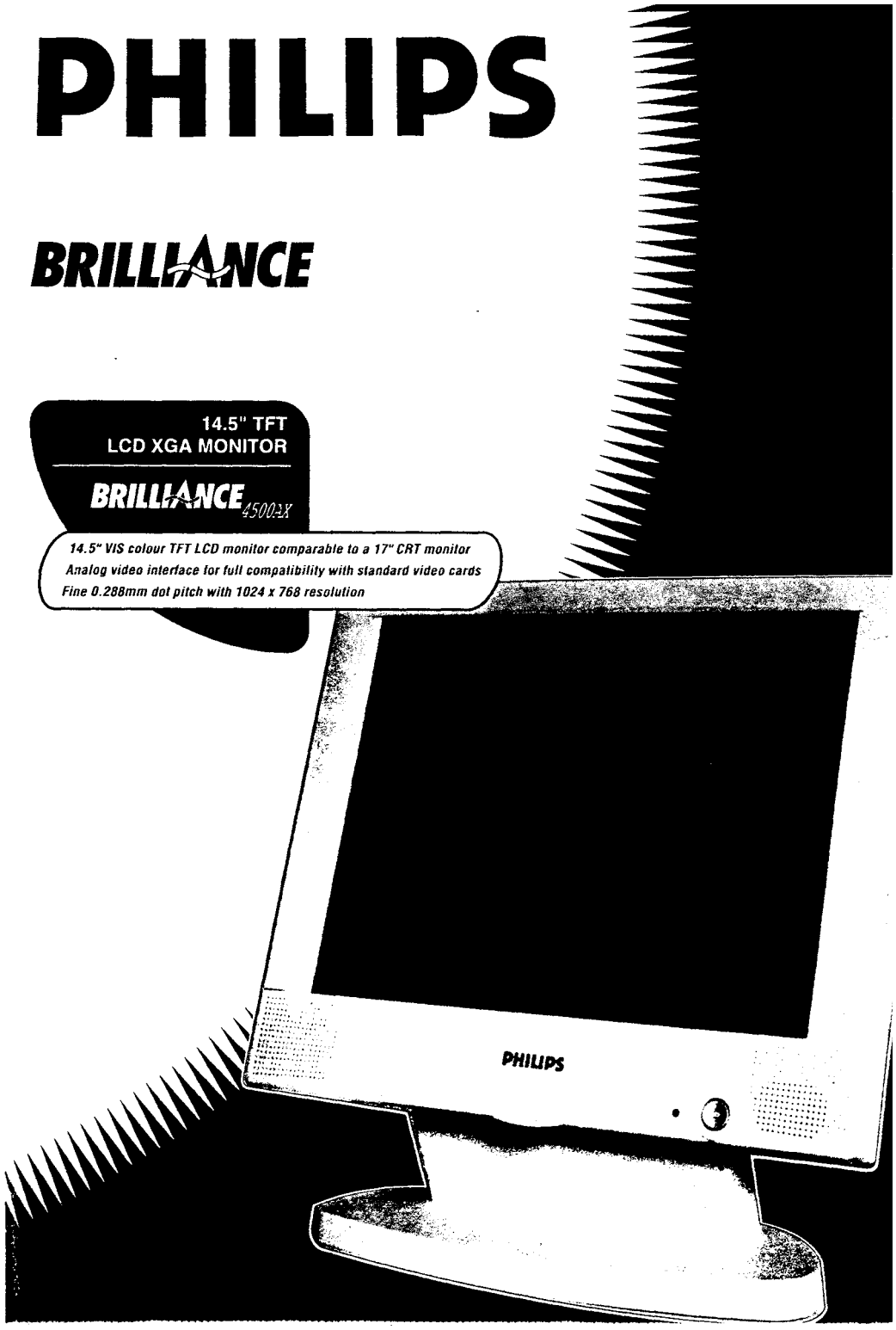
PHILIPS

BRILLIANCE

14.5" TFT
LCD XGA MONITOR

BRILLIANCE 4500X

14.5" VIS colour TFT LCD monitor comparable to a 17" CRT monitor
Analog video interface for full compatibility with standard video cards
Fine 0.288mm dot pitch with 1024 x 768 resolution



Attention!

When setting up your video card for use with the Philips Brilliance 4500AX.

Please

DO NOT USE INTERLACED MODES

An interlaced video signal may result in image distortion but will not cause permanent damage to the monitor.

PHILIPS

Contents

Safety Instructions

The following section describes instructions that should be followed to prevent any danger to users and others as well as damage to property.

DANGER: Neglecting to follow instructions with this symbol may lead to death, serious injury or other damage.

CAUTION: Neglecting to follow instructions with this symbol may lead to injury or material damage only.

Cautions:

- If a malfunction occurs, immediately turn off the power switch, unplug the AC cord, and consult your service representative.
- Do not connect the LCD Monitor to a power source with a voltage other than the one indicated, doing so could result in fire or electrical shock.
- Usage of outlets and wiring that causes the rated voltage to be exceeded should be avoided. If the rated voltage is exceeded through the use of a multiple plug or other device, it could lead to fire caused by overheating.
- Do not damage, modify, place near a heating device, bend sharply, twist, pull, place heavy objects on or bundle up the power cord.
- Failure to insert the power plug and AC adapter in securely could lead to electrical shock or overheating.
- Do not use damaged plugs or loose outlets.
- Do not remove any screws, or disassemble or modify the LCD Monitor, doing so could result in a fire or electrical shock hazard.
- Do not insert or remove the power plug with wet hands, doing so could lead to electrical shock.
- If dust collects on the power plug, humidity and other factors could cause bad insulation, leading to fire. Remove the plug and wipe it clean with a dry cloth.
- In case that substances get inside the LCD Monitor, immediately turn off the power switch, unplug the AC cord, and consult your service representative.

Cautions

- Using the AC adapter with any device other than the LCD Monitor could lead to smoke emission.
- Pulling the power cord could damage the cord and lead to fire or electrical shock.
- Do not place the LCD Monitor in an unstable location, doing so could injure you by falling down.
- Do not move the LCD Monitor with the power plug inserted, doing so could damage the power cord and lead to fire or electrical shock.
- If the power cord is damaged, immediately remove the power plug and consult your service representative.
- When not using the LCD Monitor for an extended period of time, such as when you are away on a trip, unplug the power cord for safety.
- Do not close the holes for ventilation, doing so could lead to fire.
- Do not place the LCD Monitor in a highly humid or dusty location, doing so could lead to fire or electric shock.
- Always turn the volume to low before attaching and using the headphones, then turn it up slowly to the optimum level.
- Attaching the headphones without checking if the setting is high could lead to ear damage.
- Do not use the headphones for an extended period of time at a loud volume.
- If you become used to the loud volume and raise it even higher, it could adversely affect your hearing. Lower the volume or stop use if you notice anything wrong with your hearing.

Other Cautions:

Power Supply

- Always use the special AC adapter supplied with the LCD Monitor.
- When not using the LCD Monitor for an extended period of time, remove the AC adapter plug from the AC wall outlet.
- A marginal amount of electricity of 1 W or less will be consumed even when the power switch is turned off or when the AC adapter DC plug is disconnected from the display unit.

LCD Panel

- Do not expose the LCD panel to direct sunlight or ultraviolet light.
- Do not apply excessive force on the display surface.
- Do not press sharp or pointed objects against the display.

Cleaning

- Wipe the cabinet using a well-wrung soft cloth soaked in water or a mild cleaning agent.
- Avoid the use of solvents such as benzene or thinner.
- If using chemically-treated wipe cloths, follow the instructions for use.

Surface of the Display

- Soak a soft cloth such as one made of gauze in isopropyl alcohol or ethyl alcohol and lightly wipe the surface of the display. Avoid dusting it or wiping it with a cloth dampened with water.
- Do not use ketone substances such as acetone or solvents such as xylene or toluene to clean the display.

Installation Locations

Avoid Heat and Cold Extremes:

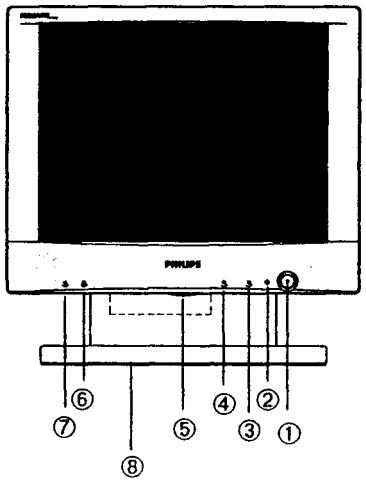
- Do not store or use the LCD Monitor in locations exposed to heat, direct sunlight, or extreme cold.
- Avoid moving the LCD Monitor between locations with large temperature differences. Choose a site falling within the following temperature and humidity ranges.
  Temperature: 5-35° C
  Humidity: 20-80% RH
- Do not subject the LCD Monitor to severe vibration or high impact conditions. Do not place the LCD Monitor inside a car trunk.
- Take care not to knock this product off the top of your desk or drop it when operating or transporting it.
- Do not store or use the LCD Monitor in locations exposed to high humidity or in a dusty environment. Also, do not allow water or other liquids to spill on or into the LCD Monitor.
- Do not place the LCD Monitor near a television or radio receiver, or other equipment radiating RF energy fields.
- If the rotating mechanism does not operate properly, wipe off the rubber on the underside of the stand base. The tilt swivel stand of the LCD Monitor is equipped with a rotating mechanism which may not work properly if dust and other dirt adheres to the rubber on the underside of the stand base, depending on the installation site. If necessary, carefully remove all the dust and other dirt adhering to the rubber.

Accessories

1. AC adapter
2. AC cord
3. Signal Cable
4. Audio Cable
5. Tilt Swivel Stand
   (the main unit and stand are connected at shipment)
6. Operating Instructions

Names of Parts and their Functions

Front:



①. Power switch

②. Power indicator
* Lights green or orange when the power is connected.

③. LCD contrast control
* Turn up to increase the contrast.
* Turn down to decrease the contrast.

④. Brightness switch
* Allows display brightness to be adjusted.

⑤. Adjustment switch cover
* Open this cover and use the buttons inside to make various adjustments.

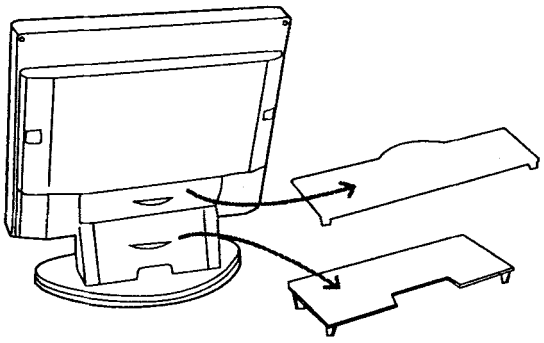
⑥. Headphone jack
* Connect a 32 ohm headphone.

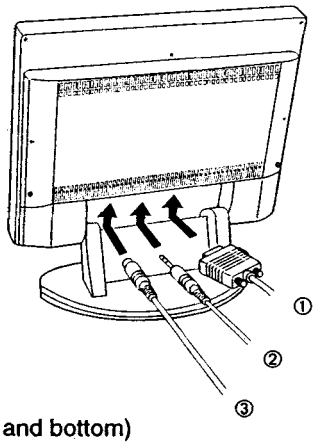
⑦. Volume control

⑧. Tilt swivel stand
* Tilts forward and back 0-30°.
* Rotates 120° to the left and right.

Caution:
Depending on the installation site, dust and other dirt may adhere to the rubber on the underside of the stand base, preventing it from working properly. If this happens, remove all the dust and other dirt from the rubber.

Rear:





- Cable cover (top and bottom)
  * Covers the cable after it has been connected.
  * When removing the covers, start with the top cover, followed by the bottom.
  * When attaching the covers to the stand, start with the bottom cover, followed by the top.

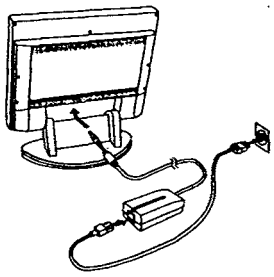
①. RGB signal input connector (RGB IN)
  * Connect the video signal cable here.

②. Audio input jack (LINE IN)
  * Connect the supplied mini plug cord here.

③. DC IN jack (DC IN)
  * Connect the supplied AC adapter DC plug here.

Connection

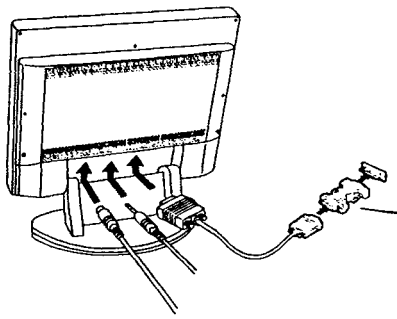
Connecting the Power Source



1. Insert the AC plug into the AC adapter
2. Insert the AC plug into the wall outlet.
3. Connect the DC plug to the LCD Monitor.
4. Insert the DC plug of the supplied AC adapter into the DC IN Jack of the LCD Monitor.

Caution: Never use an AC adapter other than the one supplied.

When using a Macintosh Computer

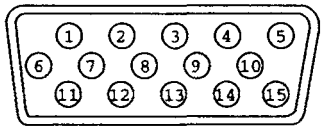


* Connect by using a conversion adapter (not included) as shown.

Caution: When connecting the LCD monitor to the Macintosh computer, use a Macintosh adapter purchased separately from a retail outlet.

Connector Pin Configuration

* Signal Input Cable

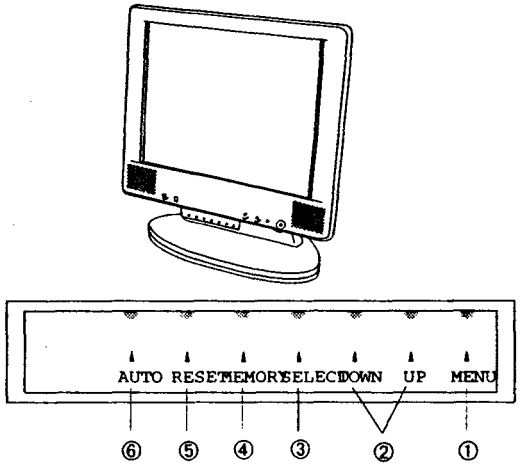


* 15-pin mini D-sub (male)

Pin Number	Signal name	Pin Number	Signal name
1	Red Image Input (R)	9	Disconnected (NC)
2	Green Image input (G)	10	Gound (GND)
3	Blue Image input (B)	11	Ground (GND)
4	Disconnected (NC)	12	DDC data (SDA)
5	Disconnected (NC)	13	Horizontal synchronizing signal (HSYNC)
6	Ground (GND)		
7	Ground (GND)	14	Vertical synchronizing signal (VSYNC)
8	Gound (GND)	15	DDC data clock (SCL)

Operation

Names of Adjustment Buttons and their Functions



①. Displays/clears menus of items to be adjusted.

②. Moves values and items to be adjusted up/down.

③. Allows the selection of items.
* All adjustments are undertaken using the on-screen menu.

④. Stores adjustments.
* Storage Function for Adjustment.
* Adjustments and changes that have been made can also be stored.

⑤. Initializes the stored items.

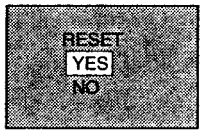
⑥. Starts the automatic adjustment function.
* The LCD Monitor automatically determines the display mode, in accordance with the synchronizing signals of the computer being used.

Storing

* Up to seven adjustments can be stored using the storage function. The adjustments can be called up in accordance with the input synchronizing signals.
* A total of seven adjustments can be stored as user defined mode by pressing the [MEMORY] button after the adjustments have been made.
* If more than seven adjustments have been stored, older adjustments will be overwritten.

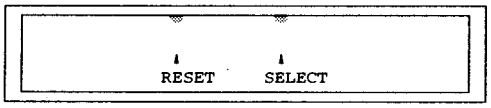
Recalling a factory setting

* Press the [RESET] button.
  The [RESET] screen appears. Select YES to initialize the factory setting for the current display mode.

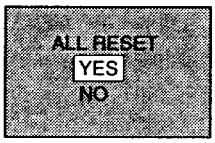


Recalling All factory settings

* Keeping the [SELECT] button pressed, press the [RESET] button.



* [ALL RESET] screen appears. Select YES to initialize all factory settings.

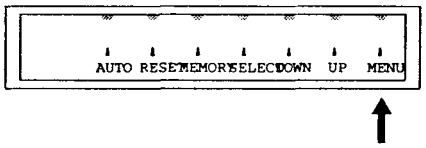


- The on-screen menu characters may flicker slightly. This is not a malfunction.

Adjustment

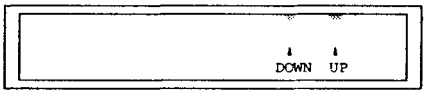
(I) General Adjustment :

- Enter the adjustment mode.
- By pressing [MENU] button.

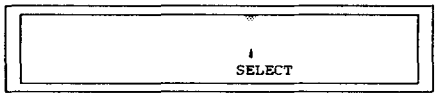


(II) Select the item to be adjusted.

- Press the [UP] and [DOWN] buttons to move the cursor up and down among the items to be adjusted.



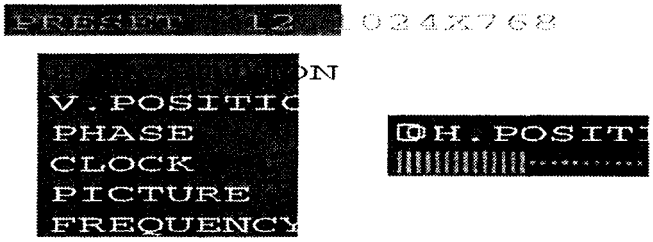
(III) Press the [SELECT] button to select the item to be adjusted.



Perform the adjustment

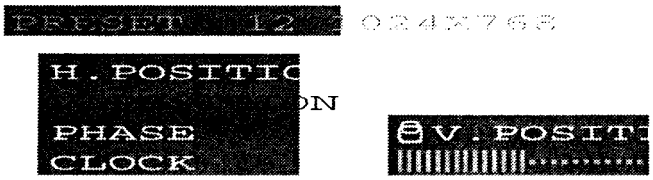
H.POSITION: Moves the screen to the left and to the right.

- [UP] button —Scrolls the screen to the right.
- [DOWN] button —Scrolls the screen to the left.
- Confirm the adjustment by pressing the [MENU] button.
- To store further adjustments, press the [MEMORY] button.



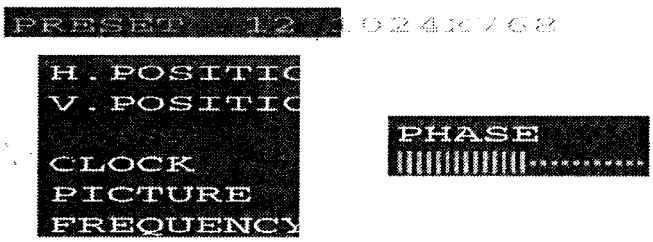
V.POSITION: Moves the screen up and down.

- [UP] button—Scrolls the screen up.
- [DOWN] button—Scrolls the screen down.
- Confirm the adjustment by pressing the [MENU] button.
- To store further adjustments, press the [MEMORY] button.



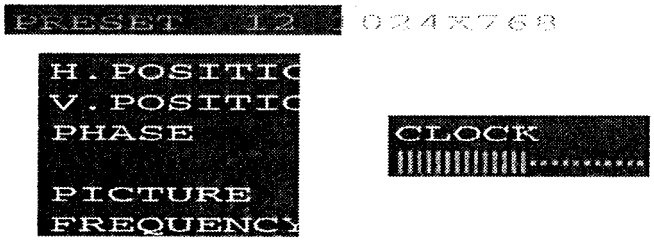
PHASE: Clock phase adjustment (adjust when characters and other items displayed flicker).

- Adjust to reduce the flickering (blurring) of characters to a minimum.



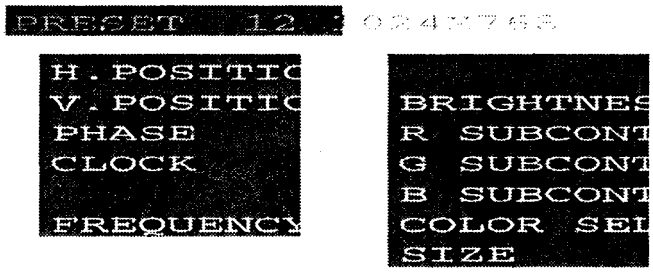
CLOCK: Allows adjustment of the horizontal synchronizing clock value. (Adjusted for the factory setting.)

- In some cases, there may be some vertical flickering even when PHASE is adjusted. This is because the personal computer image signal timing is off and does not correspond to the standard timing indicated in p. 21-22. You can correct the problem by adjusting the CLOCK value. Refer to the page on "CLOCK Adjustment" concerning how to perform the adjustment.



PICTURE: Adjusts the screen.

- Select the item to be adjusted.
- By moving the cursor using the [UP] and [DOWN] buttons.
- Confirm the adjustment by pressing the [MENU] button.
- To store further adjustments, press the [MEMORY] button.



Perform the adjustment

CONTRAST

- Standard adjustments have been made to the LCD Monitor as the factory setting, however, depending on the computer connected, color blurring may result and the correct gradations may not be achieved. If this happens, adjust the contrast.

BRIGHTNESS

- Adjust the brightness of the screen.
- (The optimum value has been selected as the factory setting.)

R.G.B SUBCONTRAST

- Adjust the contrast of each RGB color to change the tones.
- (The optimum value has been selected as the factory setting.)

COLOR SELECT

- COLOR 1 and COLOR 2 are reserved for future models which allows users to select:
  COLOR 1 for 16,000,000 colors display
  COLOR 2 for 260,000 colors display
  The current setting is 260,000 colors for both COLOR 1 and COLOR 2.

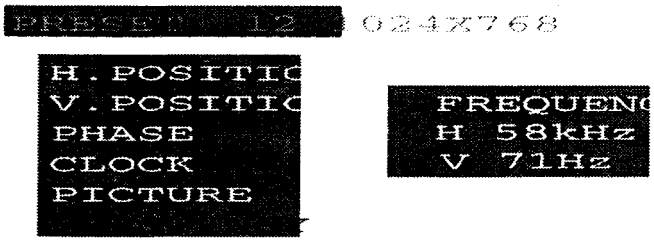
SIZE

- Set the display size when the display mode is not 1024x768.
- NORMAL shows the displayed picture element at a size matching that of the LCD screen picture element.
- EXPAND shows it at a size that fills the entire screen. (As the displayed picture element is enlarged, there may be some distortion of characters.)
- EXPAND has been selected as the factory setting.

normal

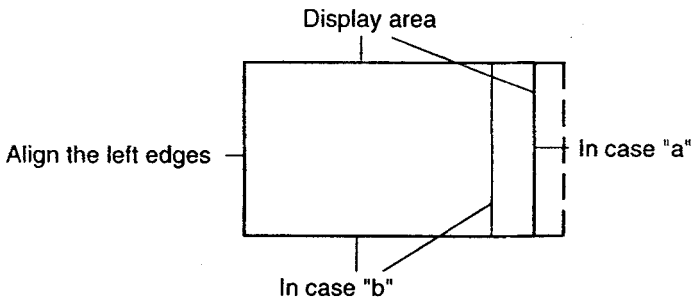
FREQUENCY:

- Displays the frequency and polarity (P:positive N:negative) of the horizontal and vertical synchronizing signals from the connected video card.



Clock Adjustment

* Display a screen which consists entirely of background color, such as Windows software. Select H.POSITION from the menu and adjust the left and right positions so that the left edge of the background aligns with the left edge of the display area.



1. Make the following adjustments in accordance with the right edges.

(a) When the right edge of the background is beyond the right edge of the display area and is not displayed.
*Adjust the clock to reduce its value. Repeat adjustment of the left and right positions and the clock until the background fills the entire display.

(b) When the right edge of the background is displayed inside the display area.
*Adjust the clock to increase its value. Repeat adjustment of the left and right positions and the clock until the background fills the entire display.

2. If there is flickering of characters and other items across the entire screen after adjustment is completed, adjust PHASE.

3. After performing the adjustment, press the [MEMORY] button and store the adjustment.

Automatic adjustment function

* Depending on the video card used, adjustments to [H.POSITION], [V.POSITION], [CLOCK], and [PHASE] may be necessary, even if they have been preset. The same adjustments are required when using the display with input signals that have not been preset. These adjustments can be made manually on the on-screen menu, but can be performed more efficiently with the automatic adjustment function.

The automatic adjustment function is operated following the steps below.

1. Input a signal with an image that fills the entire screen and display it. (Use as bright an image as possible.)
2. Press the AUTO button without the on-screen menu displayed. (The screen will disappear for a while.)
3. Check that [H.POSITION], [V.POSITION], [CLOCK], and [PHASE] are at their correct settings and make any fine adjustments using the on-screen menu if necessary.
4. Press the [MEMORY] button and store the adjustment.

* **This function may not operate correctly, depending on the image input when the adjustments are made. If this is the case, use the on-screen menu to make adjustments.**
* **With input signals that have not been preset, signals other than those with a resolution of 640 x 400, 640 x 480, 800 x 600, and 1024 x 768 cannot be adjusted correctly. Furthermore, "interlaced" signals also cannot be correctly displayed.**
* **If the automatic adjustments do not operate correctly and the screen cannot be displayed, press the RESET button followed by the SELECT button to return to the screen before the automatic adjustments.**

Power Management Function

* The LCD Monitor conforms to the DPMS standards of VESA.
* In order to operate the electricity saving function of the LCD Monitor, the video card and the computer must also meet the DPMS standards of VESA.

* VESA: Video Electronics Standards Association
* DPMS: Display Power Management Signaling

The LCD Monitor changes to the modes indicated in the following table, depending on the input signal.

DPMS Mode	Screen Status	LED Color	Electricity Consumption	Recovery Time	Horizontal Sync	Vertical Sync
ON STATE	Display Status	Green	Normal	Not applicable	Yes	Yes
STANDBY	No display	Orange	3.0 W or less	Within 1 second	No	Yes
SUSPEND	No display	Orange		Within 1 second	Yes	No
OFF STATE	No display	Orange		Within 1 second	No	No

***In the STANDBY, SUSPEND, and OFF STATE described above, the audio function is also off.**

Audio

Audio Function

- The speakers allow you to enjoy music and other sounds through connection to the sound output terminal of computers and audio equipment.

Connection with Computers and Audio Equipment

- Use the supplied mini plug cord to connect the display to the audio sound output of computers and audio equipment.

Headphone Use

- Connect the headphone to the headphone jack (mini jack).

Volume

- Adjust the speaker and headphone volume with the volume control.
- Turn the volume control to low before using the headphones, then turn it up slowly to the optimum level.

Notes:

- Enjoy the display at an appropriate volume, not too loud for your ears and not disturbing to those around you. Be careful not to turn up the display volume too high when listening without any break for an extended period of time.
- Lower the volume or stop use if you notice anything wrong with your hearing.
- Your ears can adapt to loud sounds if you listen to them without any break. If you become used to the loud volume and raise it even higher, it could adversely affect your hearing. Keep the volume down, and be careful not to raise it too high.
- When adjusting the volume, turn the volume to low, then turn it up slowly to the optimum level.
- After adjusting the volume to the appropriate level, use that level as a guide to ensure that you do not turn it up too high.
- Turn the volume control to low when you are not using the audio function.
- Do not turn the display power switch on or off if a signal is input in the audio input connector of the display.

Caution: Connection to headphones with remote controller functions may not always be possible.

DDC

* DDC (Display Data Channel) is a signaling standard established by VESA to realize plug and play performance for displays and personal computers. It allows the recreation of an optimum display, exchanging display-related data concerning items such as resolution between the display and the personal computer. In order to make use of this function, your computer must be designed for DDC.

* There are several different types of DDC; DDC type varies according to factors such as the communications system. The LCD Monitor has been designed for DDC1 and DDC2 LEVEL B.

Preset Timing

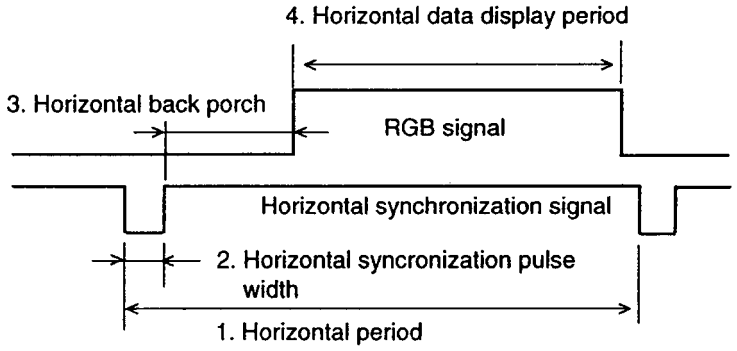
The following 13 timings have been stored in the factory setting.

Preset Number	1	2	3	4	5
Data Segment	VGA	VGA	VESA	VESA	MAC
Displayed Picture Element	640x480	640x400	640x480	640x400	640x480
Horizontal Frequency	31.47	31.47	37.86	37.86	35.00
Vertical Frequency	59.94	70.09	72.81	84.13	66.67
Synchronizing Signal Polarity	31.78	31.78	26.41	26.41	28.57
Horizontal Period	3.81	3.81	1.27	1.27	2.12
Horizontal Synchronization Pulse Width	1.91	1.91	4.06	4.06	3.17
Horizontal back porch	25.42	25.42	20.32	20.32	21.16
Horizontal Data Display Period	16.68	14.27	13.74	11.89	15.00
Vertical Synchronization Pulse Width	0.06	0.06	0.08	0.08	0.09
Vertical back porch	1.05	1.11	0.74	1.00	1.11
Vertical back Display Period	15.25	12.71	12.68	10.57	13.71

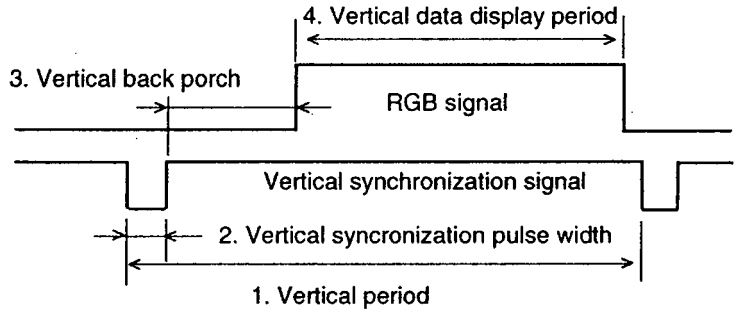
Preset Number	6	7	8	9	10
Data Segment	SVGA	SVGA	SVGA	SVGA	MAC
Displayed Picture Element	800x600	800x600	800x600	800x600	832x624
Horizontal Frequency	46.88	48.88	37.88	35.16	49.72
Vertical Frequency	75.00	72.19	60.32	56.25	74.55
Synchronizing Signal Polarity	21.33	20.80	26.40	28.44	20.11
Horizontal Period	1.62	2.40	3.20	2.00	1.12
Horizontal Synchronization Pulse Width	3.23	1.28	2.20	3.56	3.91
Horizontal back porch	16.16	16.00	20.00	22.22	14.53
Horizontal Data Display Period	13.33	13.85	16.58	17.78	13.41
Vertical Synchronization Pulse Width	0.06	0.13	0.11	0.06	0.06
Vertical back porch	0.45	0.48	0.61	0.63	0.78
Vertical back Display Period	12.80	12.48	15.84	17.07	12.55

Preset Number	11	12	13
Data Segment	VESA	VESA	VESA
Displayed Picture Element	1024x768	1024x768	1024x768
Horizontal Frequency	56.48	48.36	60.02
Vertical Frequency	70.07	60.00	75.03
Synchronizing Signal Polarity	17.71	20.68	16.60
Horizontal Period	1.81	2.09	1.20
Horizontal Synchronization Pulse Width	1.92	2.46	2.20
Horizontal back porch	13.65	15.75	12.80
Horizontal Data Display Period	14.27	16.67	13.33
Vertical Synchronization Pulse Width	0.11	0.12	0.05
Vertical back porch	0.51	0.60	0.50
Vertical back Display Period	13.60	15.88	12.75

● Horizontal Synchronization Period



● Vertical Synchronization Period



Note:

- Display positioning may vary slightly according to the type of video card connected. In this case, make adjustments with the on-screen menu and store them using the [MEMORY] button.
- When entering timing signals other than those shown above, display the screen using the appropriate preset data. The power indicator will then flash green. After adjusting the screen with the on-screen menu or the automatic adjustment function, press the MEMORY button to store the adjustments.
- When using a Macintosh, Sync on Green and Composite Sync entry is impossible.
- VGA 640 x 350 and VESA 640 x 350 are displayed in the 640 x 400 mode.
- With the expand mode for preset number 10 in the above table, 819 x 614 is displayed in stead of the actual 832 x 624 resolution.

Trouble shooting

The LCD Monitor may not always function as you would like. If you suspect something is wrong, check the following.

If the LCD Monitor is not functioning correctly:

1. Stop use of the LCD Monitor, and check the items in the following table, using the problems listed as a guide. Continued use may result in internal adjustment data being lost.
2. Note down the type of operation you were performing and the status of the LCD Monitor immediately prior to the malfunction.

Problem	Item to be Checked
Nothing appears in the display screen.	• Has the LCD contrast control been adjusted correctly? • The display may turn off automatically due to the power saving function of the computer. Press any of the keys of the computer to return it to its original state.
The display screen is too dark.	• Has the LCD contrast control been adjusted correctly? • Has the brightness switch been adjusted correctly?
The display screen has turned off.	• The display may enter a standby or suspended status due to the power saving function of the computer. If it is in such modes, press any key or move the mouse of the computer to return it to its original state.
An after-image appears.	• If an image remains in the screen for an extended period of time, it may be imprinted in the screen and leave an after-image. This usually disappears after a few hours.

Problem	Item to be Checked
An after-image remains after the power has been turned off.	• This is a characteristic of the liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The after-image will disappear after a while.
Green, red, and blue dots remain on the screen.	• The remaining dots are a characteristic of the liquid crystal, and are not a malfunction.

Specifications

(I) Item/Model:

LCD type	:	14.5 inch color TFT Liquid Crystal
Pixel pitch	:	0.288 mm x 0.288 mm
Resolution	:	1024 x 768 pixels
Display Modes	:	1024 x 768, 832 x 624, 800 x 600, 640 x 480, 640 x 400, 640 x 350
Input Terminal/RGB	:	15-pin mini D-SUB connector
Power Source		
Input	:	AC adapter 15 V (DC) 100 - 240 V; 50/60 Hz
Power Consumption	:	33 W
(DC input)		
(During power saving mode):		(3.0 W or less)
Mass (weight)	:	Approx. 5.0 kg (3.2 kg for main unit only)
Dimensions	:	Main Unit
(W x D x H)		364 x 63 x 298 mm 364 x 150 x 368 mm (Including stand)
Operating Environment		
Temperature	:	5 - 35°C
Humidity	:	20 - 80% RH (without condensation)
Input Terminal		
RGB	:	15-pin mini D-SUB connector
Audio Input	:	Stereo, mini jack
Output Terminal		
Headphone	:	Stereo mini M3
Output (rated output)	:	32 ohm 50 mW
Speaker Rated Output	:	Stereo (1 W + 1 W)

- This operating manual is subject to change without notice due to product improvements.
- No part of this operating manual can be reproduced without permission.
- Operating manuals with omissions and imperfections will be replaced.