

## Operation Instructions

Thank you for purchasing a 17" series 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.



\*Page 1-2 stand for TCO 95 models only. See the back label of the monitor for TCO distinction if any.

Congratulations! You have just purchased a TCO95 approved and labeled 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 labeled computers?

In many countries, environmental labeling 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 the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, 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 conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

What does labeling imply?

This product meets the requirements for the TCO95 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), Naturskyddsförbundet (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.

Labeled 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.

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

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Current information regarding TCO95 approved and labelled products may also be obtained via the Internet, using the address: <http://www.tco-info.com/>

TCO95 is a co-operative project between TCO (The Swedish Confederation of Professional Employees), Naturskyddsföreningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

Environmental Requirements

Brominated flame retardants

Brominated flame retardants are present in printed circuit boards, cables, wires, casings 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.

TCO95 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.

TCO95 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.

TCO95 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.

TCO95 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.

CFC's (freons)

CFC's (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFC's 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 TCO95 requirement: Neither CFC's nor HCFC's may be used during the manufacturing of the product or its packaging.

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

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

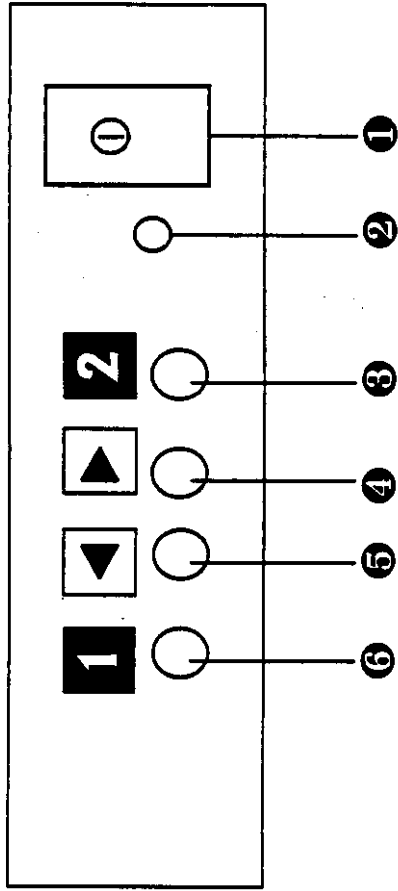
## GENERAL DESCRIPTION

This color monitor is a microprocessor controlled multi-frequency system device. The monitor is compatible with many standard graphic formats, including VGA, SVGA, and XGA. The key features include:

- 17" CRT color display with resolutions up to 1280x1024 pixels.
- Support for graphic cards with VESA compatible DDC1/2B (Display Data Channel 1/2B) interface for monitor-to-PC communication.
- Easy to use On Screen Display (OSD) adjustment interface.
- Supports EPA, NUTEK A/B, VESA compatible 4-staged power management systems.

## FEATURES

### A. Front Panel



- ① POWER ON/OFF SWITCH
- ② POWER ON/OFF INDICATOR
- ③ FUNCTION 1
- ④ INCREASE BUTTON
- ⑤ DECREASE BUTTON
- ⑥ FUNCTION 2

# FUNCTION

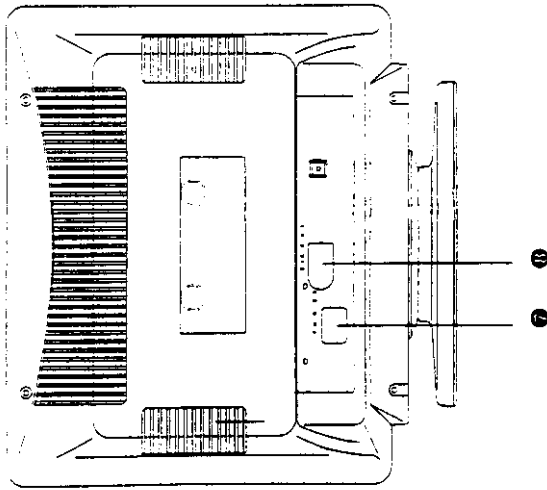
## A. External Control

SYMBOL	ITEM	DESCRIPTION
①	Power switch	-Controls Power on/off.
○	Power Indicator	-Green light gives confirmation of power on. Orange light gives confirmation of power saving mode.
2	Active function	-Press to activate selected functions/sub-menu.
▲	Increase	-Press to select function items toward right. -Increases function parameter.
▼	Decrease	-Press to select function items toward left. -Decreases function parameter.
1	OSD on/off	-Activates/Inactivates OSD functions

## B. Digital Features

1. This monitor has an adapted advance CPU to control the Contrast, Brightness, Zoom, H-size, H-center, V-center, V-Size, Pincushion, Trapezoid, Parallelogram, Pin-balance, Rotation, Color temperature. It also auto saves the configuration set up by users.
2. This monitor has 12 sets of factory preset timing and 16 sets of user definable timing.

## B. Rear Exterior

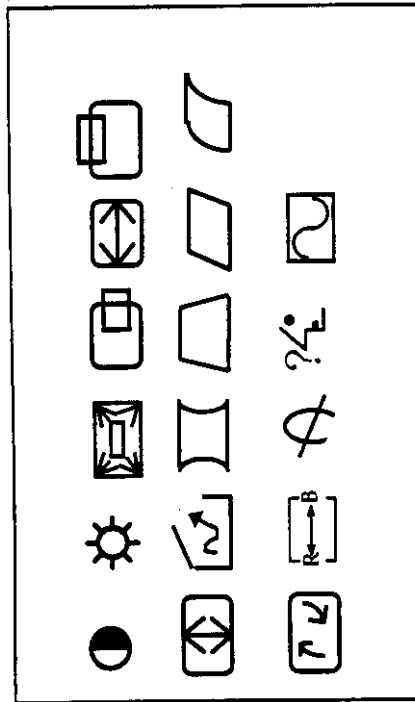


- 7 AC SOCKET
- 8 15 PIN D-TYPE CONNECTOR

## USING OSD FUNCTIONS

- Press **1** **2** function buttons to activate OSD functions and adjust with **4** **▶** to change function parameter.

- OSD icons:



ICON	ITEM	DESCRIPTION
	CONTRAST	Increases / decreases video gain.
	BRIGHTNESS	Increases / decreases raster black level.
	ZOOM	Zoom In or Zoom Out the video pattern.
	HORIZONTAL PHASE	Adjusts the H-phase of the picture.
	HORIZONTAL WIDTH	Adjusts the H-width of the picture.
	VERTICAL POSITION	Adjusts the vertical placement of the picture.
	VERTICAL HEIGHT	Adjusts the vertical size of the picture.
	RECALL	When use PRESET MODE press - or + to recall the factory default.
	PINCUSHION	Controls the side distortion.
	TRAPEZIOD	Controls the top of the H-width equal to the bottom of the picture.
	PARALLELOGRAM	Controls the vertical line on both sides to become slope and symmetry.
	PIN-BALANCE	Controls the vertical line on both sides to become parabola and symmetry.
	ROTATION	Controls the tilt of the display image.
	COLOR TEMPERATURE	Selects color temperature & adjust user color mode.
	DEGAUSS	Degausses the screen.
	LANGUAGE	Multi-language select. Use - and + key to select OSD display language.
	MODEL DISPLAY	Shows current horizontal & vertical frequency & mode type.

\*There's no pin-balance control in multimedia models.

## SIGNAL TIMING

Mode	(1) Industry	(2) Industry	(3) Industry	(4) VESA I	(5) VESA I	(6) VESA I
Resolution	640*350	640*480	720*400	640*480	720*400	640*480
H. Frequency	31.469 (KHZ)	31.469	31.469	37.500	37.927	43.269
V. Frequency	70.087 (HZ)	59.940	70.087	75.000	85.039	85.008
Pixel Rate	25.175 (MHZ)	25.175	28.322	31.500	35.500	36.000
Front Porch(FP)	(US) 0.636	0.636	0.636	0.508	1.014	1.556
Sync Width(SW)	(US) 3.813	3.817	3.813	2.032	2.028	1.556
Back Porch(BP)	(US) 1.907	1.907	1.907	3.810	3.042	2.222
Active Video	(US) 25.422	25.422	25.422	20.317	20.282	17.778
H. Period	(MS) 31.778	31.778	31.778	26.667	26.366	23.111
Front Porch(FP)	(MS) 1.176	0.318	0.381	0.027	0.026	0.023
Sync Width(SW)	(MS) 0.064	0.064	0.064	0.080	0.079	0.069
Back Porch(BP)	(MS) 1.907	1.048	1.112	0.427	1.107	0.578
Active Video	(MS) 11.122	15.253	12.711	12.800	10.546	11.093
V. Period	(MS) 14.268	16.683	14.269	13.333	11.759	11.764
H., V. Sync	+ , -	- , -	+ , +	- , -	+ , +	- , -
Polarity						
Mode	(7) VESA I	(8) VESA I	(9) VESA I	(10) VESA I	(11) VESA II	(12) VESA I
Resolution	800*600	800*600	1024*768	800*600	1024*768	1024*768
H. Frequency	46.875	48.077	48.363	53.674	60.023	68.677
V. Frequency	75.000	72.188	60.004	85.061	75.029	84.997
Pixel Rate	(KHZ) 49.500	50.000	65.000	56.250	78.750	94.500
Front Porch(FP)	(US) 0.323	1.120	0.369	0.569	0.203	0.508
Sync Width(SW)	(US) 16.616	2.400	2.092	1.138	1.129	1.016
Back Porch(BP)	(US) 3.232	1.280	2.462	2.702	2.235	2.201
Active Video	(US) 16.162	16.000	15.754	14.222	13.003	10.836
H. Period	(US) 21.333	20.800	20.677	18.631	16.660	14.561
Front Porch(FP)	(US) 0.021	0.770	0.062	0.019	0.017	0.015
Sync Width(SW)	(MS) 0.064	0.125	0.124	0.056	0.050	0.044
Back Porch(BP)	(MS) 0.448	0.478	0.600	0.503	0.466	0.524
Active Video	(MS) 12.800	12.480	15.880	11.179	12.795	11.183
V. Period	(MS) 13.333	13.853	16.666	11.756	13.328	11.765
H., V. Sync	+ , +	+ , +	- , -	+ , +	+ , +	+ , +
Polarity						

Note: Due to text mode, timing (1) cannot be full scan for V-size.

## USER TIMING MODE SETUP

The monitor is capable of storing up to 28 modes for total, with 12 factory programmed, this leaves 16 available set spaces for users.

To successfully install a new timing mode, some certain things have to be considered.

The new mode must have a horizontal frequency difference of 5 Lines. Minimum or a vertical frequency difference of 0.5Hz. minimum from any single mode previously installed. For example:

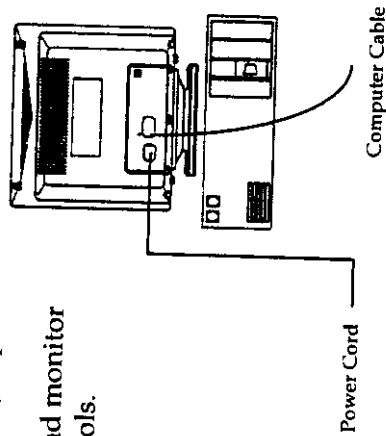
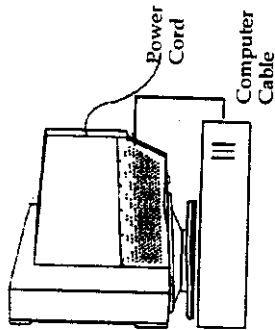
Assuming the timing requirements are met, the new mode is automatically installed when the monitor is connected to the signal source. Thus the front panel controls for horizontal/vertical display and position can be adjusted. The last made horizontal/vertical adjustment last will always be stored with the current timing mode.

After 16 user modes are installed, the first installed ones will be removed when any more modes are added. However, the factory preset modes will not be affected.

## INSTALLATION

Follow these step-by-step instruction for proper monitor installation.

1. Make certain your computer's power switch is off before plugging power cord.  
This is very important!!!
2. Then plug the power cord into your monitor's AC socket and the other end to the power source as shown.
3. Now attach the video cable to your monitor and the other end to your computer's video card output port.
4. Turn your computer and monitor on. Adjust user controls.



## 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.

**SPECIFICATIONS**

<b>CRT</b>	Size Viewable Size Dot Pitch Deflection	17-Inch Diagonal Flat Square Type 15.6 Inch (Diagonal) 0.27/0.25mm (optional) 90°
<b>Display</b>	Size Color Resolution Pixel Rate	300mm x 225mm. Unlimited Colors Up to 1280 x 1024 110 MHz
<b>Input Signal</b>	Video Signal Sync. Signal Scanning Freq.	RGB Analogue 0.7 Vpp 75 Ohms H/V. Separated, TTL. Level Positive or Negative. 30 KHz to 70 KHz for Horizontal 50 Hz to 120 Hz for Vertical
<b>Power Source</b>	Power Supply Power Consumption	AC 100-240 V, 60 Hz/50 Hz. 120W Max.
<b>Dimensions</b>	Monitor Carton	412mm (W) x 402mm (H) x 450mm (D)/ Short CRT: 405mm(W)x412mm(H)x399mm(D) 523mm (W) x 515mm (H) x 557mm (D)/ Short CRT: 515mm (W) x 528mm (H) x 535mm (D)
<b>Weight</b>	Net Weight	Approx. 16.5Kgs 17.2Kgs (Multimedia model)

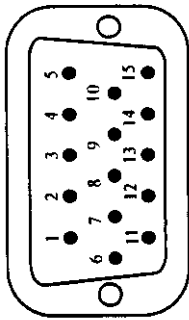
**POWER MANAGEMENT**

The Power Management states are controlled by the presence and /or absence of horizontal and vertical sync signals according to the following:

State	H. Sync.	V. Sync.	Power (nominal)	LED
ON	ON	ON	<100 WATTS	GREEN
STANDBY	OFF	ON	<15 WATTS	ORANGE
SUSPEND	ON	OFF	<05 WATTS	ORANGE
OFF	OFF	OFF	<05 WATTS	ORANGE

**D-SUB CONNECTOR**

**15-PIN D-SUB CONNECTOR**



- 1. R
- 2. G
- 3. B
- 4. GND
- 5. NC
- 6. GND
- 7. GND
- 8. GND
- 9. NC
- 10. GND
- 11. GND
- 12. SDA
- 13. H. SYNC
- 14. V. SYNC
- 15. SCL

**SIGNAL LEVEL**

CONNECTOR	SIGNAL	DESCRIPTION
R	RED	0.7 VP-P(VIDEO)
G	GREEN	0.7 VP-P(VIDEO)
B	BLUE	0.7 VP-P(VIDEO)
H	H/SYNC	TTL positive or negative
V	V/SYNC	TTL positive or negative
SDA	DDC1/2B	TTL
SCL	DDC1/2B	TTL