

USER'S MANUAL

**19" DIGITAL COLOR MONITOR
DIGITALER 19"-FARBMONITOR
MONITEUR COULEUR NUMÉRIQUE À 19"
19" MONITOR DIGITAL A COLOR**

Operation Instructions

Thank you for purchasing this 19", a high-resolution multi-scan color monitor. Please read this guide thoroughly before installation.

FCC RADIO FREQUENCY INTERFERENCE STATEMENT WARNING: (FOR FCC CERTIFIED MODELS)

This monitor has been tested and found compliant with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide proper protection against harmful interference to a residential installation. This monitor generates, uses, and can radiate radio frequency energy. Harmful interference to radio communication may be led as a result if it's not properly installed and used. However, there is no guarantee that interference will not occur in a particular installation. If this monitor does cause serious interference to radio or television reception, resetting the monitor may determine it. Moreover, users are encouraged to correct interference by doing one or more of the following:

- Reorient or relocate the receiving antenna.
- Move the monitor and the receiver further away from each other.
- Connect the monitor into an outlet on a circuit different from that to which the receiver is connected.
- Consult your local dealer or an qualified technician.

FCC Warning:

To assure a continued FCC compliance, a user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to this monitor would void the user's authority to operate this device.

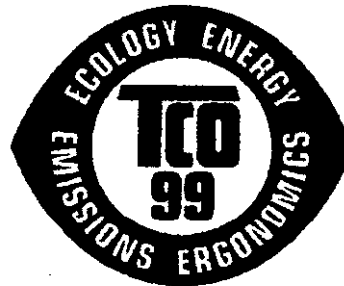
Note: If necessary, shielded interface cables and A.C. power cord must be used to meet the emission level limits.

EMI Certification

The Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numerique de class B respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

*Page 1-2 stands for TCO'99 models only. Please see back label for model distinction.



Congratulations!

You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

Approval requirements cover a wide range of issues: environment, ergonomics, usability, emission of electric and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development

SE-114 94 Stockholm, Sweden

Fax: +46 8 782 92 07

E-mail (Internet): development@tco.se

Current information regarding TCO'99 approved and labelled products may also be obtained via the Internet, using the address:

<http://www.tco-info.com/>

Environmental requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium*

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury*

Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit.

CFCs (freons)

The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

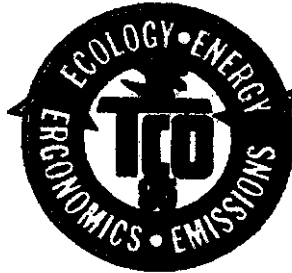
Lead*

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

* Bio-accumulative is defined as substances which accumulate within living organisms

** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

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Why do we have environmentally labelled computers?

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There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronic equipment in offices consume an enormous amount of energy since they are often left running continuously.

What does labelling involve?

This product meets the requirements for the TCO'95 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturkyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

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Environmental Requirements

Brominated flame retardants

Brominated flame retardants are present in printed circuit boards, cables, wires, castings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

Lead**

Lead can be found in picture tubes, display screens solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'95 requirement permits the inclusion of lead since no replacement has yet been developed.

Cadmium**

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The colour-generating layers of display screens must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit.

CFCs (freons)

CFCs (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'95 requirement: Neither CFCs nor HCFCs may be used during the manufacturing of the product of its packaging.

* Bio-accumulative is defined as substances which accumulate within living organisms

** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

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1 First Step

Thank you for purchasing this monitor of high performance!

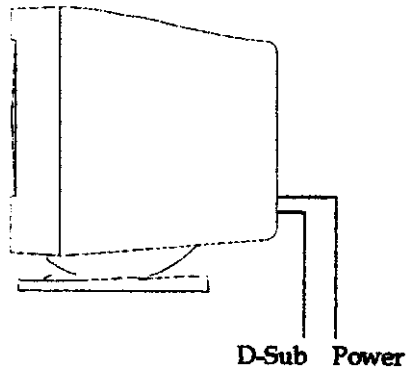
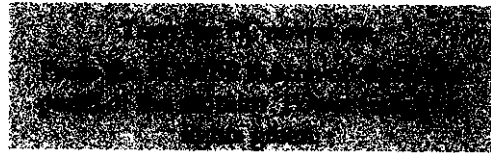
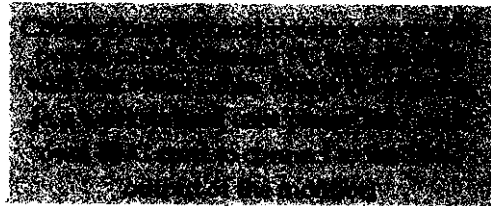
This monitor package comes with:

- ❖ Video cable with 15 pin HD D-SUB connector.
- ❖ Power cable.
- ❖ User guidebook. (You're reading now ☺)

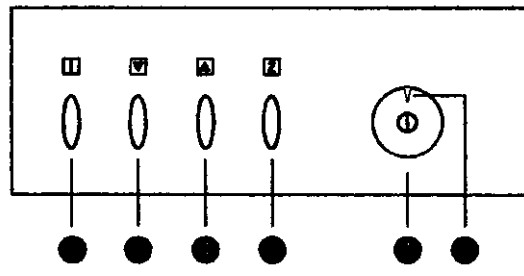
E
ENGLISH

Quick Installation

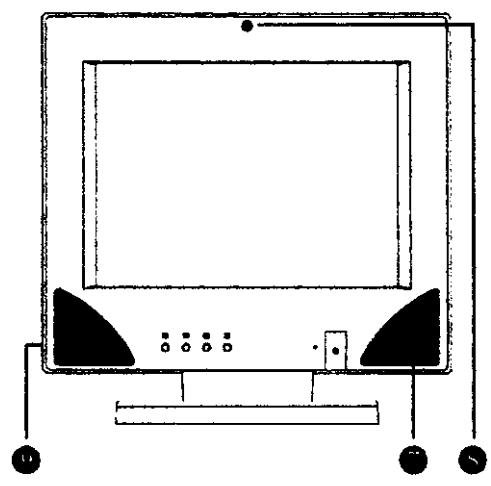
Yes! Power up!



Front Panel of 19"

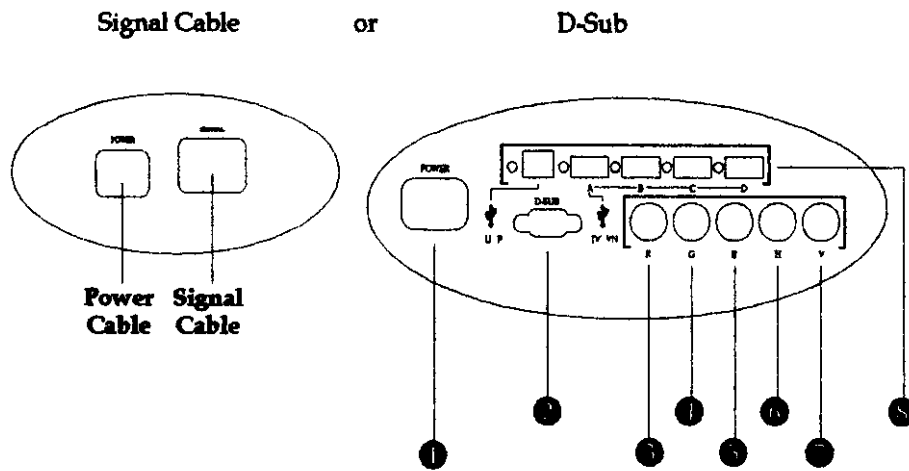


- Power Switch
- Power Indicator
- Function Key 2
- Increase
- Decrease
- Function Key 1



Note: Apart from ● ~ ●, multimedia models also features ● Speakers, ● Microphone, and ● Earphone, audio in, mic out on the side.

Rear cover of 19"









- ① AC Socket
- ② 15 pin D-SUB connector
- ③ Red BNC
- ④ Green BNC

- ⑤ Blue BNC
- ⑥ Horizontal BNC
- ⑦ Vertical BNC
- ⑧ USB input

Note: Not every model has inputs ⑤ ~ ⑧. Please see the rear cover of your monitor to find out.

2 Operation and Function

A. Front Panel

Symbol	Item	Function
	● Power button	-Controls Power on/off.
	● Power Indicator	-Green light confirms power on. -Orange light confirms power standby/suspend.
	● Function	-Activates the chosen OSD item.
	● Increase	-Increase function parameter.
	● Decrease	-Decrease function parameter.
	● OSD	-Activates OSD function menu.

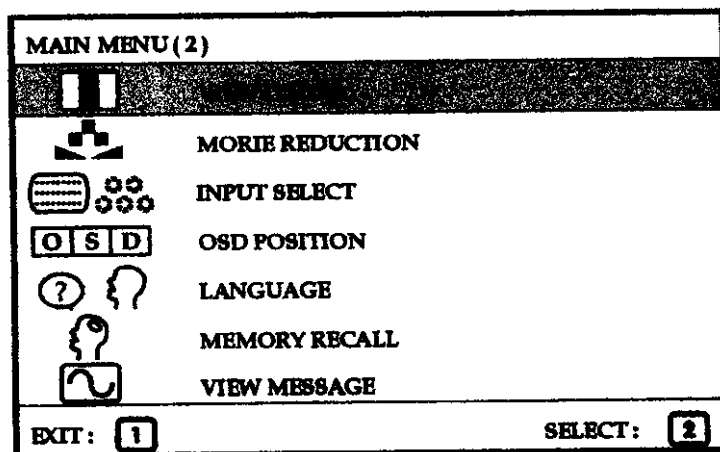
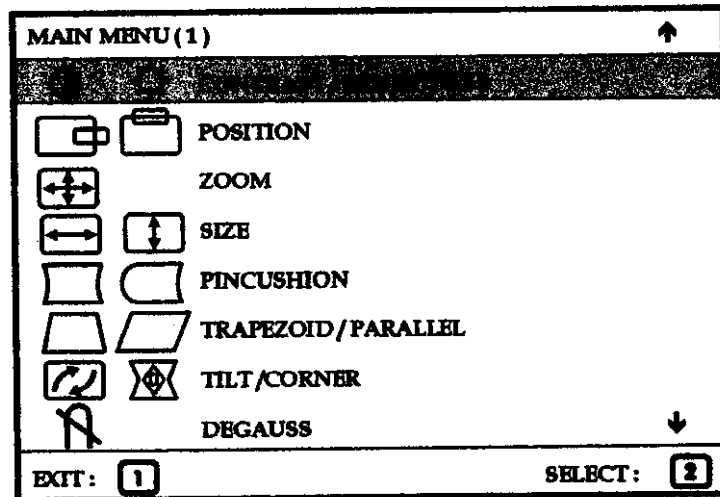
B. Digital Features

- This monitor has CPU to control contrast, brightness, and other image features.
- There are 12 sets of factory preset timing mode and 16 sets of user-definable timing mode.

OSD Function

Using OSD function

- Press **[1]** to activate OSD menu and adjust with Δ or ∇ to control direction.
Press **[2]** to select the desired item and use Δ or ∇ to increase or decrease.
- OSD Menu:



Symbol	Item	Function Description
	Contrast	-Controls the contrast level btw. the fore/background.
	Brightness	-Controls the brightness of the image.
	Zoom	-To zoom in or out.
	Horizontal Position	-Controls the horizontal position of the image.
	Horizontal Width	-Adjusts the horizontal size of the image.
	Vertical Position	-Adjusts the vertical position of the image.
	Vertical Size	-Adjusts the vertical size of the image.
	Recall	-Press ▲ and ▼ together to retrieve preset memory.
	Pincushion	-Controls the horizontal contour of the image.
	Trapezoid	-Adjusts the vertical unevenness of the image.
	Parallelogram	-Makes the image parallel.
	Pin Balance	-Makes the curve on both side symmetrical.
	Tilt	-Adjusts the tilt of the image and the inward/outward position of four image corners.
	View Color	-Adjusts the color temperature.
	Degauss	-Degauss the image.
	Language	-Select the language.
	Mode Display	-Shows preset horizontal/vertical frequency and mode
	Moire Reduction	-Reduces horizontal & vertical moire affect.
	OSD Position	-Adjusts horizontal/vertical position of OSD.
	Input Select	-Select D-SUB or BNC input.
	Audio Volume	-Controls the audio volume

Timing modes of 19"

Mode	1	2	3	4	5	6	7
	VESA I	VESA I	VESA I	VESA I	VESA I	VESA I	VESA I
Data Pixel	640	720	640	800	800	1024	1024
Data Line	350	400	480	600	600	768	768
H. Freq (KHz)	37.861	37.927	43.269	46.875	53.674	60.023	68.677
V. Freq (Hz)	85.080	85.039	85.008	75.000	85.061	75.029	84.997
Pixel Rate (MHz)	31.500	35.500	36.000	49.500	56.250	78.750	94.500
Horizontal A μ s	1.016	1.014	1.556	0.323	0.569	0.203	0.508
Horizontal B μ s	2.032	2.028	1.556	1.616	1.138	1.219	1.016
Horizontal C μ s	3.048	3.042	2.222	3.232	2.702	2.235	2.201
Horizontal D μ s	20.317	20.282	17.778	16.162	14.222	13.003	10.836
Horizontal E μ s	26.413	26.3696	23.111	21.333	18.631	16.660	14.561
Vertical A ms	0.845	0.026	0.023	0.021	0.019	0.017	0.015
Vertical B ms	0.079	0.079	0.069	0.064	0.056	0.050	0.044
Vertical C ms	1.585	1.107	0.578	0.448	0.503	0.466	0.524
Vertical D ms	9.244	10.546	11.093	12.800	11.179	12.795	11.183
Vertical E ms	11.754	11.759	11.764	13.333	11.756	13.328	11.765
Sync. Polarity (H,V)	+, -	- , +	- , -	+, +	+, +	+, +	+, +

Mode	8	9	10	11	12
	VESA I	VESA I	VESA I	VESA I	VESA I
Data Pixel	1152	1280	1280	1280	1600
Data Line	864	960	1024	1024	1200
H. Freq (KHz)	67.500	85.938	79.976	91.146	93.750
V. Freq. (Hz)	75.000	85.002	75.025	85.024	75.000
Pixel Rate (MHz)	108.000	148.500	135.000	157.500	202.500
Horizontal A μ s	0.593	0.431	0.119	0.406	0.316
Horizontal B μ s	1.185	1.077	1.067	1.016	0.948
Horizontal C μ s	2.370	1.508	1.837	1.422	1.501
Horizontal D μ s	10.667	8.620	9.481	8.127	7.901
Horizontal E μ s	14.815	11.636	12.504	10.971	10.667
Vertical A ms	0.015	0.012	0.013	0.011	0.011
Vertical B ms	0.044	0.035	0.038	0.033	0.032
Vertical C ms	0.474	0.547	0.475	0.483	0.491
Vertical D ms	12.800	11.171	12.804	11.235	12.800
Vertical E ms	13.333	11.764	13.329	11.761	13.333
Sync. Polarity (H,V)	+, +	+, +	+, +	+, +	+, +

Only 95K models feature modes 9-12.

Power Management

This monitor meets VESA® DPMS™ (Display Power Management Signaling) standards. To enable the power saving feature of the monitor, your video board or computer must meet the same standards.

Standby	Orange	<15 watts	<3 seconds
Off	Yellow	05 watts	<10 seconds

The monitor goes under these power saving modes with the following video synchronization signals:

Standby	Off	On
Off	Off	Off

Power saving system automatically launches when the monitor is idle. However the best way to conserve energy is to turn the monitor off when it's not used for long period of time.

3 Technical Information

Technical Specification

CRT	Type Dot Pitch Phosphor Glass Surface	19" (Viewable size 18"), Specified on carton box. RGB, medium persistence Anti-Static, Anti-reflection coating.	
Input Signal	Video Sync	RGB analogue H/V separate (TTL) H: 30-95KHz V: 50-160Hz	
Compatibility	IBM PC Macintosh	IBM® XT, AT, 386, 486, Pentium®, PS/2 and compatibles. Macintosh II, LC, Quadra series, Power Mac, Macintosh Clones.	
Connectors	Rear	Video-in	15-pin HD mini D-SUB
		Power	3-pin plug
Power	Voltage Consumption	AC AC	100-240 V 130 watts (typical)
Operation Temperature		0° ~ 40° C	
Dimension		Specified on carton box.	

SAFETY PRECAUTIONS

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper use or installation may result danger to the monitor as well as to the user. Carefully go over the following WARNINGS before installation and keep this guide handy.

WARNINGS:

- ◆ This monitor should be operated only at the correct power sources indicated on the label on the rear end of the monitor. If you're unsure of the power supply in your residence, consult your local dealer or power company.
- ◆ Do not try to repair the monitor yourself as it contains no user-serviceable parts. The monitor should only be repaired by a qualified technician.
- ◆ Do not remove the monitor cabinet. There is high-voltage parts inside that may cause electric shock to human bodies, even when the power cord is disconnected.
- ◆ Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- ◆ Put your monitor only in a clean, dry environment. Unplug the monitor immediately if gets wet and consult your service technician.
- ◆ Always unplug the monitor before cleaning it. Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.
- ◆ Keep the monitor away from magnetic objects, motors, TV sets, and transformer.
- ◆ Do not place heavy objects on the cable or power cord.
- ◆ -for PLUGGABLE EQUIPMENT, the Socket-outlet shall be installed near the equipment and shall be easily accessible.

Care and Maintenance

Care

- Avoid exposing your monitor directly to sunlight or other heat source. Place your monitor away from the sun to reduce glare.
- Put your monitor in a well ventilated area. Do not place anything heavy on top of your monitor.
- Make certain your monitor is installed in a clean and moisture-free area.
- Keep your monitor away from magnets, motors, transformers, speakers, and TV sets.

Safety Tips:

- If smoke, abnormal noise or odor came out of your monitor, switch off the power immediately and call your service center.
- Never remove the rear cover of your monitor cabinet. The display unit inside contains high-voltage parts and may cause electric shock to human bodies.
- Never try to repair your monitor yourself. Always call your service center or a qualified technician to fix it.

