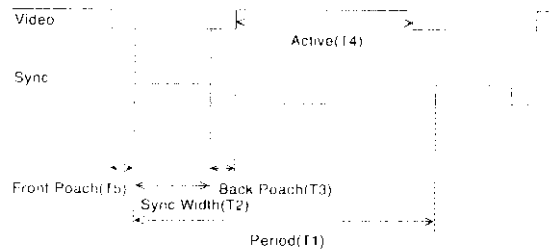


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5. Preset Mode chart

- **Timing Charts**

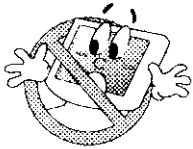
Support video timings this monitor shall be capable of display following video timing chart.



- **Input timing limits**

H-sync pulse width $1.0\mu s \leq \text{Sync Pulse Width} \leq 8.0\mu s$

V-sync pulse width $0.04ms \leq \text{Sync Pulse Width} \leq 0.5ms$



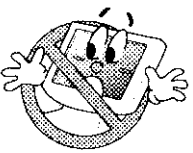
Note

If the Sync pulse width of input timing is out of range of input timing limits, monitor may be able to operate abnormal. Besure to check the sync pulse width of input timing.

- **Input level limits**

Low level : 0.4V max

High Level : 2.4V min



Note

Even if the monitor detects the input timing as a factory preset mode, the size and position may not be able to be set as desired. Check the input timings are under the specifications as you want.

For better quality of display image, use the timing and polarity shown in the preset mode table above. Please see your video card user's guide to ensure compatibility.



● **Preset Mode Table**

The timing shown in the following table will be factory preset for display.

Horizontal	Pixel	640	832	720	720	640	640	640	640	800	800	800	800	1024	1024	1024
Frequency	kHz	31.25	40.725	31.409	37.927	31.469	35.000	37.500	37.881	35.156	37.879	36.875	48.077	48.963	36.476	60.023
Period/T1	μs	10.250	20.111	31.778	26.366	31.778	28.571	26.667	26.413	28.444	26.400	27.333	20.800	20.667	17.707	16.660
Sync Width/T2	μs	1.500	1.117	3.843	1.044	1.811	2.116	2.002	1.270	2.000	3.200	1.016	2.400	2.302	1.803	1.210
Back Porch/T3	μs	-	-	1.907	1.650	1.917	3.175	3.810	3.810	3.336	2.200	3.232	1.280	2.402	1.920	2.233
Active/T4	μs	20.200	14.521	25.422	24.282	25.422	21.164	23.317	20.247	22.222	20.000	16.162	16.000	15.754	13.633	13.003
Front Porch/T5	μs	3.000	0.579	0.606	1.044	0.676	2.116	0.508	0.792	0.667	1.000	0.323	1.120	0.369	0.320	0.293

Vertical	Lines	400	624	400	400	480	480	480	480	600	600	600	600	768	768	768
Frequency	Hz	50.024	74.550	70.087	85.939	50.014	60.067	75.000	72.809	50.250	60.317	75.000	72.188	60.004	70.069	75.029
Period/T1	ms	17.724	13.414	14.268	11.759	16.683	15.000	13.333	13.735	17.778	16.579	13.333	13.853	16.666	14.272	13.228
Sync Width/T2	ms	0.322	0.060	0.064	0.079	0.064	0.086	0.080	0.079	0.057	0.106	0.064	0.125	0.124	0.106	0.050
Back Porch/T3	ms	-	-	1.089	1.108	1.048	0.427	0.427	0.528	0.626	0.607	0.448	0.478	0.600	0.513	0.466
Active/T4	ms	16.112	12.519	12.711	10.536	15.253	13.714	12.800	12.678	17.007	15.810	12.800	12.480	13.889	13.509	12.795
Front Porch/T5	ms	0.282	0.020	0.413	0.026	0.218	0.086	0.027	0.238	0.028	0.026	0.021	0.779	0.062	0.053	0.017
Interlaced	YN	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sync Polarity	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The monitor is compatible with additional modes within the one of following specified frequency ranges provided that they are different at least for one of the following:

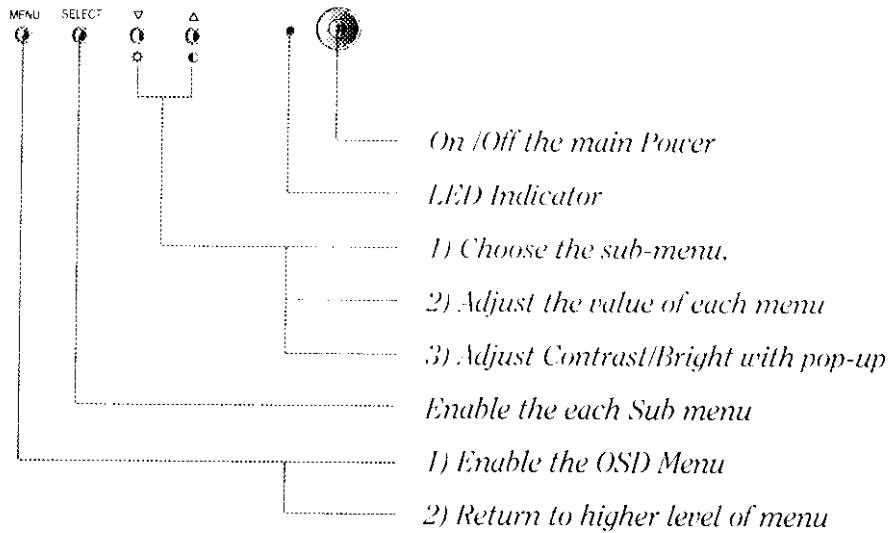
Horizontal frequency : ± 1kHz

Vertical frequency : ± 2Hz



DeluxScan® LM1400

6. On screen controls & LED indicator



- **Main menu & control selection**

Press the MENU or SELECT key to access the main menu.

The resolution and frequency are displayed at the top of the menu box.

When nonstandard signal is detected, the frequency is displayed also.

Place the color box on the control icon you wish to adjust by the ▼ or ▲ key.

Press the select key to access the control.

- **Exit menu**

Press the MENU key two times to exit.

- **Auto exit**

The OSD images are disappeared automatically after few seconds inactivity as your setting of OSD display time.

- **Auto save**

The monitor automatically saves the new setting while OSD is exit.



- **Normal mode**

When video signal is working with normal display condition, power LED is lit Green.

- **DPMS mode**

The LED indicates different status when this unit operates in different power saving modes.

- **Out of range**

When unsuitable signal is detected, the OSD displayed out of Range message.

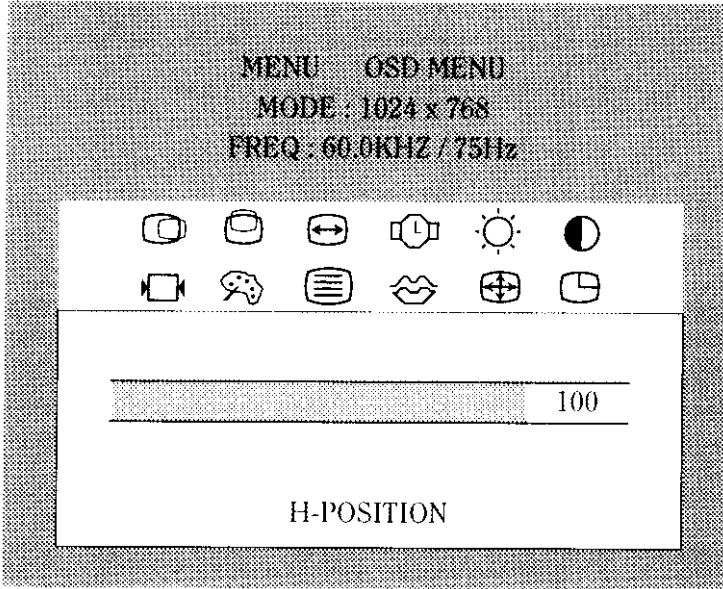


DeluxScan® LM1400

- **On-Screen Display Settings**

The Adjustment for screen settings are located in the OSD and can be viewed in one of five languages.

OSD feature and main Menu functions are as follows.



- | | | |
|--|----------------------|---|
| | H-Position | Adjust the horizontal position of the screen's image. |
| | V-Position | Adjust the vertical center of the screen's image. |
| | Clock | Adjust the width of the screen's image. |
| | Clock-Phase | Adjust the noise of the screen's image. |
| | Brightness | Adjust the intensity of screen. |
| | Contrast | Adjust the contrast of the screen's image. |
| | Recall | Reload the factory preset mode |
| | Color Control | Invokes the Color Control menu. |
| | Preset Mode | Display the factory pre-set timing. |
| | Language | Select the 5 kinds of language. |
| | OSD Adjust | Invokes the OSD position adjustment menu. |
| | OSD Time | Select the OSD display Timing. |



● **Getting Fine Picture**

Step 1. At first Display, a full screen, such as, Window's background or "H" character should be achieved by using Editor (eg; notepad).

Step 2. Adjust the screen to the center of the Display(LCD), by using the top and bottom display controls. Using V-Position Adjust menu

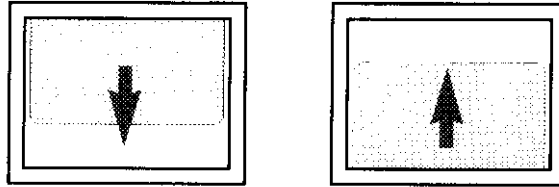


Fig 1.

Step 3. Adjust the screen to the center of the Display(LCD), by using the right and left display controls. Using Clock and H-Position adjust menu

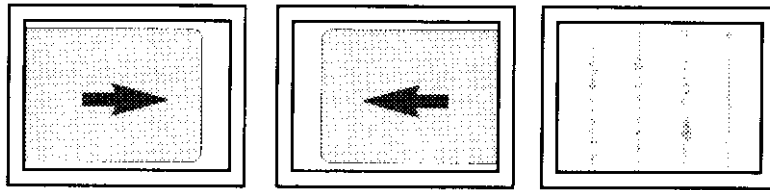


Fig 2.

Step 4. Adjust the Clock-phase until the "H" Character displays clear.

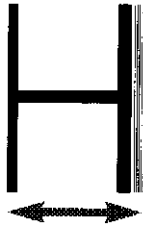


Fig 3.

Step 5. Using the Contrast, Brightness, and Color Control menu, set the color to your preference.

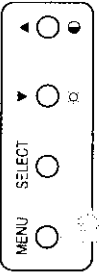
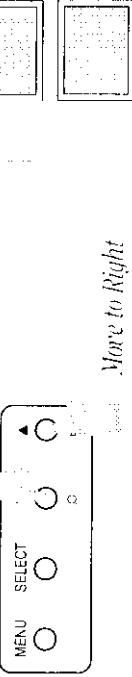
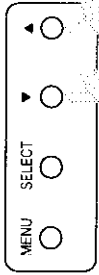
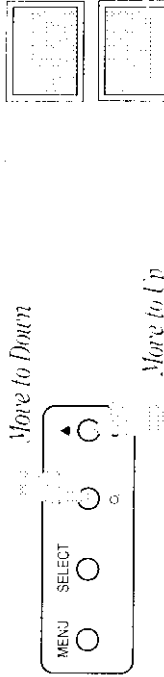
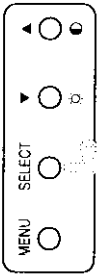


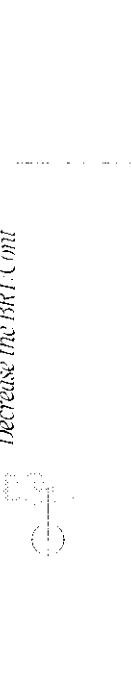
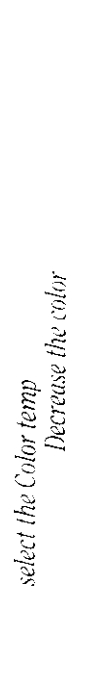
Step 6. When you finish the adjustment, you can save your settings by pressing on the menu until the OSD screen has disappeared.



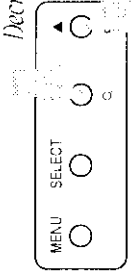
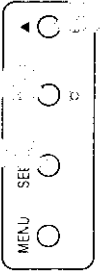


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● Adjust Sequence.

1. Menu Enable & Select the ICON	2. Adjust Method
<p>Step1. Press the menu key to Enable the OSD menu</p> 	<p>H-Position</p> 
<p>Step2. Press the ▼(Down) / ▲(Up) key to Select the Menu icon.</p> 	<p>I-Position</p> 
<p>Step3. Press the SEL key to Enable the selected icon</p> 	<p>Clock</p> 
	<p>Clock Phase</p> 
	<p>Brightness / Contrast</p> 
	<p>Color Control</p> 



<p>Brightness / Contrast</p>	 <p>Decrease the BRT Cont</p> <p>Increase the BRT Cont</p>
<p>Color Control</p>	 <p>select the Color temp</p> <p>Decrease the color</p> <p>Increase the color</p>
<p>Recall</p>	<p>retounds factory Preset Mode</p>
<p>Language</p>	<p>select from 5 different languages</p>
<p>preset Mode</p>	<p>shows the factory pre-set timing</p>
<p>Brightness</p>	<ul style="list-style-type: none"> - Press the ▼ (Down) key to enable the brightness menu - Use the ▼ (Down) and ▲ (Up) key to adjust the brightness
<p>Contrast</p>	<ul style="list-style-type: none"> - Press the ▲ (Up) key to enable the contrast menu - Use the ▼ (Down) and ▲ (Up) key to adjust the contrast
<p>Hot Key Function</p>	





DeluxScan® LM1400

7. Specifications

LCD	<i>Type</i>	AM-TFT
	<i>Size</i>	14.1" viewable, Diagonal
	<i>Dot Pitch</i>	0.279mm
	<i>Brightness</i>	200cd/m ²
	<i>Response Time</i>	40msec Max.
Input	<i>Signal</i>	RGB Analog
	<i>Type</i>	15pin D-sub
Sync	<i>H-Freq</i>	31 ~ 60KHz
	<i>V-Freq</i>	56 ~ 85 Hz
Video Band Width		78.75Mhz Max.
Display	<i>Area</i>	285.7 * 214.3 mm
	<i>Color</i>	Infinite
Resolution (Max.)		1024x768 @ 75Hz
User Controls & OSD Controls		Contrast, Brightness, H/V Position Clock, Clock-Phase, Recall Color Control, Preset Mode, Language OSD Adjust, OSD time
Power Management		As per VESA Standard.
Plug & Play		VESA DDC 1/2B
Safety & Regulation	<i>MPR-II</i>	Basic
	<i>EMC</i>	FCC Class B, CE
	<i>Safety</i>	CUL, TUV-GS
Temperature	<i>Operating</i>	5 to 35 °C
	<i>Storage</i>	-5 to 45 °C
Humidity	<i>Operating</i>	30% to 80% (Non-condensing)
	<i>Storage</i>	5% to 90% (Non-condensing)
Weight	<i>Unit</i>	4.6Kg
	<i>Carton</i>	5.0Kg
Dimension(W x H x Dmm)		471 x 493 x 288mm