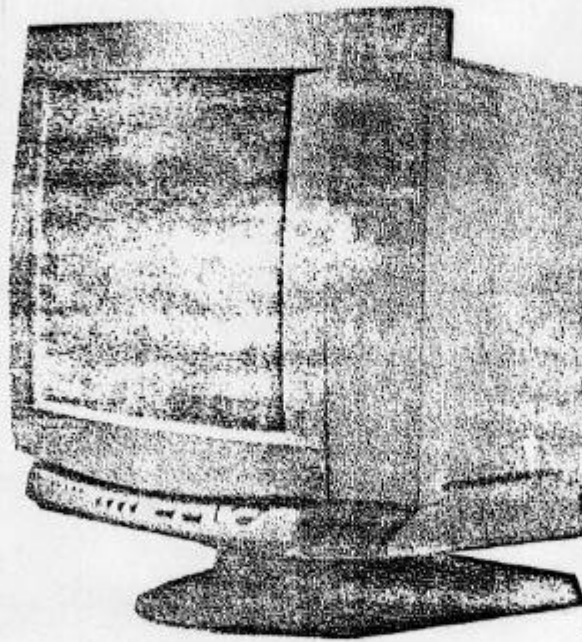


ATTACHMENT E. USERS MANUAL

DELUXSCAN[®] S450
Multiscanning Color Monitor

USER'S GUIDE



DELUXSCAN[®]

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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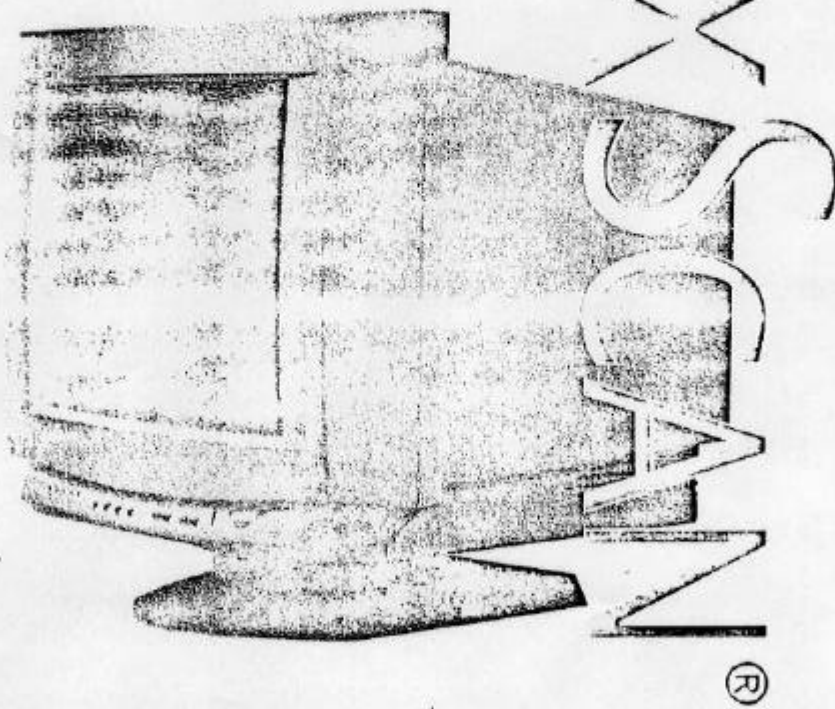


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How to get the most out of this monitor

This 14" color monitor (13.2"viewable) displays signals from personal or micro-computers.
This manual has been prepared to familiarize you with your new display monitor.

Color display tube

Dot Pitch 0.28mm

In order to prevent fire or electric shock, do not expose this display to rain or moisture.

Features

- High resolution CRT for sharp and crisp images.
- 14" (13.2"viewable) Diagonal screen with non-glare direct etched surface.
- Unlimited Color Display.
- DPMS(Display Power Management Signaling).
- Digital Control
- DDC 1/2B (Display Data Channel 1/2B)

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.

- Do not place anything heavy, wet or magnetic on the monitor or the power cord.
- Be sure to turn the monitor off before plugging the power cord into the power source.
- Make sure the power cord and the other cords are securely and correctly connected.
- Avoid operating the monitor in extreme heat, humidity or an area affected by dust.
- Never cover the ventilation openings with any material and never touch them with metallic or inflammable materials.
- Do not overload AC outlets. Extension cords, frayed power cords and broken plugs are dangerous and may result in electric shock or fire. Call your service technician for replacement.
- Do not open the monitor. There are no user-serviceable components inside, and there is dangerously high voltages inside, even when the power is turned off. Contact your dealer if the monitor is not operating properly.

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- Do not use aerosol directly on the picture tube because overspray may cause electrical shock.

Video monitor precautions

As with any electrical equipment, careless use and unprofessional maintenance are able to cause serious electrical shock and other hazards. In the interests of safety, the following suggestions should be followed at all time. Your monitor includes an appropriated plug for your area.

Power source precautions

Never remove the backcover of the monitor.

This will expose you to very high voltages and other hazards. If the display monitor does not operate properly, remove the power cord from the wall outlet, and contact your dealer. As a safety feature, this monitor is equipped with a polarized, alternating current line plug. (Grounded, 3 prong plug)

This plug will fit into the outlet only one way. If you are unable to insert the plug fully into the outlet, or if the plug simply does not fit, contact an electrician to replace the obsolete outlet.

Do not defeat the safety purpose of this polarized plug.

- When positioning this equipment, please ensure that the main plug and the socket are easily accessible.

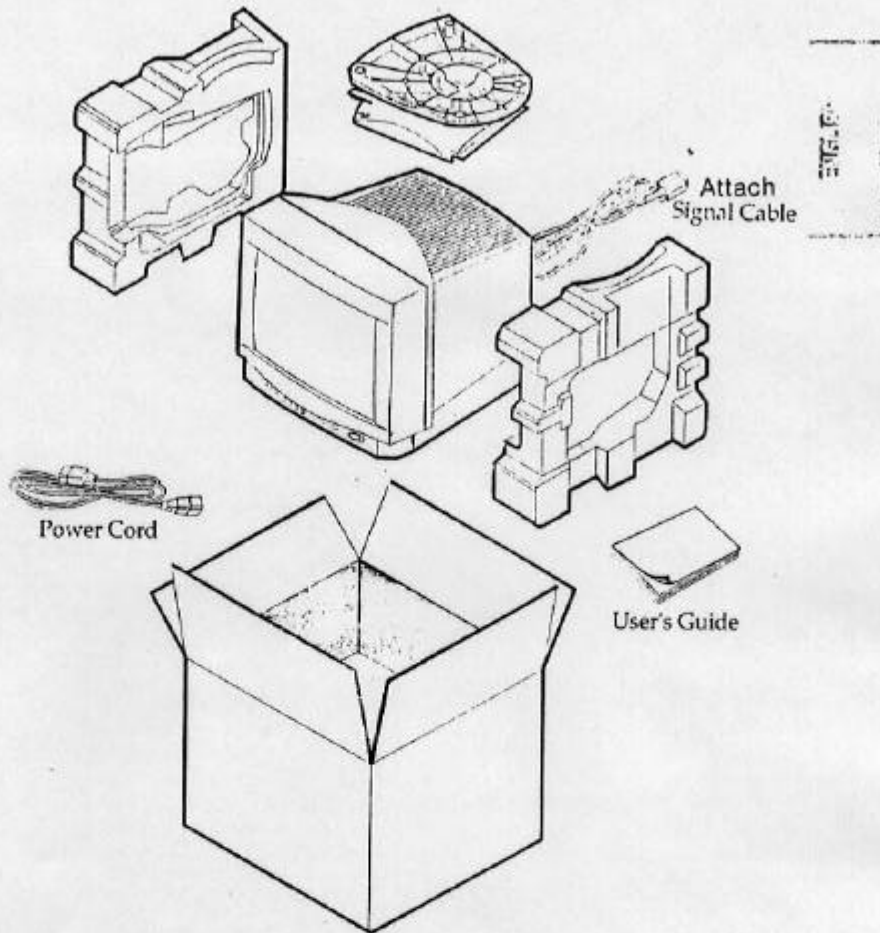
Cleaning and Maintenance


The monitor must be switched off and the power supply cable disconnected during all cleaning operations.

- Use a damp cloth for cleaning the monitor.
- Do not touch the screen with your fingers, as the natural oils from your body leave smears on the screen and tend to attract dust.
- Do not use petrol, alcohol, solvents or abrasives for cleaning the monitor. These substances could corrode the external parts.

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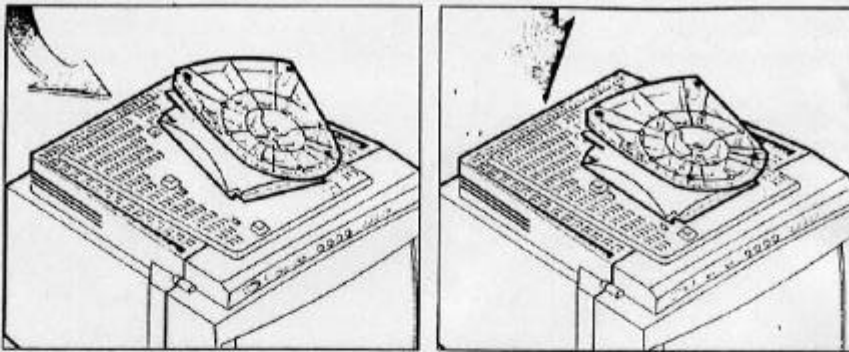
Packing List



 Above power cord can be changed upon different voltage areas.

User's Guide**Assembly and Removal of the Tilt-and-Swivel Support****Fixing**

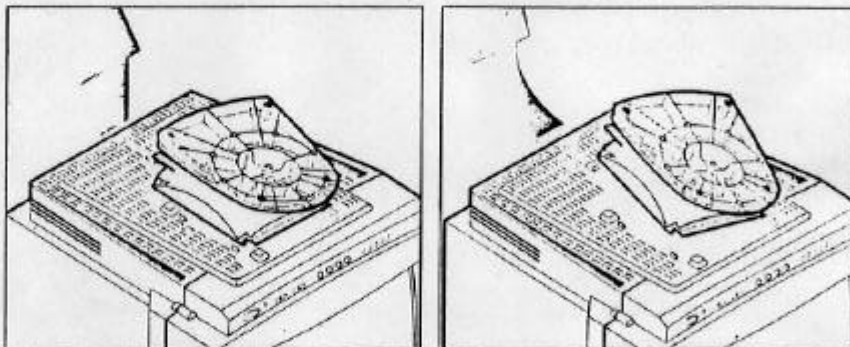
This product consists of the display monitor and the tilt and swivel. When fixing the tilt and swivel to the display monitor, please follow the steps below.



1. Push the four hooks of the tilt and swivel into the four holes at the bottom of the display monitor.
2. Then slide the tilt and swivel forward.
3. Then the latch is going to come above the tilt and swivel base, and it is fixed firmly.

Removing

Please remove the tilt and swivel when transporting for repairing.



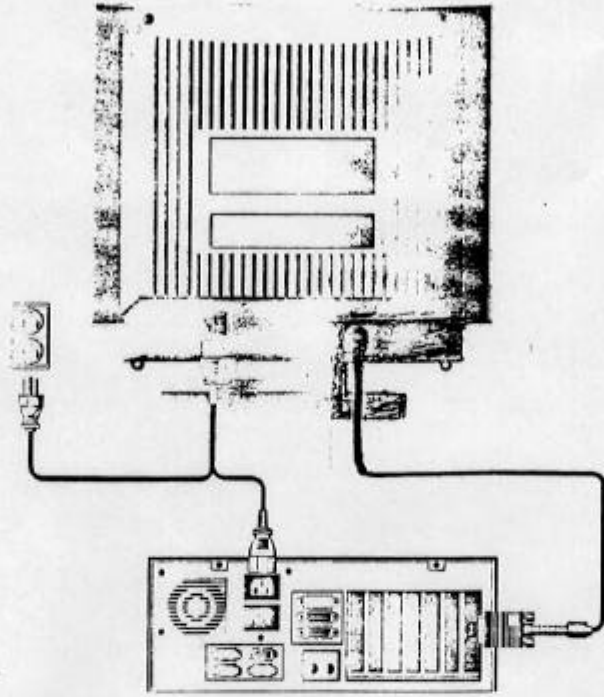
1. Push down the latch of the display monitor and pull out the tilt and swivel.
2. Slide backward the tilt and swivel from the front of the display monitor.
3. Pull out the tilt and swivel from the holes of the display monitor.

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Monitor Installation

Check that the computer is switched off before installing the monitor. The monitor is equipped with a cable for connection to the computer. The cable for connection to the power supply is provided with the computer. Follow the procedure described below to make the monitor operational :

152101E



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 then the factory-presetting area.

Display modes memory

The micro-controller has the memory capacity to store 18 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 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 8 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.

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

This monitor includes a DDC 1/2B feature.

DDC 1/2B (Display Data Channel 1/2B) is a communication channel by which the monitor automatically informs the host system of its capabilities(e.g.each supported resolution with its corresponding timing).

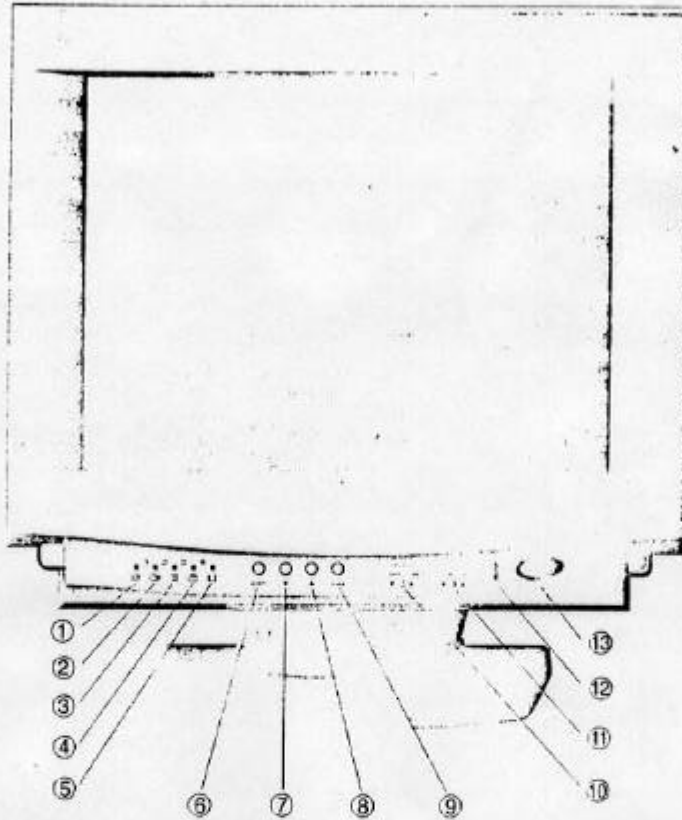
DDC 1/2B uses a formerly unconnected signal pins in the 15-pin VGA connector.

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

Some computer systems are not compatible with the DDC standard. If your monitor displays the incorrect resolution, please check your computer system including a DDC compatible video card.

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External controls



- | | |
|--------------------------------|--------------------|
| ① H-Size LED | ⑥ Select |
| ② H-Position LED | ⑦ Adjust - |
| ③ V-Size LED | ⑧ Adjust + |
| ④ V-Position LED | ⑥+⑦ H,V Moire |
| ⑤ Pincushion LED | ⑥+⑧ Self Test |
| ①+② Trapezoid LED | ⑨ Recall |
| ②+③ Parallelogram LED | ⑩ Brightness - + |
| ③+④ H-Pin Balance LED | ⑪ Contrast - + |
| ④+⑤ H,V Size Up/Down(Zoom) LED | ⑫ Power (DPMS) LED |
| ②+④ V Moire LED | ⑬ Power Switch |
| ③+⑤ H Moire LED | |

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ENGLISH

H-Size LED



A) Press (▲) button to increase the horizontal size.
B) Press (▼) button to decrease the horizontal size.

H-Position LED



A) Press (▲) button to adjust the screen to the right.
B) Press (▼) button to adjust the screen to the left.

V-Size LED



A) Press (▲) button to increase the vertical size.
B) Press (▼) button to decrease the vertical size.

V-Position LED



A) Press (▲) button to adjust the screen to the top.
B) Press (▼) button to adjust the screen to the bottom.

Pincushion LED



A) Press (▲) button to bow out the vertical side line.
B) Press (▼) button to bow in the vertical side line.

Trapezoid LED



A) Press (▲) button to make the image wider at the top.
B) Press (▼) button to make the image wider at the bottom.

Parallelogram LED



Press the SELECT button until the Parallelogram LED is on.
A) Press (▲) button to tilt the image rightward.
B) Press (▼) button to tilt the image leftward.

H-Pin Balance LED



Press the SELECT button until the Horizontal pincushion balance LED is on.
A) Press (▲) button to bow out the right vertical side line.
B) Press (▼) button to bow out the left vertical side line.

H,V Size Up/Down(Zoom) LED





Press the SELECT button until the Horizontal, Vertical size up/down(zoom) LED is on.
A) Press (▲) button to zoom in the H,V size.
B) Press (▼) button to zoom out the H,V size.

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Moire





1) Vertical Moire



While pressing SELECT button, press (▼) button until the LEDs of  and  are lighted green. It takes about 3 seconds. After then, press (▲) or (▼) button to adjust vertical moire.

2) Horizontal Moire



While pressing SELECT button, press (▼) button until the LEDs of  and  are lighted green. It takes about 3 seconds. After then, press SELECT button once more. If you do so, the LEDs of  and  are lighted green. You can adjust horizontal moire. Pressing (▲) or (▼) button.

Self Test

Press the SELECT button and (▲) button for about 3 seconds to check the monitor function.

Recall

In a factory preset mode the RECALL will reset the image size, position and geometry settings to the factory presetting. In a user setting mode, this control has no effect for the image size, position and geometry settings. But the contrast will be reset to maximum luminance and brightness to cut-off level by selecting this control in any modes.

Brightness



The Brightness Control button adjusts the picture mood according to the Brightness of the room.
A) Press (▲) button to heighten the brightness level of the picture.
B) Press (▼) button to lower the brightness level of the picture.

Contrast



The Contrast Control button adjusts the degree of difference between the lightest and the darkest sections on the screen.
A) Press (▲) button to heighten the contrast level of the displayed image.
B) Press (▼) button to lower the contrast level of the displayed image.



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Function LED

Blinks when maximum or minimum control setting is reached.

Power/DPMS LED

- A) Normal mode : Green
- B) DPMS mode : Orange, Orange/Green Blinking

Power Switch

Turns on or off Monitor power



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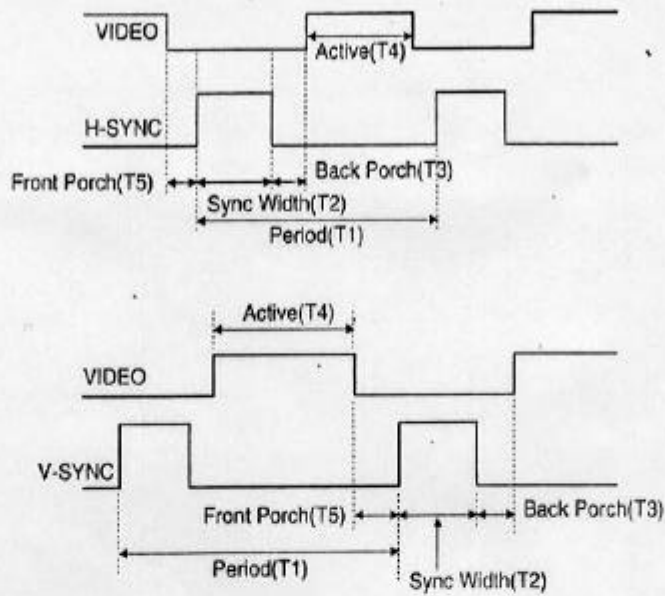
Preset timing chart

TIMING CHARTS

Supported video timings

This monitor shall be capable of displaying following video timing charts.

Timing charts



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: $0.05ms \leq \text{Sync Pulse Width} \leq 0.5ms$

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

Input level limits

Low level : 0.4V max

High level : 2.4V min

ENCLOSURE

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Timing table

	Pixel	720	840	840	800	800	1024
Frequency	kHz	31.469	31.469	37.500	37.879	46.875	48.363
Period (T1)	µs	31.778	31.778	26.667	26.400	21.333	20.677
Sync Width (T2)	µs	3.813	3.813	2.032	3.200	1.618	2.092
Back Porch (T3)	µs	1.907	1.907	3.810	2.200	3.232	2.462
Active (T4)	µs	25.422	25.422	20.317	20.000	16.162	15.754
Front Porch (T5)	µs	0.636	0.636	0.508	1.000	0.323	0.368

Vertical	Lines	400	480	480	600	600	768
Frequency	Hz	70.080	59.950	75.000	60.316	75.000	60.004
Period (T1)	ms	14.268	16.663	13.333	16.579	13.333	16.666
Sync Width (T2)	ms	0.064	0.064	0.080	0.108	0.064	0.124
Back Porch (T3)	ms	1.080	1.048	0.427	0.607	0.448	0.600
Active (T4)	ms	12.711	15.253	12.800	15.840	12.800	15.880
Front Porch (T5)	ms	0.413	0.318	0.027	0.026	0.021	0.062
Interlaced	Y/N	N	N	N	N	N	N
Sync Polar	H	-	-	-	+	+	-
	V	+	-	-	+	+	-

Table 3.01 - Preset Timings

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

- HORIZONTAL FREQ : +/- 1Khz
- VERTICAL FREQ : +/- 1 HZ

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 and adjust the image as you want.

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

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Power management

This monitor is 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 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, because degaussing helps maintain faultless color purity, every time you turn the power on.

Operation

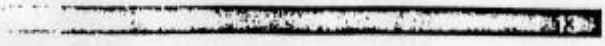
The DPMS function requires support from the computer system or any software DPMS function applied, currently being used. If the keyboard(or mouse) is left unattended for a certain period, the program or system will set the sync signals to DPMS modes. The DPMS function has three states. The recommended signals, power consumption and recovery times are shown in the table below.

STATES	SIGNAL			POWER CONSUMPTION	RECOVERY TIME	LED INDICATOR
	H.S	V.S	VIDEO			
ON	PULSES	PULSES	ACTIVE	Typical Consumption	-	GREEN
STAND-BY	NO PULSES	PULSES	BLANK	Screen saving	WITHIN 1 SEC	GREEN/ORANGE Blink about 2 sec
SUSPEND	PULSES	NO PULSES	BLANK	LESS THAN 15W	WITHIN 3 SEC	GREEN/ORANGE Blink about 1 sec
OFF	NO PULSES	NO PULSES	BLANK	LESS THAN 8W	WITHIN 15 SEC	ORANGE

When the monitor's signal cable is disconnected, the raster becomes visible. This is not a malfunction. The screen will normalize when the signal cable is connected again.

Power consumption condition (Typical)

Input Voltage : 220VAC
 Input Frequency : 50Hz/60Hz
 Display Pattern : cross hatch
 Display Size : 260 mm(H) x 195 mm(V)



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Video input terminal

The 7pin and 6pin connector are used as input signal connector
Pin and input signals are shown in the table below.

Pin Description

*. TABLE OF PC OUTPUT SIGNAL

SIGNAL PIN NO	SEPARATE SYNC/ DDC 1/2B
1	RED
2	GREEN
3	BLUE
4	N.C
5	GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	N.C
10	LOGIC GROUND
11	GROUND
12	SDA
13	H-SYNC(TTL)
14	V-SYNC(VCLK)
15	SCL

*. TABLE OF ATTACH SIGNAL CABLE

PIN NO	ASSIGNMENT 7PIN AND 6PIN CONNECTOR	LOCATION
1	RED	P401
2	RED GROUND	
3	GREEN	
4	GREEN GROUND	
5	BLUE	
6	BLUE GROUND	
1	SCL	P502
2	V-SYNC(VCLK)	
3	H-SYNC(TTL)	
4	SDA	
5	DDC RETURN	
6	5V	
7	GND	

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Specifications

CRT	SIZE	14" (13.2" viewable)
	Dot Pitch	0.28 mm
	Type	Non-glare, Anti-Static
Input	Signal	R.G.B Analog
	Connector	6pin/7pin Attach Type
SYNC	H-F	30~50 kHz(Automatic)
	V-F	50~130 Hz(Automatic)
Display	Area(H x V)	255 x 190mm (Max. Over Scan)
	Color	Infinite
Resolution	Max.	1024 x 768 (48kHz/60Hz)
	Recommended	
User Controls	H/V Size, H/V Position, Pincushion, Trapezoid, Parallelogram, H-pin balance, H.V size up/down(zoom), H.V Moire, Self Test, Recall, Brightness, Contrast, Power Switch	
Power Management	As per VESA Standard, Lower than EPA's recommendation	
VESA DDC 1/2B	Basic	
Compatibility	VESA, 8514/A, XGA, EVGA	
Power Source	100-240 VAC(Universal Power) 1.3A 70W(Typical)	
Safety & Regulation	MPR II	Basic
	EMC	FCC Class B, CE
	Safety	UL, CSA, TÜV-GS, ISO-9241-3, DHHS, NEMKO, DEMKO, FIMKO, SEMKO
Temperature	Operating	5 to 35 degree celsius
	Storage	-30 to 60 degree celsius
Humidity	Operating	35% to 80%(Non-condensing)
	Storage	30% to 85%
Weight	Unit : 10.5Kg Carton : 12.5Kg	
Dimension(W x H x Dmm)	352 x 360.2 x 372.5 mm	

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

EYE-PROTECTIVE