

## 4312 FA

*LCD-Bildschirm / Moniteur / Monitor / Skärm /  
Beeldscherm / Billedskærm*

**BETRIEBSANLEITUNG  
OPERATING MANUAL**

FUJITSU COMPUTERS  
SIEMENS





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## Introduction

Your new LCD (Liquid Crystal Display) monitor 4312 FA offers numerous features and functions, for example:

- TFT display (Thin Film Transistor; active matrix)
- minimal space requirements thanks to slim housing
- height adjustment and ability to turn (portrait mode)
- optimum ergonomic characteristics (totally distortion-free, excellent picture definition and colour purity right into the corners)
- high degree of brightness and good contrast
- high resolution (1280x1024) for displaying the information content of a conventional 19-inch screen with CRT (Cathode Ray Tube)
- presentation of up to 16.7 million colours (in conjunction with an appropriate screen controller)
- automatic scanning of all horizontal frequencies from 31 to 80 kHz and all refresh rates (vertical frequencies) from 55 to 75 Hz (all absolutely flicker-free)
- digital screen controller with microprocessor for storing 20 different display modes
- freely adjustable colour alignment for matching the screen colours to the colours of various input and output devices
- convenient operation via integrated OSD (On-Screen-Display) menu
- VESA-DDC compatibility
- VESA-FPMPMI compatibility (Flat Panel Monitor Physical Mounting Interface, mechanical interface to swivel arm and wall bracket)
- plug&play capability
- power management for reducing power consumption when the PC system is not in use
- compliance with the recommendations in accordance with TCO '99

This Operating Manual contains important information you require to start up and run your LCD monitor.

A screen controller with VGA interface is required to control the 4312 FA LCD monitor. The monitor processes the data supplied to it by the screen controller. The screen controller/the associated driver software is responsible for setting the modes (resolution and refresh rate).

When putting the monitor into operation for the first time, the screen display should be optimally adapted to the screen controller used and adjusted in accordance with your needs (see section "Changing the monitor settings" in chapter "Operation of the monitor").

### Target group

You don't need to be an "expert" to perform the operations described here. Do, however, read the chapter with the "Important notes" in the Operating Manual of the system unit and in this Operating Manual.

In the event of any problems occurring, please contact your sales outlet or our customer service centre.

### Further information

Details of how you set the resolution and refresh rate are provided in the documentation on your screen controller/the associated driver software.





## Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:



Pay particular attention to text marked with this symbol. Failure to observe this warning endangers your life, destroys the device, or may lead to loss of data.



Supplementary information, remarks, and tips follow this symbol.

- ▶ Text which follows this symbol describes activities that must be performed in the order shown. "Quotation marks" indicate names of chapters or terms.

## Important notes



In this chapter you will find information regarding safety which is essential to take note of with your monitor.

## Safety

This device complies with the relevant safety regulations for data processing equipment, including electronic office machines for use in an office environment. If you have any questions, contact your sales outlet or our customer service centre.

- The display surface of the LCD monitor is sensitive to pressure and scratches. You should therefore be careful with the display surface so as to avoid lasting damage (Newton rings, scratches).
- If the device is brought into the installation site from a cold environment, condensation can form. Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site.
- During installation and before operating the device, please observe the instructions on environmental conditions in the chapter entitled "Technical data" as well as the instructions in the chapter "Installing an ergonomic video workstation".
- To ensure adequate ventilation the monitor may only be operated with the monitor foot installed.
- Only the power adapter supplied may be used for the LCD monitor's power supply.
- Do not cover the power adapter when it is operational. Do not place the power adapter on heat-sensitive material.
- The power adapter automatically sets itself to a mains voltage in the range of 100 V to 240 V. Ensure that the local mains voltage lies within these limits.
- Ensure that the power socket on the power adapter or the grounded mains outlet is freely accessible.
- The ON/OFF switch does not disconnect the device from the mains voltage. To completely disconnect the mains voltage, remove the power plug from the socket.



- Lay all cables so that nobody can stand on them or trip over them. When attaching the device, observe the relevant notes in the chapter "Connecting the monitor".
- No data transmission cable should be connected or disconnected during a thunderstorm.
- Please ensure that no objects (e.g. necklaces, paperclips etc.) or liquids can get into the interior of the device (this may cause an electrical shock or short circuit).
- In emergencies (e.g. damaged casing, elements or cables, penetration of liquids or foreign matter), switch off the unit, disconnect the power plug and contact your sales outlet or our customer service centre.
- The screen background lighting contains mercury. You must observe the applicable handling and disposal safety regulations for fluorescent tubes.
- If the LCD monitor is damaged (for example the glass is broken), avoid letting any liquids that may escape coming into contact with any part of your body (skin, mouth, nose) or foodstuffs. Clean parts of the body and clothing that have already come into contact with such liquids with plenty of soap and water.  
Do not breathe in any of the escaping vapours. You should contact your doctor if you have breathed in fumes or come into contact with the liquid.
- Only qualified technicians should repair the device. Unauthorised opening and incorrect repair may greatly endanger the user (electric shock, fire risk).
- The power adapter may only be opened by authorised specialist personnel.
- You may set only those resolutions and refresh rates specified in the "Technical data" chapter. Otherwise you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service centre.
- Keep this operating manual together with your device. If you pass on the device to third parties, you should include this manual.

## Cleaning notes

- Always pull out the power plug before you clean the monitor.
- Do not clean any interior parts yourself, leave this job to a service technician.
- Do not use any cleaning agents that contain abrasives or may corrode plastic.
- Ensure that no liquid will run into the system.
- Ensure that the ventilation areas of the monitor are free.
- The display surface of the LCD monitor is sensitive to pressure and scratches. Clean it only using a soft, slightly moistened cloth.

Wipe the monitor housing with a dry cloth. If the monitor is particularly dirty, use a cloth which has been moistened in mild domestic detergent and then carefully wrung out.

## Transport notes

- Transport the monitor with care and only in its original packaging or another corresponding packaging fit to protect it against knocks and jolts.
- Never drop the LCD monitor (danger of glass breakage).

## Manufacturer's notes

### Energy Star



The Fujitsu Siemens LCD colour monitor 4312 FA is designed to conserve electricity by dropping to less than 5 W when it goes into standby, suspend and OFF mode. With this new power management the 4312 FA qualifies for the U.S. Environmental Protection Agency's (EPA) Energy Star Computers award.

The EPA estimates that computer equipment uses 5% percent of all business electricity and that this is growing rapidly. If all desktop PCs and peripherals enter a low-power mode when not in use, the overall savings in electricity could amount to \$ 2 milliard annually. These savings could also prevent the emission of 20 million tons of carbon dioxide into the atmosphere - the equivalent of 5 million automobiles.

As an Energy Star Partner, Fujitsu Siemens Computers GmbH has determined that this product meets the Energy Star guidelines for energy efficiency.

### CE marking



The shipped version of this device complies with the requirements of the EEC directives 89/336/EEC "Electromagnetic compatibility" and 73/23/EEC "Low voltage directive".

## FCC Class B Compliance Statement

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

### 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 and meets all requirements of the Canadian Interference-Causing Equipment Regulations. 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 strict 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 equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The manufacturer is not responsible for any radio or television interference caused by unauthorised modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by the manufacturer. The correction of interference caused by such unauthorised modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC rules.



## Important note on power cable

To guarantee safe operation, use the cable supplied. Use the following guidelines if it is necessary to replace the original cable set.

- The female/male receptacles of the cord set must meet CEE-22 requirements.
- The cable has to be HAR-certified or VDE-certified. The mark HAR or VDE will appear on the outer sheath or on the insulation of one of the inner conductors.
- For devices which are mounted on a desk or table, type SVT or SJT cable sets may be used. For devices which sit on the floor, only SJT type cable sets may be used.
- The cable set must be selected according to the rated current for your device.

## Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Product Name:	Color LCD Monitor
Trade Name:	Fujitsu Siemens Computers
Model Number(s):	4312 FA
Name of Responsible Party:	Siemens Information and Communication Products LLC 3860 N. First Street San Jose, CA 95134-1702 U.S.A.
Contact Person:	Mike Fitzner
Phone No.:	(408) 428-8918
Fax No.:	(408) 428-7290

We, Siemens Information and Communication Products LLC, hereby declare that the equipment bearing the trade name and model number specified above was tested confirming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commissions requirements.







## Disposal and recycling

This device has been manufactured to the highest possible degree from materials which can be recycled or disposed of in a manner that is not environmentally damaging. The device may be taken back after use to be recycled, provided that it is returned in a condition that is the result of normal use. Any components not reclaimed will be disposed of in an environmentally acceptable manner.

If you have any questions about disposal of the batteries or system, please contact your local sales outlet or:

Fujitsu Siemens Computers GmbH  
Recyclingcenter  
D-33106 Paderborn  
Tel.: ++ 49 5251 - 818 010/ Fax: ++ 49 5251 - 818 015

## Checking the contents of the consignment

- ▶ Unpack all the individual parts.
- ▶ Check the delivery for damage incurred during transportation.
- ▶ Check whether the delivery agrees with the details in the delivery note.  
The complete LCD monitor package includes:
  - one monitor
  - one data cable (D-SUB)
  - one power cable
  - a power adapter with power adapter cable
  - one floppy disk
  - this Operating Manual

Should you discover that the delivery does not correspond to the delivery note, notify your local sales outlet immediately.

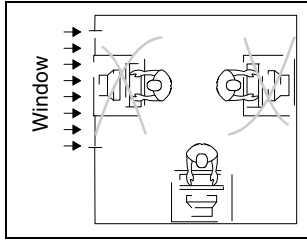


It is recommended not to throw away the original packing material. Keep it for future transportation.

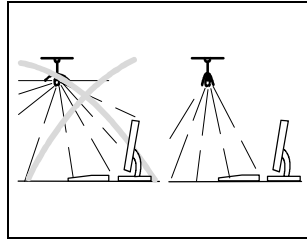


## Installing an ergonomic video workstation

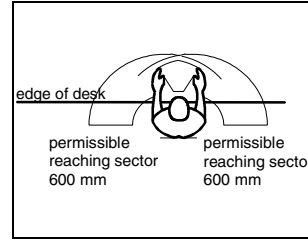
Before you set up your equipment, you should select a suitable position for working at the monitor. Please observe the following advises when installing a video workstation.



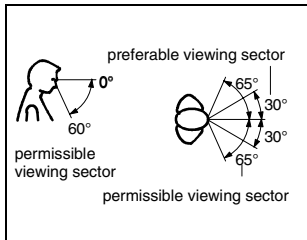
Avoid direct and reflected glare.



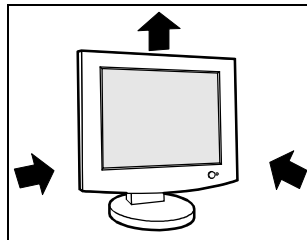
Avoid glare from electric lighting.



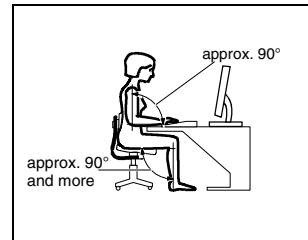
Position the keyboard where it is easiest to reach.



Position the monitor for optimum viewing. The viewing distance to the monitor should be approximately 50 cm.

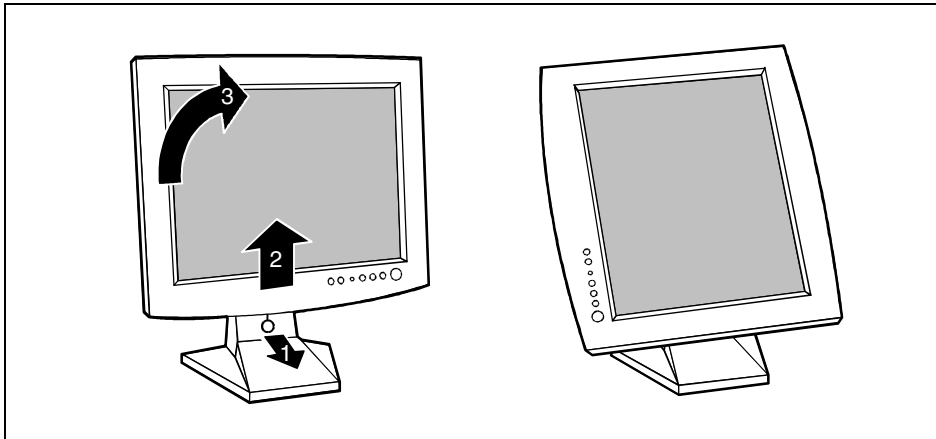


Keep ventilated areas clear.



Remember to maintain correct posture.

## Height adjustment and ability to turn



You can conveniently adjust the height of your monitor by first removing the transport lock (1) and then slightly lifting the display (2). In addition, you can also turn the display by 90° into the vertical position (portrait mode). To do this you must slightly lift the display (2) and turn it clockwise (3).



You must use corresponding software (pivot software) so that the screen display is also shown in the portrait mode. This software is available from specialised dealers.

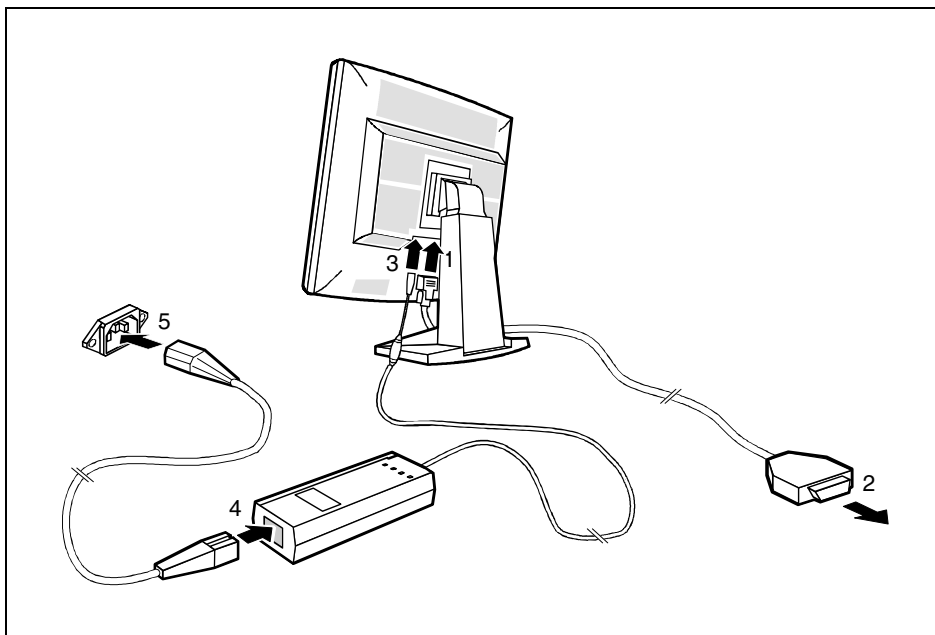
## Connecting the monitor

See your system unit's operating manual for details of the connectors and interfaces on the system unit.



Please note the information provided in the "Safety" section in the chapter "Important notes" at the beginning of this manual.

Do not cover the ventilation openings of the monitor.



- ▶ Be sure that the monitor and the system unit are switched off.



The system unit's power plug must be pulled out!

The data cable supplied has two 15-pin D-SUB connectors for connection to the monitor and to the system unit.

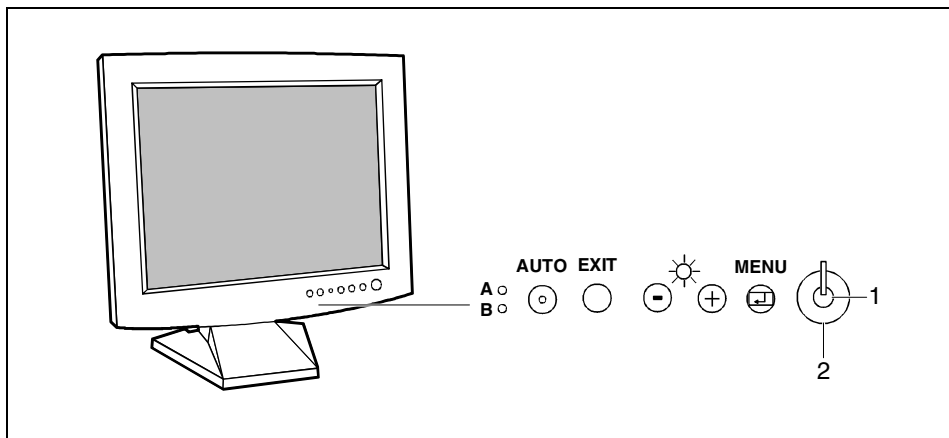
- ▶ Connect one of the connectors of the data cable to the D-SUB connector on the monitor (1) and secure the plug-in connection by tightening the safety screws.
- ▶ Connect the other connector of the data cable to the (active) monitor port on the system unit and secure the plug-in connection by tightening the safety screws (2).

**i** If your system unit has two monitor ports ("onboard" screen controller and separate graphics card), the monitor port for the separate graphics card is usually active.

- ▶ Plug the power adapter cable into the power connector (3) of the monitor. Ensure that it snaps firmly in place.
- ▶ Connect the female receptacle of the power cable supplied to the power adapter (4). Ensure that it snaps firmly in place.
- ▶ Connect the male receptacle of the power cable supplied to the monitor socket of the system unit (5). Ensure that it snaps firmly in place.
- ▶ Plug the power connector of the system unit into a properly grounded mains outlet.

**i** When you start working with your monitor for the first time you should install the appropriate graphics drivers for your application software. Details of how to do this are provided in the documentation on your screen controller/the associated driver software.

## Operation of the monitor



1 = Power button

2 = Power indicator

## Switching the monitor on/off

The ON/OFF switch (2) is used for switching the monitor on and off.

The power indicator (1) glows green when the monitor and system unit are switched on. The power indicator glows green and flashes when the monitor does not receive any video signal or is in the energy-saving mode. The power indicator goes off when the monitor is switched off.

When you switch on the PC system, you must proceed in the following order:

- ▶ First switch the LCD monitor on with the ON/OFF switch (2).
- ▶ Then switch on the system unit.



If your PC has a power management function (energy-saving mode), you should read the "Notes on power management" of the monitor in this chapter.

## Notes on power management

If your PC is equipped with power management, the monitor can support this function fully. The monitor has a four-stage power management system.

Stage	ON	Standby mode	Suspend mode	OFF mode
Power indicator	glows green	flashes green (1 s)	flashes green (1 s)	flashes green (1 s)
Function	Monitor operating normally	Monitor is dark	Monitor is dark	Monitor is dark
Power consumption	normal < 36 W	reduced to < 5 W	reduced to < 5 W	reduced to < 5 W

If your PC detects inactivity (no input) it sends an appropriate signal to the monitor to reduce the power consumption (energy-saving mode). The power indicator of the monitor changes colour to indicate the status change.

Once an input is made at the PC the screen contents are redrawn and full power is restored.

For detailed information on how energy-saving mode operates refer to the Operating Manual or Technical Manual of your PC.



When the monitor is switched to the energy-saving mode by the power management system a power consumption of up to 5 W is maintained to feed the circuit for redrawing the screen contents.

To completely switch off the power consumption, switch off the system unit or pull the plug of the monitor power cable out of the monitor socket of the system unit.

## Changing the monitor settings

When putting the monitor into operation for the first time, the screen display should be optimally adapted to the screen controller used and adjusted in accordance with your needs.

### Basic monitor settings with the floppy disk supplied

If one of the operating systems Windows for Workgroups, Windows 95/98, Windows NT or OS/2 (with Windows emulation installed) is used, the basic monitor settings can be set with the floppy disk supplied.

- ▶ Insert the supplied floppy disk into the floppy disk drive.
- ▶ Open the *Readme* file on the floppy disk and follow the instructions in the file.

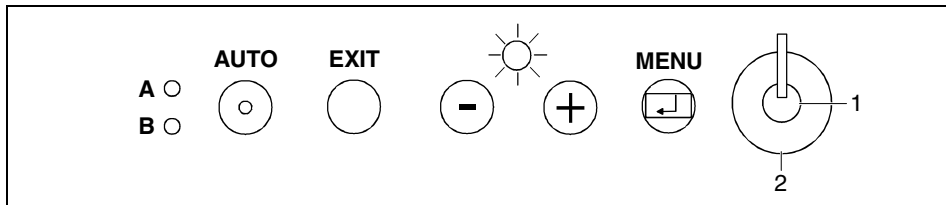
Your monitor should now already be properly adjusted. If none of the above operating systems is used or minor corrections are to be made to the screen display, then change the monitor settings with the OSD menu.

### Monitor settings using the OSD menu

You can use the buttons on the control panel to set the screen display via an integrated OSD menu (On-Screen-Display).



The OSD menu is available in five languages (default setting: English). How you set a different language for the OSD menu is described in the section "Setting the language for the OSD menu".



1 = Power button

2 = Power indicator

The MENU button switches the OSD menu on and selects the displayed function (Symbol or submenu).

You use the - or + buttons to mark the symbol for a function and can then make the settings for the selected function.

Press the EXIT button to quit a submenu or to hide the OSD menu. (The OSD menu is automatically closed if no button is pressed for some time.)

With the OSD menu concealed, you can make the following settings directly:


- Adjust the brightness with the - or + button (*Brightness*).
- Start auto-adjustment of the monitor with the AUTO button (*Auto adjustment*).
- Select the video signal source (analogue (A) or digital (B)) with the EXIT button.

**Carry out auto-adjustment of the monitor for the current resolution**

With the AUTO button you can start the auto-adjustment for the current resolution. During the auto-adjustment the display *Auto adjustment* is shown.

During auto-adjustment the functions *Fine*, *Coarse* and *Position* are carried out (see *Image Lock*, *Horizontal* and *Vertical* adjustment window). For this purpose a screen display must be present which has a few light dots in the first and last column and in the first line. The Windows desktop usually fulfills this condition.

When changing the monitor controller to a mode (resolution and refresh rate) in which the monitor has not been operated up until then, the monitor automatically executes the *Auto adjustment* function.

 Should you be dissatisfied with the results of the auto adjust function, then set the basic setting of the monitor with the floppy disk provided.

**Monitor settings using the OSD menu**

To set the OSD menu, perform the following steps:

- ▶ Press the MENU button to activate the OSD menu.

The main menu appears on the screen with icons for the setting functions.



The last icon set is marked (in this case *Brightness*). At the same time, the corresponding setting window appears.

- ▶ If necessary, use the - or + button to mark another icon, e.g. *Contrast*.

The displayed setting window changes when changing from one symbol to another.

- ▶ Press the MENU button to activate the highlighted icon.
- ▶ Use the buttons - or + (in accordance with the displays in the menu) to make changes.



Depending on the function (in this case *Contrast*), additional adjustment functions are offered.



- ▶ Press the MENU button to select from the displayed adjustment possibilities (in this case *Bright Colors* and *Dark Colors*).
- ▶ Use the - or + button to make the desired setting.
- ▶ Press the EXIT button twice to exit the OSD menu.

All changes are stored immediately.

All modifications are automatically stored if no button is pressed in an active setting window for approx. 3 seconds.

#### Adjusting the brightness

	Setting the brightness of the display ( <i>Brightness</i> )
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#### Adjusting the contrast

	Calling the <i>Contrast</i> setting window
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


#### Setting picture definition and eliminating picture interference

	Calling the <i>Image Lock</i> setting window. This function adapts the monitor to the screen controller of your PC.
<b>Fine</b>	Eliminate picture noise or horizontal lines
<b>Coarse</b>	Eliminate vertical bars

#### Adjusting the horizontal position


	Calling the <i>Position</i> setting window
	Shifting the picture to the left
	Shifting the picture to the right

**Adjusting the vertical position**

	Calling the <i>Position</i> setting window
	Shifting the picture down
	Shifting the picture up

**Activating the factory settings**

Factory settings are available for Image Lock, picture position and colours in the preset operating modes (see table in the chapter "Technical data").


	Calling the <i>Reset</i> setting window
<b>Geometry Reset</b> - NO YES +	- = The user settings for picture definition and picture position are retained. + = The factory settings are activated.
<b>Color Reset</b> - NO YES +	- = The user settings for the colours are retained. + = The factory settings are activated.




If you press down the EXIT button for about 5 seconds, all the settings will be reset to factory settings!

You can use this function when you connect your monitor to another PC or to another monitor controller (graphics card). The monitor then carries out the *Auto adjustment* feature for each new mode.


**Setting colour ratios**

	Calling the <i>Color Temperature</i> setting window
<b>User Adjusted...</b>	Setting user-defined colours: With the submenus <i>R (Red)</i> , <i>G (Green)</i> and <i>B (Blue)</i> you can increase or decrease the corresponding colour ratios (Red, Green, Blue).
<b>Reddish</b>	Selecting reddish colour setting
<b>Bluish</b>	Selecting bluish colour setting

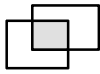
#### Switching full-screen mode on or off

	<p>Calling the <i>Image Size</i> setting window (activate with MENU button). If your graphic card is only capable of displaying a resolution lower than 1280 x 1024, the scaling process of the monitor can extend the addressability to 1280 x 1024 pixels by determining intermediate values (with interpolation). (<i>Expand1</i>) (<i>Expand2</i>)</p>
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
#### Setting language for the OSD menu

	<p>Calling <i>Language</i> setting window (activate with MENU button). You can choose from English (default setting), German, French, Italian and Spanish.</p>
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
#### Setting transparency for the OSD menu

	<p>Transparency for the OSD menu (<i>Halftone</i>) <i>Off</i> = The normal screen display is covered by the OSD menu. <i>On</i> = The OSD menu is transparent.</p>
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#### Setting position for the OSD menu

	<p>Calling the <i>Menu Position</i> setting window With <i>Horizontal</i> you can move the OSD menu horizontally, and with <i>Vertical</i> vertically on the screen.</p>
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#### Setting display time for the OSD menu

	<p>Calling the <i>Display Time</i> setting window You can select between 5, 10, 20 and 200 seconds. If the adjusted time has run out without the settings being saved, the OSD menu is automatically closed.</p>
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#### Displaying the monitor settings

	<p>Displaying horizontal frequency, refresh rate and resolution of the current monitor setting</p>
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#### Selecting video signal source

<p><b>A</b> <input type="radio"/></p> <p><b>B</b> <input type="radio"/></p>	<p>With the OSD menu hidden you can make the following settings with the EXIT button:</p> <p>A: switch on the analogue mode. The monitor processes the signals of the analogue port (VGA/D-SUB).</p> <p>Or</p> <p>B: switch on the digital mode. The monitor processes the signals of the digital port (DVI-D).</p>
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**Locking menu items of OSD menu**

All menu items of the OSD menu except brightness and contrast can be locked to prevent accidental or unauthorised changes to the monitor settings.

- ▶ Press the MENU button of the control panel for at least 5 seconds until the OSD menu disappears.

Locked menu items in the OSD menu are marked with the icon . In the digital mode some applications are locked, e.g.: *Contrast, Image Lock, Position, Reset, Color*.

**Releasing locked menu items of OSD menu**

- ▶ Press the MENU button of the control panel for at least 5 seconds until the OSD menu disappears.

The icon  disappears.

**Notes on ergonomic colour adjustment**

If you select colours for the display in your application programmes, take note of the information below.

The primary colours blue and red on a dark background do not produce the minimum required contrast of 3:1 and are therefore not suitable for continuous text and data entry.

When using several colours for characters and background and giving the primary colours full modulation, you can obtain very suitable colour combinations (see the following table):

Background	Characters							
	black	white	purple	blue	cyan	green	yellow	red
black		+	+	-	+	+	+	-
white	+		+	+	-	-	-	+
purple	+	+		-	-	-	-	-
blue	-	+	-		+	-	+	-
cyan	+	-	-	+		-	-	-
green	+	-	-	+	-		-	-
yellow	+	-	+	+	-	-		+
red	-	+	-	-	-	-	+	

- + Colour combination very suitable
- Colour combination not suitable because colour locations are too close together, thin characters are not identifiable or rigorous focusing is demanded of the human eye.

## Technical data

### Dimensions and weight (LCD monitor)

Visible diagonals:	43 cm
Dot pitch:	0,264 mm
Screen size:	338 ± 3 mm x 270 ± 3 mm
Maximal resolution:	1280 x 1024 pixels
Dimensions (W x H x D):	Monitor incl. Monitor base: 414 mm x 457 mm x 206,9 mm Box: 507 mm x 270 mm x 532 mm
Weight:	Monitor incl. Monitor base: 6 kg Box: 8,6 kg

<b>Accessories:</b>	Power cable (1.8 m) D-SUB data cable (1.8 m) Power adapter
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<b>Storable display modes:</b>	20 (10 of which are preset)
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### Power adapter

Input data	
Rated mains voltage:	100 V - 240 V (±10 %)
Frequency:	50 Hz - 60 Hz (±5 %)
Output data	
Rated voltage:	14,0 V (±5 %)
Output current:	≤3 A

### Electrical data

Video:	analogue, positive, 0.7 V <sub>pp</sub> , 75 Ω
Synchronisation:	Separate Sync. TTL, positive or negative
Horizontal frequency:	31 kHz .... 80 kHz (multi-scanning)
Refresh rate:	56 Hz .... 75 Hz
Maximum pixel rate:	135 MHz
Power supply:	14,0 V (±5 %)
Total power consumption (incl. power adapter):	42 W (maximum), 36 W (nominal) < 5 W in the energy-saving mode (standby mode, suspend mode and OFF mode)

### Environmental conditions

Environment class	3K2, IEC 721
Rated range of operation:	15 °C .... 35 °C
Humidity:	20 % .... 85 %
Limit range of operation:	5 °C .... 35 °C
Humidity:	20 % .... 85 %
Condensation must be avoided.	

## VESA-DDC-compatible VGA interface

Your monitor is equipped with a VESA-DDC-compatible VGA interface. VESA-DDC (Video Electronics Standard Association, Display Data Channel) is used as the communications interface between the monitor and the PC. If your computer is equipped with a VESA-DDC-compatible VGA interface, it can automatically read the data for ensuring optimum operation from your monitor and select the appropriate settings.



If the monitor 4312 FA is not yet displayed in the list of monitors, you can select the following monitor instead:

Siemens or Siemens Nixdorf 4311 FA, 4611 FA 4612 FA or 461 V

## Preset operating modes



The picture position and size have been set to optimum values at the factory for the operating modes listed above. Depending on the screen controller used, it may be necessary to adjust the display position and size. In this case, you can change and save the settings (see "Operation of the monitor").

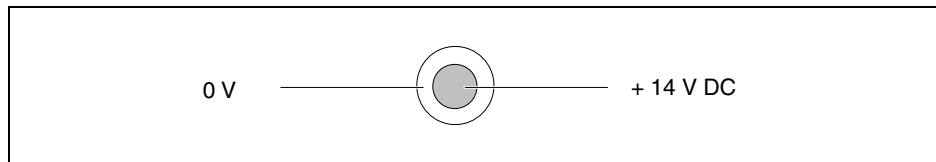
Horizontal frequency	Refresh rate	Screen resolution
31,47 kHz	70.00 Hz	640 x 350
31,47 kHz	70.00 Hz	720 x 400
31,47 kHz	60.00 Hz	640 x 480
37,50 kHz	75.00 Hz	640 x 480
37,88 kHz	60.30 Hz	800 x 600
46,87 kHz	75.00 Hz	800 x 600
48,36 kHz	60.00 Hz	1024 x 768
60,02 kHz	75.00 Hz	1024 x 768
60,00 kHz	60.00 Hz	1280 x 1024
79,98 kHz	75.00 Hz	1280 x 1024

For ergonomic reasons, a screen resolution of 1024 x 768 pixels is recommended. Because of the technology used (active matrix) an LCD monitor provides a totally flicker-free picture even with a refresh rate of 60 Hz.

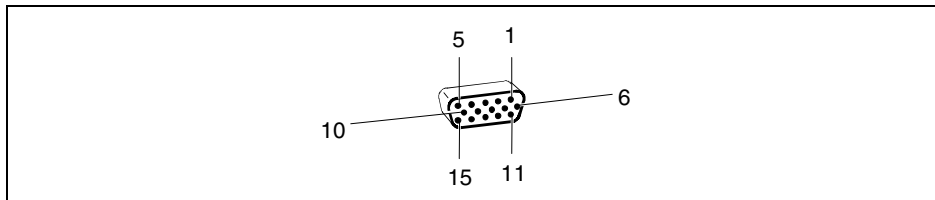


Because of the technology used (active matrix) an LCD monitor provides a totally flicker-free picture even with a refresh rate of 60 Hz.

## Power supply plug



## Pin assignment D-SUB



Pin	Meaning
1	Video input red
2	Video input green
3	Video input blue
4	Ground
5	DDC ground
6	Red video ground
7	Green video ground
8	Blue video ground

Pin	Meaning
9	no pin
10	Sync. ground
11	Ground
12	DDC-Data
13	H. sync
14	V. sync
15	DDC Clock

## Trouble shooting

Should an error occur, first check the following points. If the distortion is still not eliminated, the monitor should, if possible, be checked on another PC and/or with another data cable.

If you cannot solve the problem, contact our customer service centre.

### The display is too small or not centred

The monitor recognises an undefined mode (see "Technical data").

- ▶ Adjust the position and the size of the display and save your settings (see "Operation of the monitor").

### No display (power indicator does not light)

- ▶ Check whether the monitor is switched on.
- ▶ Check whether the power cable is connected properly to the power adapter and to the system unit and whether the power adapter cable is connected properly to the monitor.
- ▶ Check whether the mains socket is live.



**No display (power indicator lights)**

- ▶ Check whether the system unit is switched on.
- ▶ Check whether the data cable for the monitor is correctly attached to the monitor and the monitor port on the system unit.
- ▶ Press any key on the PC keyboard - the PC may be in energy saving mode.
- ▶ Alter the brightness and/or contrast until you get a picture.

**Picture disturbances (vertical and horizontal lines, picture noise)**

- ▶ First in the *Image Lock* setting window, set the *Coarse* function to remove any vertical bars.
- ▶ Then set the *Fine* function in the *Image Lock* setting window to eliminate the picture noise or the horizontal lines.



If one of the operating systems Windows for Workgroups, Windows 95/98, Windows NT or OS/2 (with Windows emulation installed) is used, the monitor can be adjusted with the floppy disk supplied.

**Permanently unlit or lit pixels**

The standard of production techniques today cannot guarantee an absolutely fault-free screen display. A few isolated constant lit or unlit pixels may be present. The maximum permitted number of pixels faults is stipulated in the stringent international standard ISO 13406-2 (Class II).

Example: a 17" flat-screen monitor with a resolution of 1024 x 1280 has 1024 x 1280 = 1310720 pixels. Each pixel consists of three subpixels (red, green and blue), so there are about 4 million dots in total.

According to ISO 13406-2 (Class II), a maximum of 6 pixels and 7 subpixels may be defective, i. e. a total of 25 faulted dots. This corresponds to approx. 0,00062 % of the entire screen surface!

The flat screen monitors from Fujitsu Siemens Computers are typically considerably better than requirements defined in this standard.

**The screen becomes darker**

The background lighting has a limited lifetime. If your monitor display should become too dark, the background lighting will have to be exchanged. Please contact our customer service centre.







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## TCO'99



### 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.





## TCO'99

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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  
Email (Internet): [development@tco.se](mailto: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 <sup>1)</sup> 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 <sup>2)</sup>

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 <sup>2)</sup>

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 <sup>2)</sup>

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.

<sup>1)</sup> Bio-accumulative is defined as substances which accumulate within living organisms.

<sup>2)</sup> Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

