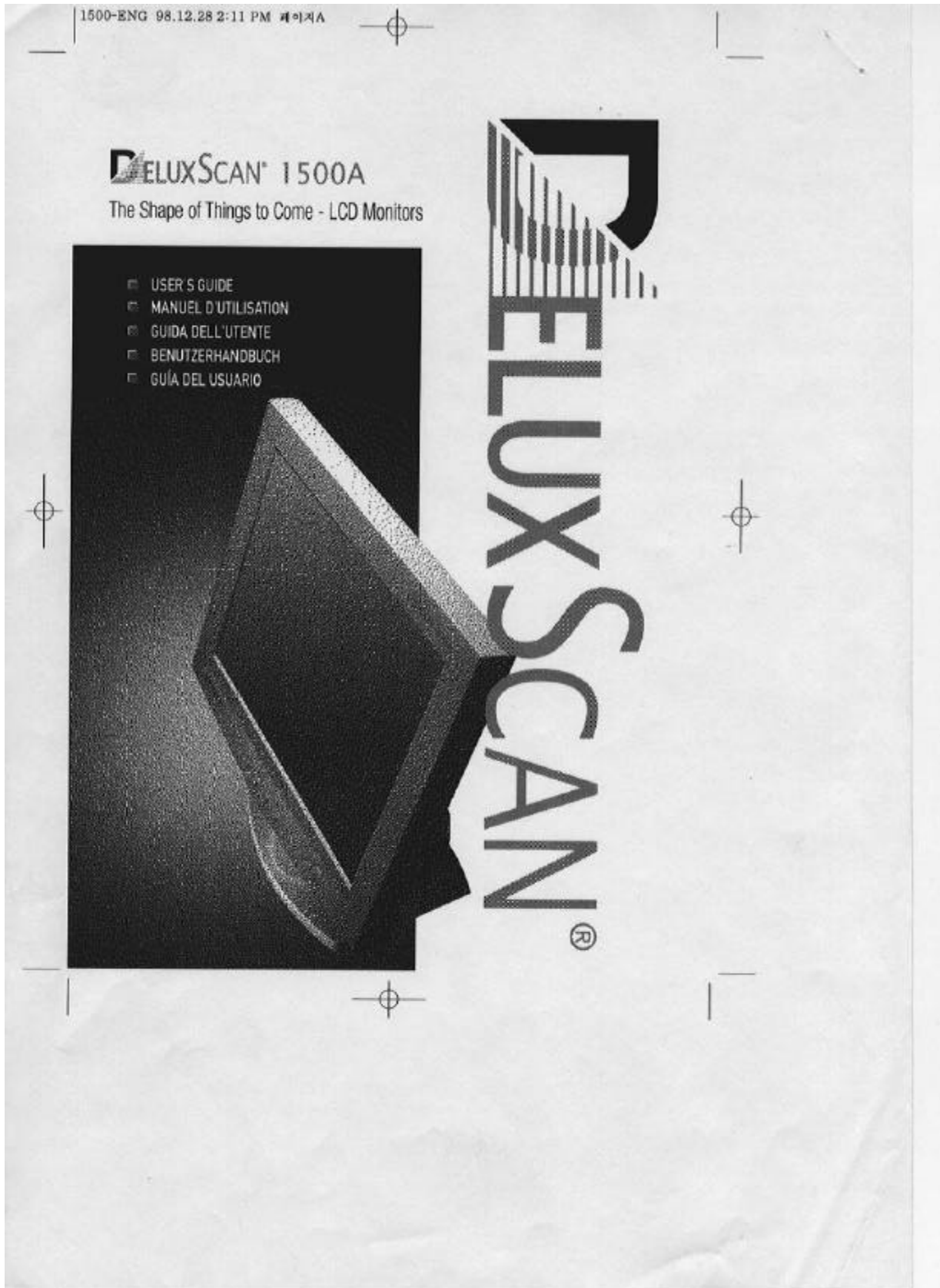# 1. USER'S GUIDE

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U.S.A.

U.S.FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT
INFORMATION TO THE USER

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 of a circuit different from that to which
  the receiver is connected.
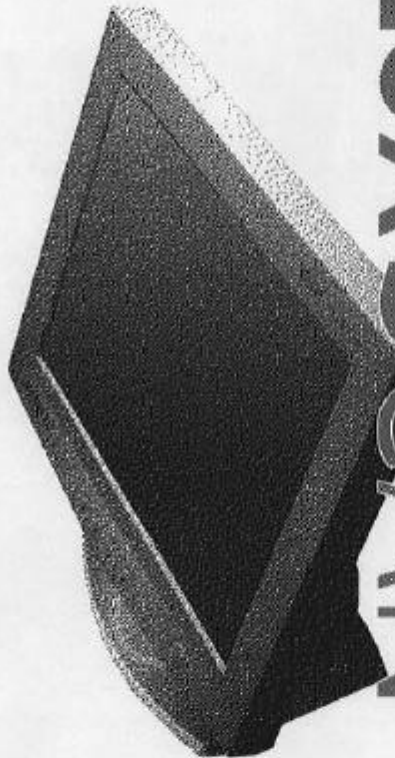• Consult the dealer or an experienced radio/TV technician for assistance.

Changes or modification not expressly approved by the party responsible for
compliance could void the user's authority to operate the equipment.
Connecting of peripherals requires the use of grounded, shielded signal cables.

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DELUXSCAN® 1500A
The Shape of Things to Come - LCD Monitors

USER'S GUIDE

DELUXSCAN®

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ᴰELUXSCAN®

How to get the most out of this monitor

This is a 14.1" color LCD monitor (Model: HLM 1500A) which can display signals from a personal or micro computer.
This manual has been prepared to familiarize you with your new display monitor.

Features

- 15.0" viewable XGA (1024 × 768) resolution LCD module
- 16.7 Milo Colors
- DPMS (Display Power Management Signaling)
- OSD (On-Screen Display) controls, multi-language OSD Menu
- Automatically adjust the image Position, the Clock, the Clock Phase settings
- Universal 100-240V AC power supply
- DDC 1/2B features

General safety precautions

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

Do not place anything 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.

Avoid operating the monitor in extreme heat, humidity or areas affected by dust.
  Temperature : 5~35°C
  Humidity : 30~80RH

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

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Overloaded AC outlets and extension cords are dangerous, as are frayed power cords and broken plugs, which may cause electric shock or fire. Call your service technician for replacement.

Do not use sharp tools such as a pin or a pencil near the monitor, as they may scratch the LCD surface.

Do not use a solvent, such as benzene, to clean the monitor, as it will damage the LCD surface.

Maintenance

Do not open the monitor. There are no user-serviceable components inside, and there is a risk of exposure to high-voltage electricity inside, even when power is turned off. If the display monitor does not operate properly, remove the power cord from the wall outlet and contact your dealer. As with any electrical equipment, careless use and unprofessional maintenance are liable to cause a serious electric shock and other hazards.

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DELUXSCAN
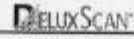
Packing List
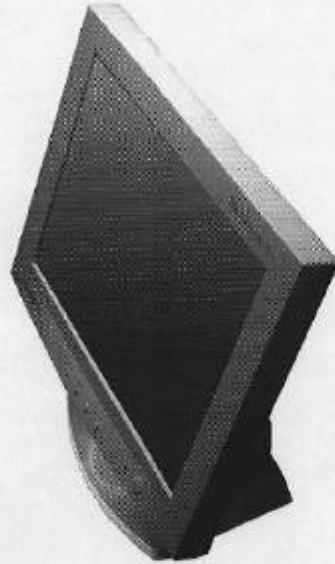
HLM 1500A LCD Monitor

Signal Cable

User's Guide

Power Cord

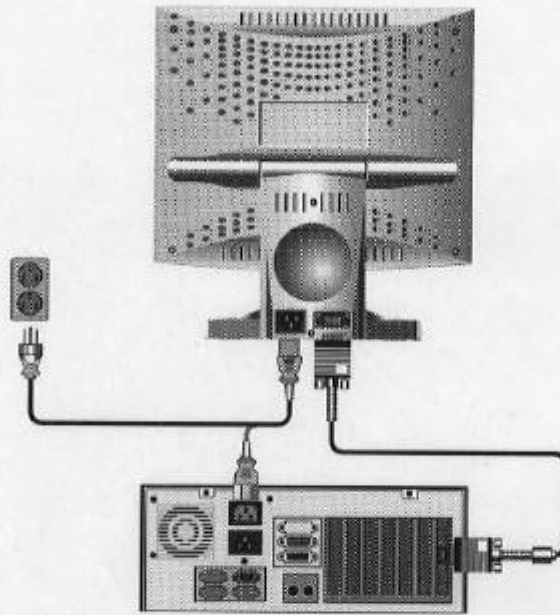! *Above power cord can be changed upon different voltage areas.*

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Connecting with external equipment

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

Connect the video signal cable (15-pin connector) to the connector on the video board inside the computer, usually located on the rear panel of the computer.

Connect the power supply cable to the monitor and then to the power supply.

After powering on the computer, wait for 30 seconds, then adjust the display using the various controls provided (see later). For further information on the installation procedure, refer to the operating guide of the computer being used.

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Micro-controller features

The micro-controller 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-mode memory

The micro-controller has the memory capacity to store 29 different display modes including timing formats and display settings. This memory capacity is divided into two parts. One is the user-setting area, and the other is the factory-presetting area.

User-setting area

The user can add nonstandard modes. If you adjust your display image, the image is saved automatically. The micro-controller will then always detect and display 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 (i.e. when 10 modes are registered), the oldest timing settings will be deleted as new ones are added.

Factory-presetting area

There are 19 display modes stored in this area. These display modes are preset at the factory and include most of the display modes currently available (see Preset-mode table in 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.

### DDC 1/2B (Display Data Channel 1/2B)

DDC 1/2B (Display Data Channel 1/2B) is a communication channel through 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 as a 'Plug & Play' feature if both monitor and host systems support DDC 1/2B protocol.

> **!** Some computer systems are not compatible with the DDC 1/2B standard. If your monitor displays the wrong resolution, please check your computer system, including the DDC compatible video card.

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On-screen controls and LED indicator

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On/Off Power

LED Indicator
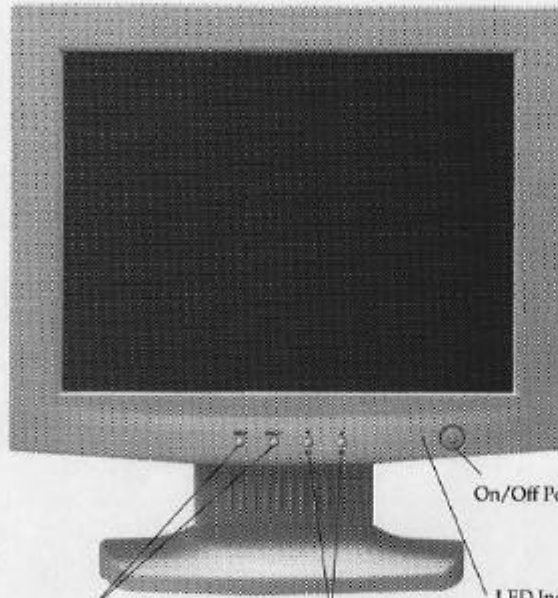
Enable the each Sub menu
1) Enable the OSD Menu
2) Return to higher level of menu

1) Choose the sub-menu
2) Adjust the value of each menu
3) Adjust Contrast/Bright with pop-up

Main menu and control selection

Press the MENU and select key to access the main menu.
The resolution and frequency are displayed at the top of the menu box.
When a nonstandard signal is detected, the frequency is also displayed.
Place the color box on the control icon you wish to adjust by using the ▲ or ▼ key.
Press the select key to access the control.

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Exit menu

Press the MENU key to exit the OSD screen.

Auto exit

The OSD images disappear automatically after a few seconds of inactivity.

Auto save

The monitor automatically saves the new setting when OSD closes.

Normal mode

When the video signal is working in normal display mode, 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 an unsuitable signal is detected, the OSD displays an Out of Range message.

On-screen display settings

The menu for screen setting adjustment is 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 image.

V-Position

Adjust the vertical center of the screen image.

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Clock

Adjust the width of the screen image.

Clock-Phase

Adjust the noise of the screen image.

Brightness

Adjust the screen's intensity.

Contrast

Adjust the contrast of the screen image.

Recall

Reload the factory-preset mode

Color Control

Display the Color Control menu.

Preset Mode

Display the factory-preset timing.

Language

Select from five languages.

OSD Adjust

Displays the OSD position adjustment menu.
Select the OSD display timing.

Auto Adjust

Automatically adjust the image Position, the Clock, the Clock phase settings.

> *The Clock Phase may not be optimized in case VESA timing could not meet the standard.*
> *In order to get the optimized result of Auto Adjust function, please brighten the background image.*

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Refining the picture

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

Step 2. Adjust the screen to the center of the display (LCD) by using the top and bottom display controls (i.e. using V-Position Adjust menu).
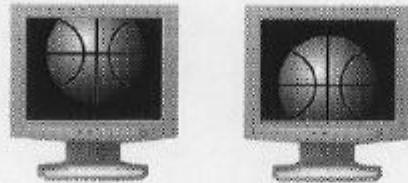
Step 3. Adjust the screen to the center of the Display (LCD) by using the right and left display controls (i.e. using Clock and H-Position adjust menu).

Step 4. Adjust the Clock-Phase until the 'H' Character displays clear.
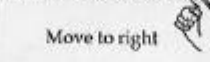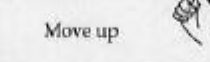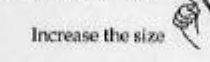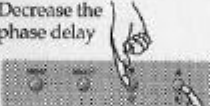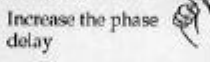
Step 5. Using the Contrast, Brightness, and Color Control menu, set the color to your preference.

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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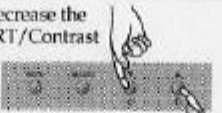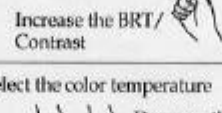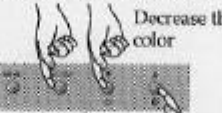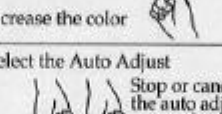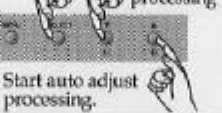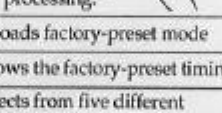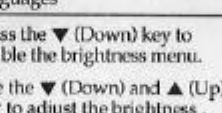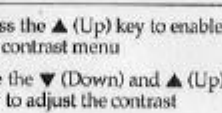
User's Guide

Adjust Sequence

How to enable the menu	Adjust method		
Step1. Press the menu key to enable the OSD menu.	H-Position	Move to left Move to right	
Step2. Press the ▼(Down) / ▲(Up) key to select the Menu icon.	V-Position	Move down Move up	
Step3. Press the SEL key to enable the selected icon.	Clock	Decrease the size Increase the size	
	Clock Phase	Decrease the phase delay Increase the phase delay	

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How to enable the menu	Adjust method		
	Brightness/ Contrast	Decrease the BRT/Contrast Increase the BRT/ Contrast	
	Color Control	Select the color temperature Decrease the color Increase the color	
	Auto Adjust	Select the Auto Adjust Stop or cancel the auto adjust processing Start auto adjust processing.	
	Recall	Reloads factory-preset mode	
	Preset Mode	Shows the factory-preset timing	
	Language	Selects from five different languages	
Hot Key Function	Brightness	Press the ▼ (Down) key to enable the brightness menu. Use the ▼ (Down) and ▲ (Up) key to adjust the brightness .	
	Contrast	Press the ▲ (Up) key to enable the contrast menu Use the ▼ (Down) and ▲ (Up) key to adjust the contrast	

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Preset mode chart

Timing charts

Supported video timings;
This monitor shall be capable of displaying following video-timing charts.
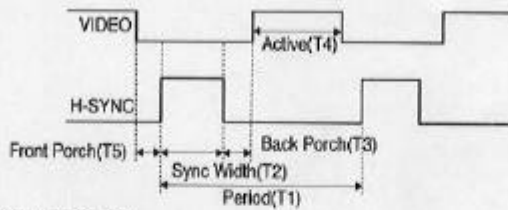
(FIG. 1 H-Sync)
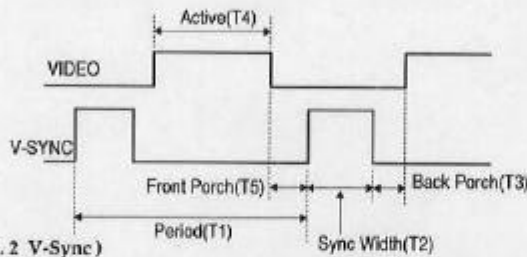
(FIG. 2 V-Sync)

Input timing limits

H-sync pulse width $1.0us \leq$ sync pulse width $\leq 8.0us$
V-sync pulse width $0.04ms \leq$ sync pulse width $\leq 0.5ms$

> If the sync pulse width of input timing is out of range of input timing limits, monitor may operate abnormally. Be sure to check the input timing sync pulse width.

Input level limits

Low level: 0.4V max
High level: 2.4V min

Preset-mode table

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

Horizontal	Pixel	640	640	720	640	720	640	640	640	800	900	800	900	832	1024	1024	1024
Pixel Clock	MHz																
Frequency	kHz																
Period (T1)	µs																
Sync Width (T2)	µs																
Back Porch (T3)	µs																
Active (T4)	µs																
Front Porch (T5)	µs																
Vertical	Lines	350	400	400	350	400	480	480	480	600	600	600	600	624	768	768	768
Frequency	Hz																
Period (T1)	ms																
Sync Width (T2)	ms																
Back Porch (T3)	ms																
Active (T4)	ms																
Front Porch (T5)	ms																
Interlaced	Y/N	N	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 one of the following specified frequency ranges, provided that they are different at least for one of the following:

• Horizontal frequency: ±0.8kHz   • Vertical frequency: ±1.8Hz   • Vertical resolution: ±3 lines

Even if the monitor detects the input timing as a factory-preset mode, you may not be able to set the size and position as desired. Check the input timings are under the specifications you want. For better display image quality, use the timing and polarity shown in the preset-mode table. Please see your video card user guide to ensure compatibility.

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Power management

This monitor is equipped with a DPMS (Display Power Management Signaling) function that automatically cuts power use to just a little less than 8W 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 for any software DPMS function applied. If the keyboard (or mouse) is left unattended for a certain period, the program or system will set the sync signals to DPMS mode.
The recommended signals, power consumption, and recovery times are shown in the table below.

Status	Signal			Power Consumption	Recovery Time	LED Indicator
	H Sync	V Sync	Video			
On	Pulse	Pulse	Active	40 Watt	-	Green
Standby	No Pulse	Pulse	Blank	Less than 20 Watt	Within 2 sec	Alternating Green/Orange(1sec)
Suspend	Pulse	No Pulse	Blank	Less than 10 Watt	Within 2 sec	Alternating Green/Orange(0.5sec)
Off	No Pulse	No Pulse	Blank	Less than 8 Watt	Within 2 sec	Orange

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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
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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15 Pin D-Sub Connector

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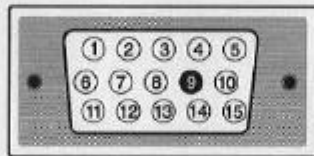
User's Guide

Specifications

LCD	Type	AM-TFT	
	Size	15.0" viewable, Diagonal	
	Dot Pitch	0.297 mm	
	Brightness	230cd/m²	
	Response Time	40msec Max.	
Input	Signal	RGB Analog	
	Type	15 pin D-sub	
Sync	H-Freq	31.5~68.7kHz	
	V-Freq	56~85Hz	
Video Band Width		94.5MHz Max	
Display	Area	304 × 228mm	
	Color	16.7 Milo colors	
Resolution (Max.)		1024 × 768 @ 85Hz	
User Controls & OSD Controls		Contrast, Brightness, H/V Position, Clock, Clock-Phase, Recall, Preset Mode, Color Control, Language, OSD Adjust(Position, Display Time), Auto Adjust	
Power Management		VESA DPMS Standard	
Plug & Play		VESA DDC 1/2B	
Safety & Regulation	Ergonomics	TCO 95	
	EMC	FCC Class B, CE	
	Safety	UL, cUL, CE, TÜV-GS, SEMKO, NEMKO, DEMKO, FIMKO	
Temperature	Operating	5 to 35℃	
	Storage	-5 to 45℃	
Humidity	Operating	30% to 80% (Non-condensing)	
	Storage	5% to 90% (Non-condensing)	
Weight	Unit	5.0Kg	
	Carton	6.5Kg	
Dimension (W × H × D mm)		380 × 384 × 174 mm	

▶ Specification is subject to change without notice for performance improvement.

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http://monitor.hei.co.kr

⚛HYUNDAI

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