ELSA ECOMO™ 19M99

Manual

Preface

Thank you for placing your trust in this ELSA product. With the *ECOMO 19M99* you have selected one of ELSA's high-end monitors. ELSA products are subject to the highest of standards in production and quality control which are the foundation for consistently high product quality. This monitor was especially designed for the demands of professional users, and distinguishes itself with an extraordinary degree of reliability.

If you have questions to the topics covered in this manual or require additional help, our online services are at your disposal around the clock. The complete range of support and services provided by ELSA can be found in the "Advice and Help" chapter.

In very urgent cases the ELSA Hotline can be reached under the following number:
+49-241-606-6135

Before you continue

How to set up your ECOMO 19M99 is described in the Installation Guide. Please refer to this information first before you start reading this manual.

Content

Introduction

Monitor features

The main features of the *ELSA ECOMO 19M99* are described below to give you an overview of the monitor's capabilities.

On-screen display

Settings for the monitor can be adjusted quickly and easily using the on-screen display menu.

Multi-mode technology

The multi-mode technology is controlled by the microprocessor. The monitor synchronizes itself automatically to all frequencies in the horizontal range between 30 kHz and 96 kHz, and in the vertical range between 48 Hz and 120 Hz. Microprocessor control allows the monitor to operate in any frequency mode with the precision of a fixed-frequency monitor.

Storage for graphics modes

Besides the factory settings for popular display standards, the *ECOMO 19M99* can store user-defined settings and other timings.

Static beam landing correction

The static beam landing correction of the electron beam corrects color interferences. Furthermore, the monitor provides a demagnetizing function.

Dynamic focus

The distance over which the electron beam is projected varies considerably over the width and height of the screen, an effect which is especially significant with larger monitors. The dynamic focus function automatically adjusts the focal length of the beam to ensure that the picture stays sharp, even at the outer edge.

Moiré correction

An adjustable Moiré correction compensates for the unwanted wave-like interference patterns from background rasters.

TCO '95 - The latest standard

Your ELSA monitor complies with the CE radiation norm which officially defines criteria for safety and electromagnetic compatibility. The TCO '95 and similar approvals additionally define the conditions for visual ergonomics, low radiation, energy saving functions

and ecology. Thus the *ECOMO 19M99* meets all the requirements laid down in the EU Directive 90/270/EEC for monitors in the working environment.

Plug & Play (DDC)

The *ECOMO 19M99* is equipped with the DDC1 and DDC2b functions (DDC = Display Data Channel), which the monitor can use to transmit information (e.g. graphics modes supported and timing) to the host computer. This system works only if the host computer (the graphics board) also supports the DDC function.

Power management (VESA DPMS)

The monitor has a power saving function which reduces the power consumption in stages if the monitor is not in use.

Macintosh and the ELSA monitor

ECOMO 19M99 is a multi-frequency monitor which can also be connected to Apple Macintosh computers. A suitable adapter is required to make this connection.

Package contents

Please check that nothing is missing from the package contents. When opening the pakkage please ensure that the following components are included:

- ■ Monitor
- ■ Documentation: Installation Guide and Manual
- ■ CD ROM with INF files
- ■ Power cord

Please contact your dealer if any items are missing or damaged. ELSA reserves the right to make changes to the package contents without prior notice.

CE Conformity and FCC Radiation Standard

CE

This equipment has been tested and found to comply with the limits of the European Council Directive on the approximation of the laws of the member states relating to electromagnetic compatibility (89/336/EEC) in accordance with EN 55 022 class B.

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commission (FCC) Rules. For the FCC Id see the chapter "Technical data", page 17).

CE and FCC

These limits are designed to provide reasonable protection against radio frequency interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may interfere with to radio communications if not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception (this can be determined by turning this 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 distance between this equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician.
- Caution: Always use a shielded signal cable to comply with the requirements for an FCC Class B computing device.

Caution to the user: The Federal Communications Commission warns the user that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Aspects of your monitor

The front control panel

The lower front of the monitor features a row of switches and buttons which allow you to tune the picture settings precisely.
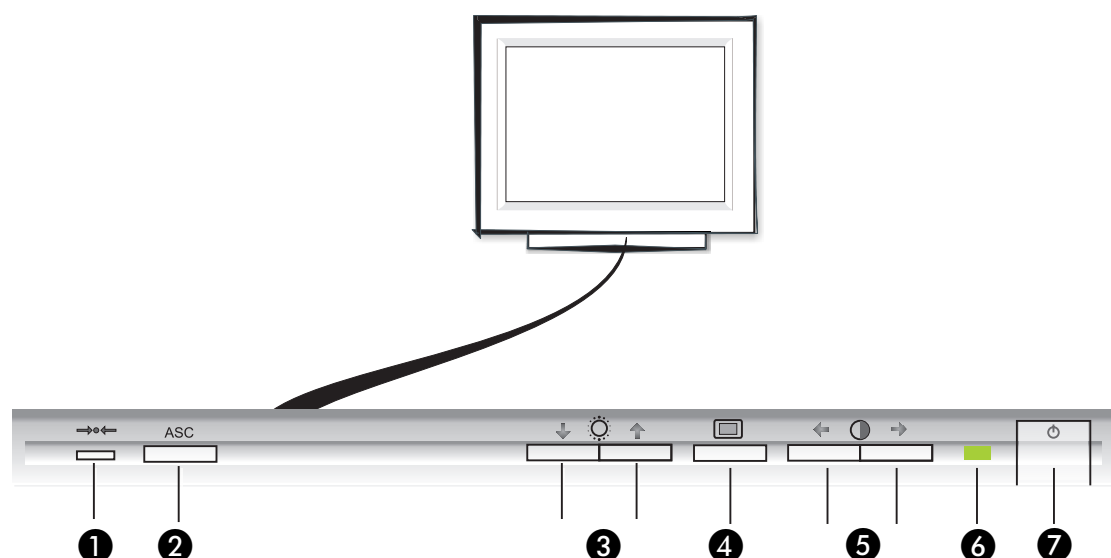
	Function
❶	**Reset button** Resets the values to the factory settings
❷	**Quick align** The ASC button (Auto Sizing and Centering) automatically centers the picture. At the same time the picture size is adjusted to fit the diagonals of the monitor.
❸	**Brightness** Use the two arrow keys to adjust the brightness of the picture. The arrow keys are used to move the cursor in the on-screen menu and alter the settings.
❹	**Menu button** The menu button is the central control button for the on-screen menu: Pressing it opens and closes the on-screen menu and confirms the settings made on an on-screen menu page.
❺	**Contrast** Use the two arrow keys to adjust the picture contrast. The arrow keys are used to move the cursor in the on-screen menu and alter the settings.
❻	**Power indicator** The indicator lamp lights up when the monitor is switched on and indicates the status of the energy saving function.
❼	**Power switch** Used to switch the monitor on and off

Rear connectors panel
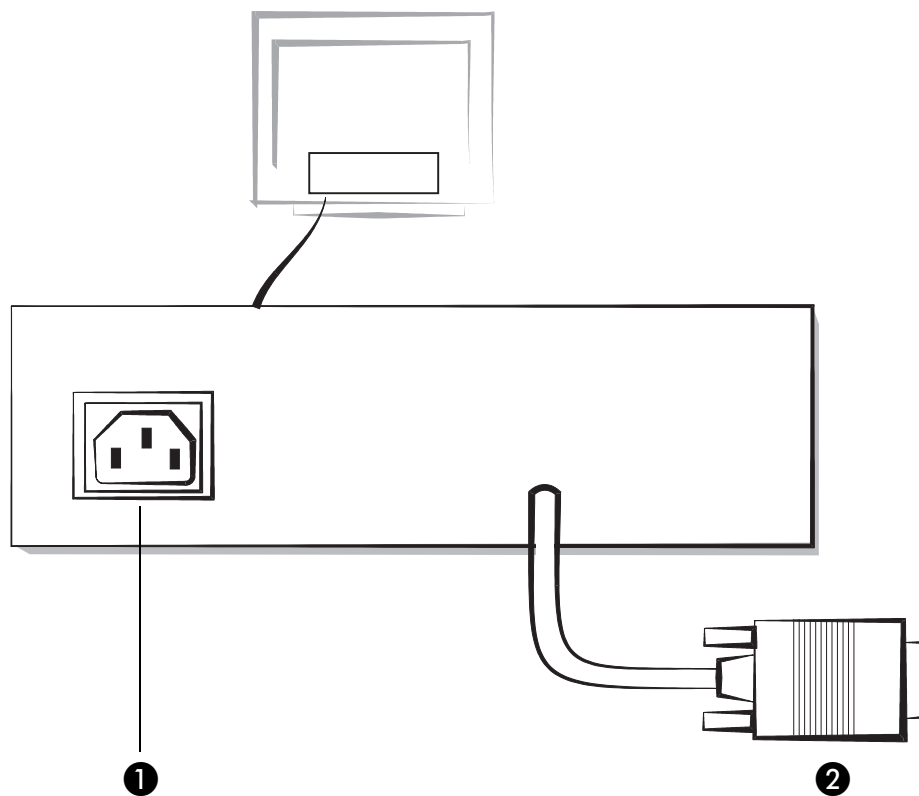
	Function
❶	**AC IN connector** Plug the power cord in here.
❷	**Video input connector (HD15)** Plug the cable carrying the signal from the graphics board to the monitor into this socket

Monitor operation

The on-screen display

The on-screen menu – On Screen Display (OSD) – makes fine tuning the picture on your monitor easy. The possible settings range from simple brightness adjustment to detailed correction of pin-cushion curvature or distortion. The on-screen display appears as soon the 'Menu' button on the control panel is pressed. Once in the on-screen display, you can use the buttons to access the various pages of the menu.

What you need to know

You need to know the buttons for navigating within the pages and from one page to another. You should bear the following in mind if you wish to adjust the monitor settings:

Use the 'Menu' button to access the menu page of the on-screen display and to confirm the selection of the on-screen page..

Use the arrow keys to move the selection to the position you want and to alter the values and settings.

Use the 'Menu' button to confirm the alteration. After pressing the 'Menu' button again you can leave the OSD.

Overview of all menu pages

The OSD of your *ECOMO 19M99* contains various menu pages. We will now show you how to navigate around the pages, what they look like and how to adjust values:

Menu page			Brief describtion	applies to	Details
	END		Ausblenden des Bildschirmmenüs	–	–
	POSITION		Sets the horizontal and vertical position of the picture	▷ ◁	page 10
	SIZE		Picture size	▷ ◁	page 10
	GEOMETRY		Compensates for rotation	▷ ◁	page 10
			Pincushion	◁ ▷	page 11
			Pincushion balance	◁ ▷	page 11
			Trapezodial distortion	◁ ▷	page 11
			Trapezodial balance	◁ ▷	page 11
	ZOOM		Enlarges or reduces the picture proportionally	▷ ◁	page 10
	COLOR	1	Sets the color temperature (9300 K)	◁ ▷	page 12
		2	Sets the color temperature (5000 K)	◁ ▷	page 12
			Sets the color temperature finely	◁ ▷	page 12
	CONVER-GENCE		Horizontal and vertical convergence correction	◁ ▷	page 12
	OSD POSITION		OSD position on the sreen	▷ ◁	page 12
	OPTION		Manual degauss	–	page 12
			Locks the control panel	–	page 13
		A	Language selection	–	page 9
			Restores the original color images	–	page 12
			Moiré correction	◁ ▷	page 11
	GRAPHICS ENHANCE-MENT		Screen mode for display features	▷ ◁	page 13

▷ ◁ : the setting is stored and applies to all input signals
◁ ▷ : the setting is stored and applies only to the current input signal

Monitor settings

The monitor settings can be fine tuned according to your preferences. Don't be afraid to experiment with the monitor and try out all of the options for adjustment. If the picture has gone completely astray, just press the RESET "emergency button" to restore the factory settings (→page 14).

After switching on

Plug & Play

Today's graphics boards, and the *ECOMO 19M99*, are capable of communicating using DDC (Display Data Channel). The *ECOMO 19M99* can send its parameters to the graphics board. In turn, the graphics board ensures that the monitor operates at the highest possible refresh rate for the resolution selected. This means that you will normally get a picture straight away that needs only minor adjustments. Check the fine tuning of the picture and adjust the picture for the relative light levels of your working environment.

You will now find out what settings are possible and how to solve any problems.

Language

The *ECOMO 19M99* can display its on-screen menus in a choice of languages. If you want to change the language used for the on-screen menu, simply call up the menu 'Option' and mark the option 'Language' by means of the keys ◄/►. Then, select the language you want by using the keys ◄/► .

Problems and solutions

In this chapter you will find all the information you need for adjusting the picture and using the monitor functions. Please refer to page 7 if you are not sure how to operate the on-screen menu.

Characters displayed are barely detectable or almost illegible

Picture Brightness and Contrast
Brightness and contrast can be adjusted directly using the arrow keys on the front of the monitor.

Centering/moving the picture

Picture
Use the selection keys to access the 'POSITION' menu page and correct the setting using the ▲/▼ and ◀/▶ buttons.
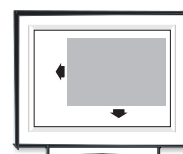
Pressing the ASC button automatically fits the size of the picture to the monitor and at the same time centers the picture.

The picture does not fill the entire screen

Picture Size
Use the selection keys to access the 'SIZE' menu page and correct the setting using the ▲/▼ and ◀/▶ buttons.

Another possibility is to use the ZOOM function. This allows you to enlarge and reduce the picture proportionally.
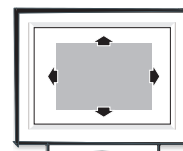
Pressing the ASC button automatically fits the size of the picture to the monitor and at the same time centers the picture.

The picture is "askew"

Picture Rotation
Use the selection keys to access the 'GEOM' menu page. Move the cursor onto the menu 'ROTATION' using the ▲/▼ buttons. You can use the ◀/▶ buttons to rotate the picture and correct the rotational effect.

The picture bows inward or outwards at the edges

Pincushion or Barrel Distortion Use the selection keys to access the 'GEOM' menu page. Move the cursor onto the option 'PINCUSHION' or 'PIN-CUSHION BALANCE' using the ▲/▼ buttons. Use the ◀/▶ buttons to adjust the picture geometry.
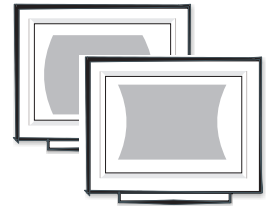
The picture tapers towards the top

Trapezoidal Use the selection keys to access the 'GEOM' menu page. Move the cursor onto the option 'TRAPEZOIDAL DISTORTION' using the ▲/▼ buttons. Use the ◀/▶ buttons to change the picture geometry.

The picture is slanted to the left or right

Picture Slant This effect is also known as "Trapezium balance". Use the selection keys to access the 'GEOM' menu page. Move the cursor onto the option 'TRAPEZOIDAL BALANCE' using the ▲/▼ buttons. Use the ◀/▶ buttons to adjust the settings.

The picture has a wave-like pattern superimposed on it

Moiré Correction Modern monitors are affected by the undesirable side-effect of moiré. This is particularly noticeable with a light background screen brightness and can often be eliminated by selecting another background color. This effect produces an interference pattern which results from a displacement between the electron beams and the shadow mask. Beam point and shadow mask converge precisely in some parts of the screen, producing a bright picture. Minor deviations make for a somewhat darker region in other parts of the screen.

Use the selection keys to access the 'OPTION' menu page. Move the cursor onto the desired option using the ▲/▼ buttons. Change the setting for 'MOIRE' using the ◀/▶ buttons to correct the effect of moiré.
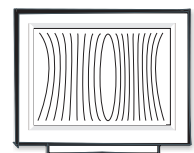
The picture has blue or red shadows

Convergence

The three electron beams are not in registration and are not hitting the phosphor dots on the viewing screen accurately, resulting in a fuzzy picture on the screen and the appearance of red or blue shadows around objects. This is called convergence error. The three control bars on the OSD page will help to adjust the convergence. The convergence value is correct when the color bars are "sharp".
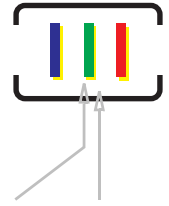
The bars should coincide exactly.

Use the selection keys to access the 'CONVERGENCE' menu page. Using the keys ◀/▶ or ▲/▼ you can adjust the convergence correction .

Printer and screen colors should match

Color Temperature

Color temperature setting enables you to set up your monitor's background white to match the white of the printer paper. You can match the colors on screen to match printed output or some other color swatch. The lower the value, the brighter the paper quality.

Use the selection buttons to select the menu page, 'COLOR'. You can use the ◀/▶ buttons to switch between the color temperatures, 9300 K (1) and 5000 K (2), where 9300 K represents the value for default white. If you set the cursor on the last position the color value can be finely and variably tuned using the keys ◀/▶ changes at the same time.

Degaussing

The monitor screen is automatically degaussed whenever it is turned on. You can, of course, manually degauss the monitor. Use the selection 'MAN.DEGAUSS' in the 'Option' menu and set the value on 'ON'.

Positioning the on-screen menu

The on-screen menu can be positioned anywhere along the horizontal and vertical axes using the appropriate arrow keys.

The color brillance is to be freshened up again

Color Brillance

The color of most display monitors tend to gradually lose brillance after several years of service. The Color Return feature allows you to restore the color to the original factory preset levels.

First, select the 'OPTION' menu page and move the cursor onto the option 'RESTORE THE COLOR TEMPERATURE'. Press the key ▶. A white rectangle is displayed in the middle of the screen during the original color images are being restored. This procedure takes approximately 2 seconds. Please note that this feature probably does not work with old devices.

Before using this feature, the monitor must be in normal operation mode for at least 30 minutes. If the monitor goes into power saving mode, you must return the monitor to normal operation mode and wait for 30 minutes for the monitor to be ready. You may need to adjust your computer's power saving settings to help keep the monitor in normal operation mode for the full 30 minutes. If the monitor is not ready, an appropriate message will appear.

Locking the control functions

Keyboard Lock   You will no longer be able to select any of the functions, except for the menu button and the 'Option' menu page if access to the on-screen menu has been locked. This also applies to the control panel buttons on the front of the monitor. You cancel the lock by setting the feature again on 'OFF'.

Optimize your picture at the push of a button

The *ECOMO 19M99* disposes of a feature to optimize the picture. This feature distinguishes among three settings:

- STANDARD MODE
- PRESENTATION MODE
- GRAPHICS/VIDEO MODE

The Standard Mode is ideal for spreadsheets, word processing and other text oriented applications. The Presentation Mode is useful for presentation programs that require vivid colors. The Graphics and Video Mode gives movies and games enhanced visual appeal by increasing the sharpness and brightness.

The selected mode indication appears on the screen for about three seconds. If the screen appears too white, adjust the color temperature.

The Presentation Mode and Graphics and Video Mode may produce ghost images when displaying text oriented applications. These modes change the brightness of the picture dynamically according to changes in moving pictures. If ghost images appear, set the Video Enhancement Mode to Standard Mode.

Resetting the values to the factory settings

You can use the reset button to return all settings you have changed back to the factory settings.

Resetting a specific adjustment

Navigate through the on-screen menus to select the adjustment item you want to reset, and press the 'RESET' button. You can do this while you are adjusting an item.

Resetting all of the adjustments for the current input signal

Press the 'RESET' button when no menu is displayed on the screen. Note that the follwing items are not reset by this method:

- ■ on-screen menu language
- ■ on-screen menu position
- ■ control lock

Resetting all of the adjustments for all input signals

Press and hold the reset button for more than two seconds when no menu is displayed on the screen. This resets everything to the factory preset mode.

Resetting all of the adjustment data to the factory presets

Press and hold the reset button for more than five seconds when no menu is displayed on the screen. This resets everything to the factory presets including the input selection.

The 'RESET' button does not function when the control lock is set to ON (→ page 13).

An optimized working environment

You have already taken a significant step towards this goal: you have acquired a monitor with technology guaranteeing optimized ergonomics and a minimum of stress at your place of work. Equally important is the overall arrangement of your working environment, which includes some basic rules about working with a monitor.

The ELSA ECOMO 19M99 complies with the latest EU ergonomics guidelines (90/270/ EEC) for work places with monitors, which came into effect on the 1.1.97.

Monitor picture quality

The screen must display a stable picture. How can you check this? Simply focus on a fixed point next to your screen. If you can see a perceptible flickering of the picture, you can try and adjust the brightness and contrast to stabilize the picture. If this does not help, then try to increase the display refresh rate with your graphics board driver.

Tips for an ergonomic working environment

Lighting in your working environment

The lighting in your place of work should not perceptibly flicker. Avoid placing monitors directly next to windows and be sure that there is the possibility to reduce the intrusion of strong sunlight such as with a blind. When arranging desks, make sure that the direction of view is parallel with the lighting. The direction of view to the monitor should be parallel to the windows. Glare and reflections can be reduced by an anti-reflective layer (Lambda/4 anti-reflection) on the screen.

You can check whether or not your place of work meets these basic rules:

■   Are you facing a window when looking at your monitor?

■   Does your monitor screen show any reflections from windows or lighting?

The work desk

The top of the work desk should be at a height of 72 cm. The desk top should be around 80 cm deep and of sufficient length. There should be a suitable separation between the operator and the monitor, which for a 17" monitor is recommended to be at least 45 cm.

The seating position

The seating position is most important for work in comfort and without problems. A rule of thumb is: sit with a straight back and ensure that your arms and legs are bent at approximately 90°. Your feet should also rest flat on the floor.

It is important that you frequently shift your seating position – to practice the so-called "dynamic sitting" – and that you stand up once in a while.

The monitor position

The *ECOMO 19M99* can be tilted and swiveled so that you can set up the monitor position to your liking.

When swiveling or tilting, please support the monitor with both hands
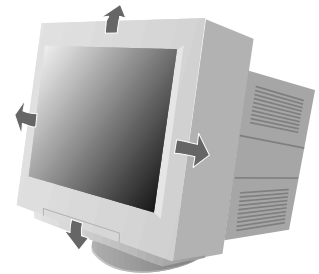
When selecting the monitor position, be sure not to place it directly on the computer housing.

Cleaning your monitor

When cleaning the monitor, please follow these guidelines:

- ■ Always unplug the monitor before cleaning
- ■ Wipe the screen and cabinet front and sides with a soft cloth
- ■ If the screen requires more than dusting, apply household window cleaner to a soft cloth to clean the monitor screen

Do not use benzene, thinner or any volatile substances to clean the unit as the finish may be permanently marked. Never leave the monitor in contact with rubber or vinyl for an extended period.

Technical data

CRT	Diagonal	48.3 cm / 19", viewable display size 365 x 273 mm, 18"
	Gun	In-line
	Deflection angle	90 °
	Phosphors	Red, green, blue (P22, medium short persistence)
	Phosphor color coordinates	RedGreenBlue X = 0.625 X = 0.28 X = 0.155 Y = 0.34 Y = 0.595 Y = 0.07
	Slot mask	0.25 - 0.27 mm
	Face plate	anti-glare, anti-reflective, anti-static coating
	Focusing method	Dynamic beam forming
Input signal	Video	0.7 V RGB analog
	Synchronization	Synchronization signals on green or separate horizontal/ vertical synchronization or composite synchronization
Interface	Input connector	DB9-15P
	Input impedance	75Ω (video) 1kΩ (sync)
Frequency range	Horizontal: 30 - 96 kHz, vertical: 48 - 120 Hz	
Resolution	Horizontal: up to 1600 pixels, vertical: up to 1200 lines	
Warm-up time	30 min. to reach optimum performance temperature	
Brightness	100 cd/m^2, standard full white video	
Video bandwidth	120 MHz	
Blanking time	Horizontal	< 2.8 μs
	Vertical	< 450 μs
Viewable display	365 x 274 mm	
	9300 K 6500 K 5000 K Gamma value (γ) = 2.5 X = 0.283 ± 0.02 X = 0.313 ± 0.02 X = 0.346 ± 0.02 Y = 0.298 ± 0.02 Y = 0.329 ± 0.02 Y = 0.359 ± 0.02	
Color temperature	9300 K-5000 K	
Power supply	AC 100-120 V/220-240 V; 10 %, 50-60 Hz, 105 W (typical)	
Operating environment	Temperature	5° - 35 °C
	Humidity	10 - 90 % relative air humidity
Housing	444 x 469 x 455 mm (W x H x D)	
Weight	26 kg approx.	
Tilt/ swivel base	Tilt angle	-5° - +15°
	Swivel angle	± 90°
Approvals/ certifications	Safety (CE)	EN 60950
	EMC (CE/FCC)	EN 55022 Class B, EN 50082-1, EN 60555-2 FCC Class B (FCC-ID: AK8GDM500PS)
	X-radiation	German X-ray regulations dated 1987-01-08
	Others	TCO '95 VESA DPMS EPA Energy Star MPR-II ISO 9241-3 (certified by TÜV Ergonomie) ZHI/618 NUTEK Spec. 803299/94

Power management function

The *ECOMO 19M99* complies with the guidelines set by VESA and Energy Star together with the stringent standards of NUTEK. The *ECOMO 19M99* will automatically reduce power consumption in three stages if the monitor is connected to a graphics board complying with VESA DPMS. You can set the delay time before the monitor enters the power saving mode using the on-screen menu.

The following table gives you an overview.

Mode	Synchronization Signal		Power Con-sumption	Recovery Time	Power Indicator
	Horizontal	**Vertical**			
Stand-by mode	no	yes	$\leq 15W$	approx. 3 sec	alternating green and orange
Suspend mode	yes	no	$\leq 15W$	approx. 3 sec	alternating green and orange
Active-off mode	no	no	$\leq 8W$	approx. 10 sec	Orange

Factory settings

To minimize the need for adjustment, the factory has preset popular display standards into the monitor. Picture size and centering are automatically adjusted if any of these 30 display standards is detected. The monitor is capable of automatically storing up to 3 additional display standards. The new display information must differ from any of the existing display standards by at least 1 kHz for the horizontal scan frequency or 5 Hz for the vertical scan frequency or the sync signal polarities must be different.

The VGA D-Shell plug

Pin Assignment
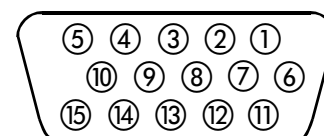
Connection	Signal	Connection	Signal
1	RED	9	Not assigned
2	GREEN	10	Sync ground
3	BLUE	11	Ground
4	Ground	12	Bidirectional data (SDA; DDC1/2B)
5	DDC ground	13	Horizontal synchronization
6	Red ground	14	Vertical synchronization
7	Green ground	15	Data timing (SCL; DDC2B)
8	Blue ground		

The *19M99* issues analog signals in accordance with the requirements RS-170. The synchronisation information is sent separately.

Video input connection to an Apple-Macintosh computer
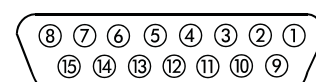
Pin Assignment

In principle, it is also possible to connect your ELSA monitor to Macintosh computers. The graphics output of the Macintosh disposes of a 15-pin socket. Connecting the VGA socket to the monitor you need a an appropriate adapter. Please contace your dealer if you have further questions.

Pin	Signal	Pin	Signal
1	Red ground	9	BLUE Video
2	RED video	10	Sense 2
3	C-sync	11	C & V sync Ground
4	Sense 0	12	V-sync
5	GREEN video (mono video)	13	Blue ground
6	Green ground	14	H-sync Ground
7	Sense 1	15	H-sync
8	Not used		

H-sync = scan frequency, V-sync = Refresh rate

Troubleshooting

Problem solving

What happened		What you can do
No picture	If the power indicator is not lit	Check that the power cord is properly connected and the monitor is switched on.
	If the 'No INPUT signal' display comes up, the power indicator lights up orange or alternates between orange and green	The screen is dark when the power saving function is active. Press any key on the front of the monitor
		Check the video cable connection. The plug should be securely and fully inserted in the graphics board socket.
		Check the HD15 plug for damaged contact pins.
		Check that the graphics board is firmly seated in its slot.
	If the 'Out of scan range' message is displayed on the monitor	The signal frequency must be within the permitted range (horizontal: 30 - 96 kHz, vertical: 48 - 120 kHz)
		If you are using an adapter, this may be contributing to the cause of the problem.
The picture is distorted		Check in the Manual for your graphics board that the monitor settings are correct.
		Check that the graphics mode and frequency selected are supported. Try lowering the video signal frequency even if the video signal is within the permitted frequency band.
The colors lack uniformity		Degauss the monitor This phenomenon can arise if you place equipment which generates a magnetic field near the monitor (e.g. loud-speakers or halogen lamps) or if you change the position of the monitor. Wait approx. 20 seconds if you need to degauss the monitor a second time.
The monitor cannot be adjusted using the buttons		This may occur if the keyboard lock is activated. You can find out how to release the lock on page 13.
The picture bounces or has wavy oscillations		Ensure that there are no sources of magnetic interference near the monitor (e.g. electric fans, halogen lamps or laser printers).
		If you are using a second monitor, increase the distance between the two monitors.
		Try plugging the monitor into a different AC outlet.
The picture is flickering		Increase the refresh rate of the graphics board. You will find information on this in the documentation accompanying your graphics board.
The picture appears to be ghosting		Avoid using of switch boxes or cable extensions. Long cable extensions or poor contacts may be causing this fault.

What happened	What you can do
A hum is heard as soon as the monitor is switched on	The monitor is automatically degaussed every time it is switched on. This process lasts approx. 3 seconds, during which a hum may be heard. The same hum is heard even when the monitor is degaussed manually.

Restraining wires

You may notice two thin, horizontal lines in the picture. This is not a defect, but a phenomenon common to monitors which use the aperture grille CRT technology.

These lines are shadows produced by the restraining wires which reduce the aperture grille's sensitivity to vibration .

Restraining Wires
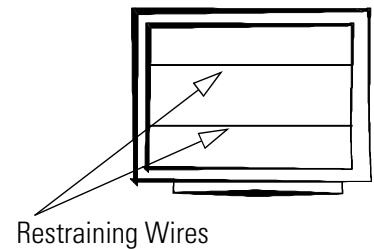
On-screen messages

The *ECOMO 19M99* can take care of itself. The following on-screen message will appear if the signal frequency is outside of the permitted range:

ℹ INFORMATION
MONITOR IS WORKING
OUT OF SCAN RANGE

ℹ INFORMATION
MONITOR IS WORKING
CHECK SIGNAL CABLE
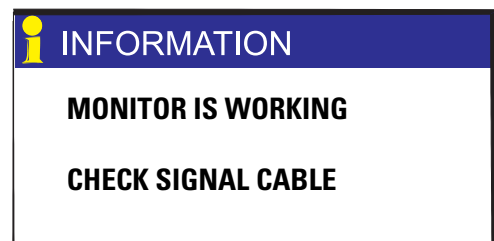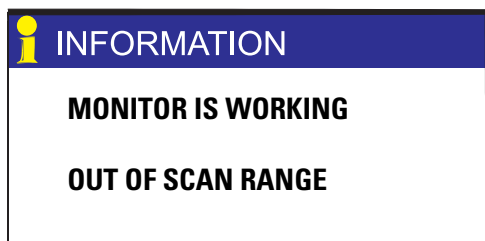
The second message indicates that there is no input signal received, or the video cable is not connected. In addition a RGB and a white bar is displayed. Checking those bars you can immediately discover a missing signal.

Appendix

TCO '95 –
Ecological Requirements for Personal Computers

Congratulations! You have just purchased a TCO '95 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 to the further development of environmentally adapted electronic 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 electronic equipment are concerned is that environmentally harmful substances are used both in the products and during their manufacture. Since it has not been possible so far for the majority of electronic 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 both the working and natural environment viewpoints. Since all types 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 consumes an enormous amount of energy, since it is often routinely left running continuously.

What does Labeling Involve ?

This product meets the requirements for the TCO '95 scheme, which provides for international environmental labeling of personal computers. The labeling scheme was developed as a joint effort of the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (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 among other things restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons), and chlorinated solvents. 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, along with physical and visual ergonomics and good usability.

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

■ TCO Development Unit
11494 Stockholm
Sweden

Fax: +46-87829207
EMail (Internet): development@tco.se
http://www.tco-info.com/

Environmental Requirements

brominated flame retardants are present in printed circuit boards, cabling, casings and housings, and are added to delay the spread of fire. Up to 30 % of the plastic in a computer casing can consist of flame-retardant substances. These are related to another group of environmental toxins, PCB, and are suspected of giving rise to similar harm, including reproductive damage in fish-eating birds and mammals. Flame retardants have been found in human blood and researchers fear that they can disturb fetus development. Bio-accumulative* TCO '95 demands require that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine or bromine.

■ **Lead** – can be found in picture tubes, display screens, solder and capacitors. Lead damages the nervous system and higher doses causes lead poisoning. The relevant bio-accumulative* TCO '95 requirement permits the inclusion of lead, as no replacement has yet been developed.

■ **Cadmium** – is present in rechargeable batteries and in color-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant bio-accumulative* TCO '95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The color-generating layers of display screens must not contain any cadmium.

■ **Mercury** – is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses. The relevant bio-accumulative* TCO

'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. The relevant bio-accumulative* TCO '95 demands require that no mercury is present in any of the electrical or electronic components concerned with the display unit.

■ **CFCs (Freons)** – are sometimes used for washing printed circuit boards and in the manufacture of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultra-violet light with consequent increased risks of skin cancer (malignant melanoma). The relevant TCO '95 requirement: Neither CFCs nor HCFCs may be used during manufacture of the product or its packaging.

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

Advice and Help

On the WINNERware you will find a list of the questions most frequently asked of the Support hotline. In many cases you will quickly find a help for solving problems. The file can be read with the Acrobat Reader which is also included on the CD.

If you encounter any problems during the installation or operation of your ELSA product, please consult this manual first.

If you have further questions, you can contact our Support team. Ensure that you can provide the following information.

- Exact model name of your ELSA monitor.
- The type of graphics board and the BIOS version (displayed when starting the computer).
- Operating systemand hardware environment.

Software Updates

The latest versions of the ELSA software are always available for download from our Internet WWW site www.elsa.de and direct via FTP from ftp.elsa.com. You will also find a wealth of information and answers to frequently asked questions (FAQs). Before you contact the ELSA Support team, please make sure that you are using the latest ELSA software (driver, firmware or INF file) versions.

ELSA-ServiceDirect

Active as of January 1, 1998, we provide a six-year warranty backdated to the date of purchase on most products; ELSA color monitors and ELSA videoconferencing systems are covered by a three-year warranty. During this period, the following services are provided to you within Europe. At all stages of the warranty process you will receive competent care and advice from ELSA Customer Services.

Before you send your device to ELSA, please make a note of the device's serial number. This can be found on the bar-code sticker on the device and on the packaging. Have this number ready in case we have to contact you.

Repairs

- During the warranty period your faulty ELSA product will be repaired or exchanged free of charge. If you send your ELSA product for repair, be sure to enclose it in the original packaging to reduce the chance of damage during shipping. Be sure to

enclose a short description of the problem with the device, along with a copy of the invoice as proof of purchase. ELSA reserves the right to demand the original invoice.

■ After expiry of the warranty period we will dispose of your faulty device at no cost to you, and you will receive a current version of the product including a 6-year warranty for an appropriate fee. We will, if possible, repair your faulty device for a standard fee.

Please note that the warranty services only apply to faults covered in accordance with our warranty conditions valid in the Federal Republic of Germany.

Who to Contact?

First you should contact the dealer where you bought your ELSA product. If there are still questions remaining, contact one of the following:

■ **ELSA on the Internet**

ELSA WWW site   www.elsa.de

■ **ELSA by Mail**

Or write to ELSA   ELSA AG
                                       Computergrafik Support
                                       Sonnenweg 11

                                       52070 Aachen
                                       Germany

If you are not sure whether your product is defective or if the problem is just a driver which is incorrectly installed, please cal^ql the ELSA Support hotline before you send the board for repair.

■ **ELSA Support Hotline**

If very urgent, call the   +49-241-606-6135
ELSA Support hotline

                                     Mondays to Fridays from   9.00 am until 5.00 pm (CET)

If you have any questions about the ELSA ServiceDirect program or the progress of your repair, please call.

■ **ELSA Service Hotline +49-241-6065112**

■ **ELSA World Wide**

You can contact the ELSA subsidiaries:

ELSA, Inc.

2231 Calle De Luna   Phone: +1-408-919-9100
Santa Clara, CA 95054   +1-800-272-ELSA
USA   Fax: +1-408-919-9120

ELSA Asia, Inc.

7F-11, No. 188, Sec. 5	Phone:	+886-2-2768 57 30
Nanking East Road	Fax:	+886-2-2766 08 73
Taipei 105		
Taiwan, R.O.C.		

ELSA Japan, Inc.

Mita Suzuki Building 3F	Phone:	+81-3-5765-7391
5-20-14 Shiba, Minato-ku	Fax:	+81-3-5765-7235
Tokyo 108-0014		
Japan		

ELSA-ServiceDirect for *ELSA ECOMO*™ Monitors

3-Year Warranty Including ELSA-Onsite

As of the purchase date 01.01.1998, ELSA grants a three-year warranty on *ELSA ECOMO*[1] monitors including ELSA-ServiceDirect. ELSA strives to offer its customers top product quality with its extensive quality assurance measures. If, however, the customer makes a complaint, this service program guarantees perfect support and repair procedures to minimize any inconvenience. As well as repairs carried out free of charge, the following ServiceDirect services are offered within the extended scope of the warranty.

ELSA-Onsite: 3 years of onsite service for ELSA monitors—free of charge

You can avail of the numerous advantages of our onsite services for *ELSA ECOMO* monitors throughout Europe[2]. If you discover a fault with your monitor, you first contact our support team. If your monitor requires repairs within the warranty period of three years, you are provided with a replacement unit within 24 hours[3] which we deliver to your workplace. Your repaired monitor will be returned to you as soon as possible. The advantage of this offer is that you have no downtime or transport expenses. ELSA's customer service ensures that all transporting procedures are dealt with in the correct manner.

Your direct contact partner at ELSA-ServiceDirect

As an ELSA customer, you will receive support and advice from ELSA's customer service at all stages of the warranty services being carried out.

The ELSA support hotline is the first number to dial if you discover a malfunction or fault on your monitor.

ELSA Monitor Support Hotline
+49-(0)241-606-6135

If you have general questions on ServiceDirect, on the progress of repair work, contact the ELSA service hotline.

ELSA Service Hotline
+49-(0)241-606-5112

1) Applies to all *ELSA ECOMO* monitors purchased after January 1, 1998.
2) For *ELSA ECOMO 21H97*, a 4 week DoA warranty is granted outside of Germany instead.
3) Provided that the complete documentation reaches the ELSA support team by 11.00 a.m. by mail or directly via the computer graphics faxline— Tel.: +49-(0)241-606-6399. Please note that warranty services are only granted for faults which are covered within the framework of our General Terms of Warranty, valid for the Federal Republic of Germany (refer to our Internet site: www.elsa.com).

If the ELSA service cannot find fault with the unit claimed to be defective, we will invoice you for DM 200 plus V.A.T. to cover inspection costs and replacement of the unit.

Warranty Conditions

The ELSA AG warranty, valid as of June 01, 1998, is given to purchasers of ELSA products in addition to the warranty conditions provided by law and in accordance with the following conditions:

1   Warranty Coverage

a)   The warranty covers the equipment delivered and all its parts. Parts will, at our sole discretion, be replaced or repaired free of charge if, despite proven proper handling and adherence to the operating instructions, these parts became defective due to fabrication and/or material defects. Also we reserve the right to replace the defective product by a successor product or repay the original purchase price to the buyer in exchange to the defective product. Operating manuals and possibly supplied software are excluded from the warranty.

b)   Material and service charges shall be covered by us, but not shipping and handling costs involved in transport from the buyer to the service station and/or to us.

c)   Replaced parts become property of ELSA.

d)   ELSA are authorized to carry out technical changes (e.g. firmware updates) beyond repair and replacement of defective parts in order to bring the equipment up to the current technical state. This does not result in any additional charge for the customer. A legal claim to this service does not exist.

2   Warranty Period

The warranty period for ELSA products is six years. Excepted from this warranty period are ELSA color monitors and ELSA videoconferencing systems with a warranty period of 3 years. This period begins at the day of delivery from the ELSA dealer. Warranty services do not result in an extension of the warranty period nor do they initiate a new warranty period. The warranty period for installed replacement parts ends with the warranty period of the device as a whole.

3   Warranty Procedure

a)   If defects appear during the warranty period, the warranty claims must be made immediately, at the latest within a period of 7 days.

b)   In the case of any externally visible damage arising from transport (e.g. damage to the housing), the transport company representative and ELSA should be informed immediately. On discovery of damage which is not externally visible, the transport company and ELSA are to be immediately informed in writing, at the latest within 7 days of delivery.

c)   Transport to and from the location where the warranty claim is accepted and/or the repaired device is exchanged, is at the purchaser's own risk and cost.

d)   Warranty claims are only valid if the original purchase receipt is returned with the device.

4   Suspension of the Warranty

All warranty claims will be deemed invalid

a)   if the device is damaged or destroyed as a result of acts of nature or by environmental influences (moisture, electric shock, dust, etc.),

b)   if the device was stored or operated under conditions not in compliance with the technical specifications,

c) if the damage occurred due to incorrect handling, especially to non-observance of the system description and the operating instructions,

d) if the device was opened, repaired or modified by persons not authorized by ELSA,

e) if the device shows any kind of mechanical damage,

f) if in the case of an ELSA Monitor, damage to the cathode ray tube (CRT) has been caused especially by mechanical load (e.g. from shock to the pitch mask assembly or damage to the glass tube), by strong magnetic fields near the CRT (colored dots on the screen), or through the permanent display of an unchanging image (phosphor burnt),

g) if, and in as far as, the luminance of the TFT panel backlighting gradually decreases with time, or

h) if the warranty claim has not been reported in accordance with 3a) or 3b).

5   Operating Mistakes

If it becomes apparent that the reported malfunction of the device has been caused by unsuitable software, hardware, installation or operation, ELSA reserves the right to charge the purchaser for the resulting testing costs.

6   Additional Regulations

a) The above conditions define the complete scope of ELSA's legal liability.

b) The warranty gives no entitlement to additional claims, such as any refund in full or in part. Compensation claims, regardless of the legal basis, are excluded. This does not apply if e.g. injury to persons or damage to private property are specifically covered by the product liability law, or in cases of intentional act or culpable negligence.

c) Claims for compensation of lost profits, indirect or consequential detriments, are excluded.

d) ELSA is not liable for lost data or retrieval of lost data in cases of slight and ordinary negligence.

e) In the case that the intentional or culpable negligence of ELSA employees has caused a loss of data, ELSA will be liable for those costs typical to the recovery of data where periodic security data backups have been made.

f) The warranty is valid only for the first purchaser and is not transferable.

g) The court of jurisdiction is located in Aachen, Germany in the case that the purchaser is a merchant. If the purchaser does not have a court of jurisdiction in the Federal Republic of Germany or if he moves his domicile out of Germany after conclusion of the contract, ELSA's court of jurisdiction applies. This is also applicable if the purchaser's domicile is not known at the time of institution of proceedings.

h) The law of the Federal Republic of Germany is applicable. The UN commercial law does not apply to dealings between ELSA and the purchaser.

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