

Multiscan® Color Computer Display

---

# CPD-1730<sub>ES</sub>

**Power Saving Model**

**Operating Instructions**    page 2

**Mode d'emploi**    page 18

**Multiscan®**

---

# Owner's Record

---

The model and serial numbers are located at the rear of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your dealer regarding this product.

Model No. CPD-1730

Serial No. \_\_\_\_\_

## WARNING

English

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Dangerously high voltage is present inside the unit. Do not open the cabinet. Refer servicing to qualified personnel only.

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. 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 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 the equipment and 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.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

### For the customers in Canada

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

# Table of Contents

---

Features .....	3
Precautions .....	4
Location and Function of Controls .....	5
Connections .....	6
Preset Mode .....	7
Adjustment .....	8
Use of the Tilt-Swivel .....	12
Specifications .....	13
Troubleshooting/Power Saving Function .....	15
Appendix .....	16
Sony Display Memory System .....	16
Sony Trinitron System .....	17

## Features

---

The CPD-1730 is a high resolution computer display designed for use with microcomputers, or computers having analog RGB output.

- Super Fine Pitch Trinitron computer display with an anti-glare dark screen.
- RGB terminal which allows equipment with analog RGB output to be connected.
- Compatible with the PS/2 microcomputers using VGA.
- Multiscan capacity which makes it compatible with a variety of computer graphics standards.

# Precautions

---

## On safety

---

- Operate the unit at 100 to 120 V AC, 50 – 60 Hz.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for several days.
- To disconnect the AC power cord, pull it out by the plug. Never pull the cord itself.
- Keep a vacant space in front of the wall outlet so that you can disconnect the AC power cord.

## On installation

---

- Allow adequate air circulation to prevent internal heat build-up.  
Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in places subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Install this unit away from other units. If you install this unit near other computer equipment, their signals may interfere with one another and the interference may cause disruption in the displays.

## On cleaning

---

### Cabinet:

To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents such as thinner or benzine, or abrasive cleansers since these will damage the cabinet. As a safety precaution, unplug the unit before cleaning it.

### CRT:

A clean soft cloth such as gauze or cotton or lens cleaner paper is recommended for stains on CRT's. Stubborn stains can be removed with those lightly dampened with an alcohol (methyl, ethyl or isopropyl). Other material or liquid may damage the surface of the CRT. Be sure not to put alcohol on the cabinet.

Do not place any liquids or solvents on top of the model. To ensure safety, unplug the unit before cleaning it.

## On repacking

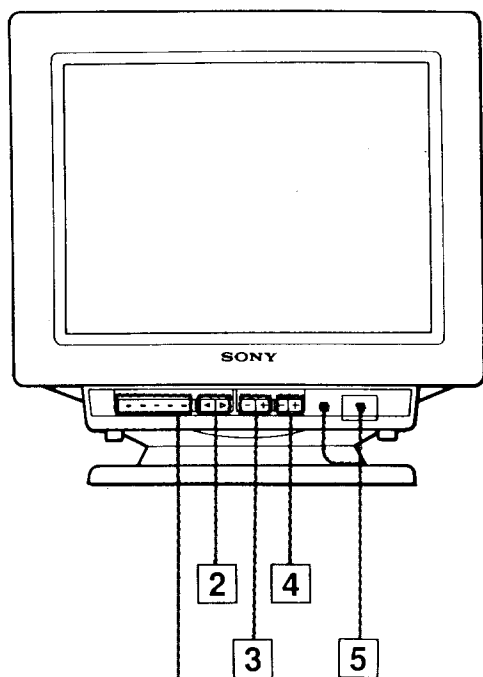
---

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

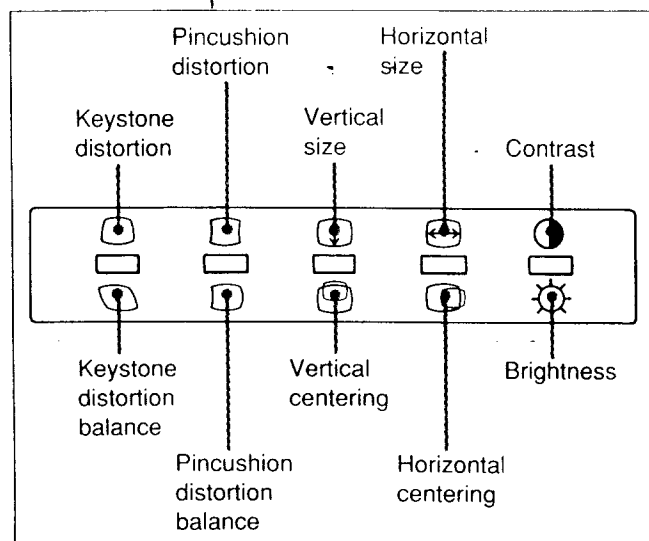
If you have any questions about this unit, contact your authorized Sony dealer.

# Location and Function of Controls

**Front**

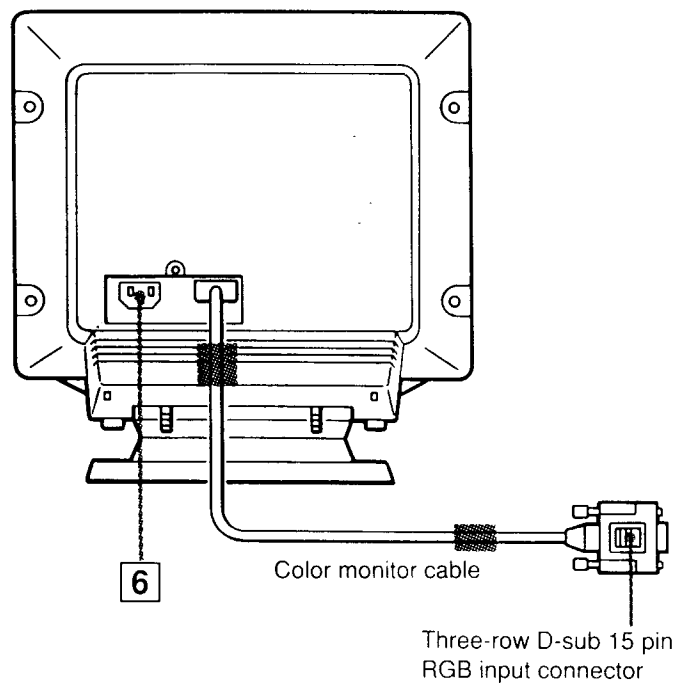


**1 Indicators**



One of the indicators that corresponds to the adjustment item selected by the SELECT buttons [2] lights. While the indicator is lit, adjust the item by using the ADJUST +/- buttons [3] and [4].

**Rear**



**2 SELECT ◀/▶ buttons**

Press to select the adjustment item so that the indicator corresponding to the selected item lights.

**3 ADJUST +/- buttons (blue)**

Adjust the item shown in blue below the indicator selected by using the SELECT buttons [2].

**4 ADJUST +/- buttons (red)**

Adjust the item shown in red above the indicator selected by using the SELECT buttons [2].

**5 POWER switch and indicator**

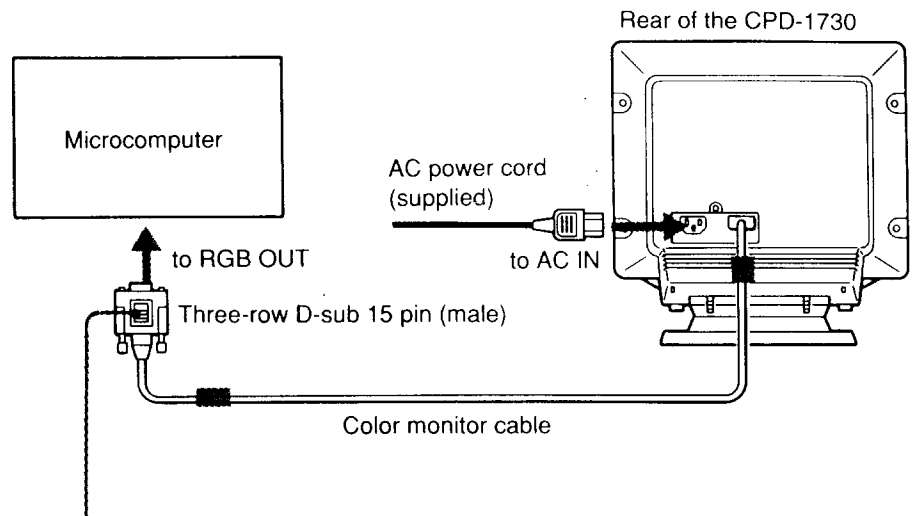
To turn on the power of the unit, press this switch. The indicator lights up. To turn off the unit, press it again.

**6 AC IN connector**

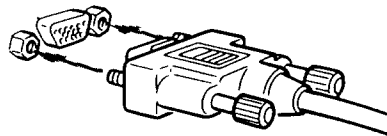
Connect to an AC outlet with the supplied AC power cord.

# Connections

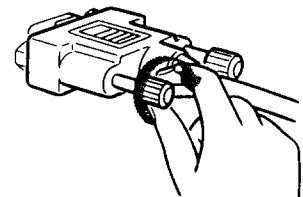
Connect the power cord and the monitor cable.  
Be sure to turn the power of the unit off before making the connection.



**1** Align the plug with the receptacle.

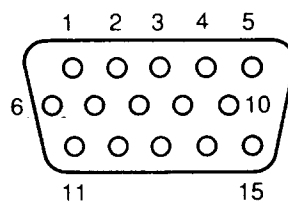


**2** Plug in and tighten the screws by hand.



To disconnect the plug, loosen the screws.

## RGB Input Pin Assignment



1	2	3	4	5	6	7	8
R	G	B	GND	GND	GND	GND	GND
9	10	11	12	13	14	15	
—	GND	GND	—	H SYNC	V SYNC	—	

# Preset Mode

---

The CPD-1730 adjusts automatically the display size and position to the optimum in accordance with the input signal of up to 18 different types.

It has factory-preset setting values for 9 different types of signals. When a computer that issues such signal is connected, the optimum display is obtained without any manual adjustment (preset mode).

The factory-preset values and corresponding computer/work station models (called "preset-type models" in this manual) are as follows:

No.	Display (dots × lines)	Horizontal frequency	Vertical frequency	Scanning mode	Preset type models
1	640 × 350	31.5 kHz	70 Hz	Non-interlace	MCGA <sup>1)</sup>
2	640 × 400	31.5 kHz	70 Hz	Non-interlace	VGA Text <sup>1)</sup>
3	640 × 480	31.5 kHz	60 Hz	Non-interlace	VGA Graphic <sup>1)</sup>
4	1024 × 768	35.5 kHz	87 Hz	Interlace	8514A <sup>1)</sup>
5	800 × 600	48.1 kHz	72 Hz	Non-interlace	SVGA
6	1024 × 768	56.5 kHz	70 Hz	Non-interlace	SVGA
7	1024 × 768	48.8 kHz	60 Hz	Non-interlace	Sony standard
8	640 × 480	35.0 kHz	66 Hz	Non-interlace	Macintosh II <sup>2)</sup> 13"
9	832 × 624	49.7 kHz	75 Hz	Non-interlace	Macintosh II <sup>2)</sup> 16"

<sup>1)</sup> VGA, MCGA, and 8514A are the trademarks of International Business Machines Corporation.

<sup>2)</sup> Macintosh II is the trademark of Apple Computer Inc.

- The buttons on the front panel allow manual adjustment when a signal from equipment other than the preset-type models is input. 18 different manually adjusted conditions are stored in memory, and called back when the same signal is input again so that the optimum display for this signal is obtained automatically.
- The type of input video signal is discriminated according to its signal specifications, such as horizontal frequency or sync polarity. When the signal specifications of the input signals are almost similar, however, these signals may not be discriminated as different.

## Adjustment

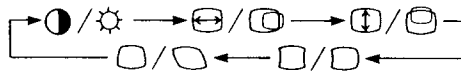
**When a computer or a work station of one of the preset-type models or equivalent (see page 7) is connected, no picture adjustment is necessary.** If you want to adjust the contrast, brightness, picture size and position manually, follow the procedure described below to get the optimum picture.

## Adjusting the Picture Quality

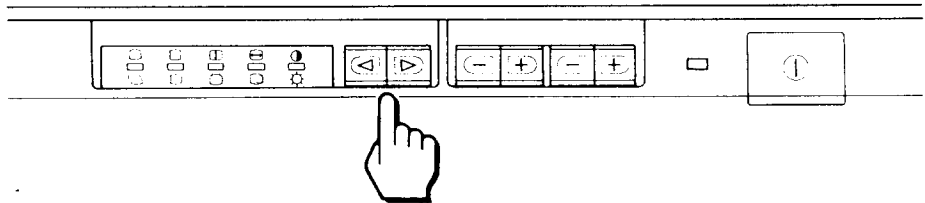
- 1** Turn on the unit, and feed the video signal from the connected computer/work station.

- 2** Press the **SELECT** ◀ and ▶ buttons to choose the adjustment item.  
The indicator corresponding to the selected item lights up.  
When the power is turned on, the ☉/☀ indicator is lit.

Pressing the SELECT ◀ button changes the item in the following order:



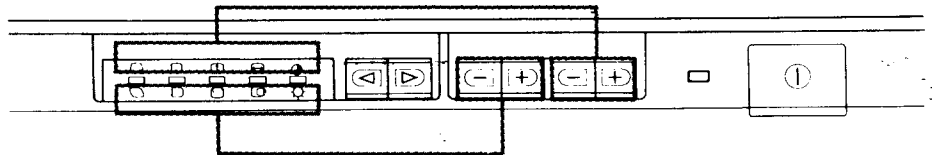
Pressing the **SELECT ►** button changes the item in the reversed order.  
For what the indicators mean and how to make an adjustment, see the next page.





- 3** Observe the picture, and press the red or blue ADJUST +/- buttons while the target indicator is lit.

To adjust the item in red mark shown above the indicator, use the red ADJUST +/- buttons.

To adjust the item in blue mark shown below the indicator, use the blue ADJUST +/- buttons.



If you do not press the SELECT ◀▶ buttons or the ADJUST +/- buttons within 10 seconds, the / indicator lights up again.



## Meaning of the Mark and How to Adjust

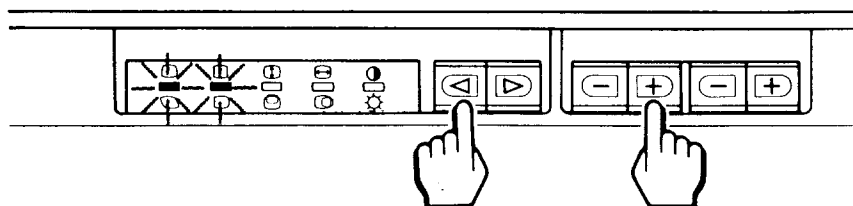
Mark	Meaning	Use the ADJUST +/- buttons in	How to Adjust
	Contrast	Red	Press + for more contrast. Press – for less contrast.
	Brightness	Blue	Press + for more brightness. Press – for less brightness.
	Horizontal size	Red	Press + to enlarge the horizontal size. Press – diminish it.
	Horizontal centering	Blue	Press + to move the picture to the right. Press – to move it to the left.
	Vertical size	Red	Press + to enlarge the vertical size. Press – to diminish it.
	Vertical centering	Blue	Press + to move the picture upward. Press – to move it downward.
	Pincushion distortion	Red	Press + to expand both the right and left sides of the picture. Press – to dent them.
	Pincushion distortion balance	Blue	Press + to distort the picture toward the right. Press – to distort it toward the left.
	Keystone distortion	Red	Press + to enlarge the upper part of the picture. Press – to enlarge the lower part of the picture.
	Keystone distortion balance	Blue	Press + to tilt the picture to the right. Press – to tilt it to the left.

## Adjusting the Rotation

If the picture is rotating, adjust it as follows.

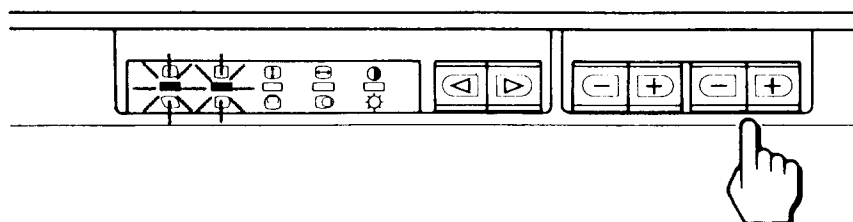
1

While pressing the **SELECT** ◀ button, press the **ADJUST +** button *in blue* to select the rotation of the adjustment items.  
The □/□ and □/□ indicators light up.



2

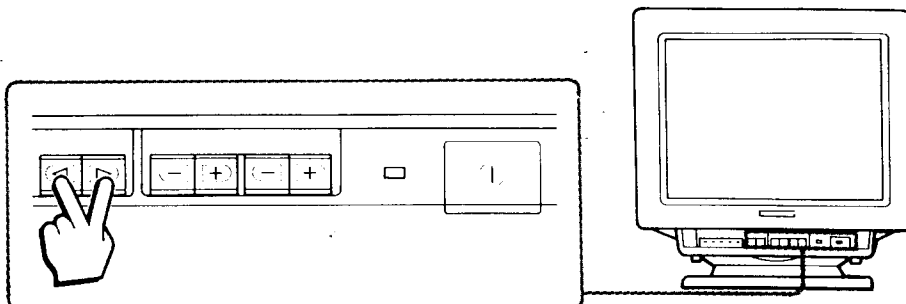
Correct the picture rotation using the **ADJUST +** and – buttons *in red*.  
Press + to rotate the picture clockwise.  
Press – to rotate it counterclockwise.



## Adjustment

### If you want to stop the adjustment

Keep pressing the SELECT ◀ and ▶ buttons simultaneously for 3 seconds.  
The item you are adjusting is reset to the factory-preset condition.



### The indicator blinks when .....

The limit value is achieved by pressing ADJUST + or –.

## Storing the Adjusted Condition

The adjusted display condition is stored in memory:

- when 2 seconds have elapsed after you release the button.
- when 10 seconds have elapsed after the adjustment and the ●/○ indicator is lit.

Listed below are the adjustment items that are stored in memory. A maximum of 18 different sets of adjustment items can be stored.

This will enable the monitor to respond to 18 different input signals and display a well adjusted picture for each one (9 factory preset, 9 user-stored).

Adjustment item	How stored
Horizontal size ☐ Horizontal centering ○ Vertical size ○ Vertical centering ○ Pincushion distortion □ Pincushion distortion balance □ Keystone distortion □ Keystone distortion balance □	<b>They are stored together with the type of the input signal.</b> The adjusted condition for up to 18 different input signals can be stored. The stored condition is called back from memory when the corresponding signal is input, and the optimum display is obtained for this signal.
Contrast ● Brightness ○ Rotation	<b>They are stored independently from input signal.</b>

---

### When the 19th condition is stored

If you attempt to store a 19th set of adjustment items, it will replace the first set of user-stored adjustment items.

---

### If you modify the condition for the preset-type models

It also will be stored in memory. When called back from memory, priority is given to the modified condition. When the stored conditions are cleared, the factory-preset conditions return.

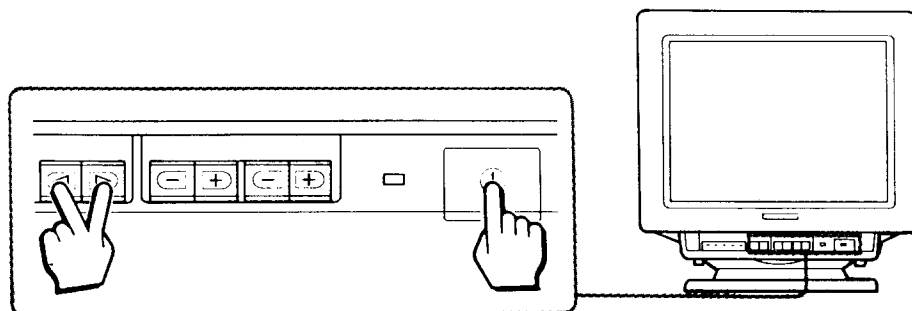
## Resetting Every User-Stored Condition to Factory-Preset Condition

You can clear every user-stored condition at once.  
Clear the user-stored condition when you want to erase unnecessary conditions from memory and store only the necessary conditions again.

---

### Method

Turn off the power and turn it on again while pressing the SELECT ◀ and ▶ buttons simultaneously.



---

### When every condition is cleared

The 5 indicators light up at the same time. The rotation, ● (contrast) and ○ (brightness) also return to their factory-preset conditions.

## Adjustment

---

### Resetting Single User-Stored Condition to Factory-Preset Condition

You can clear an individual user-stored condition, except for the rotation, ● (contrast) and ☉ (brightness).

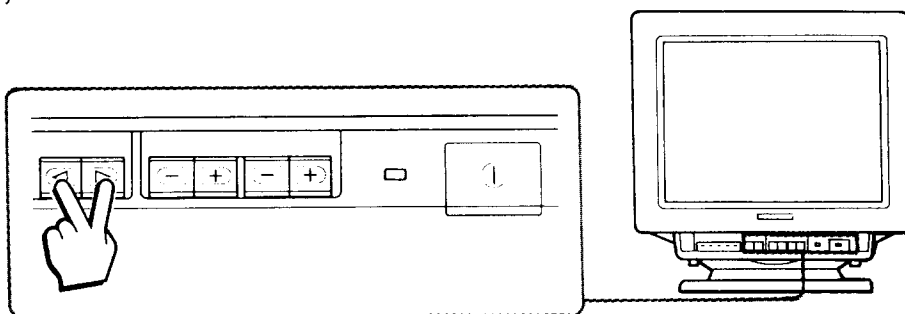
1

Input the signal for the condition you want to reset.

2

Keep pressing the SELECT ◀ and ▶ buttons simultaneously for more than 3 seconds.

The five indicators light up. The condition is reset to the factory-preset condition when you release the buttons.

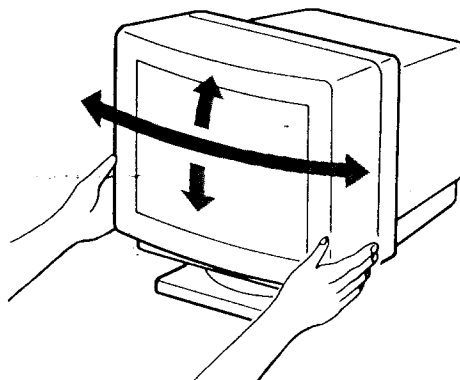
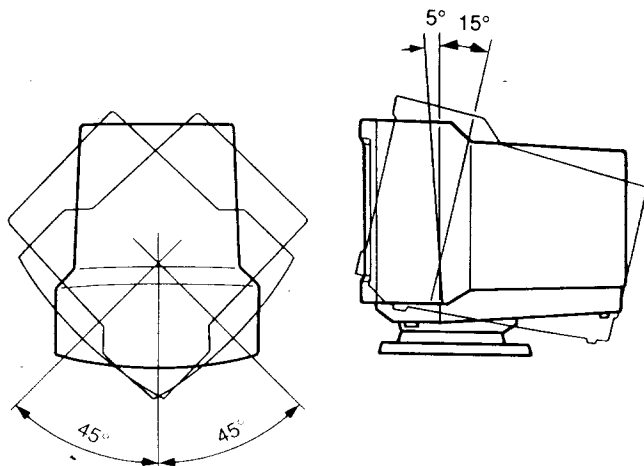


## Use of the Tilt-Swivel

---

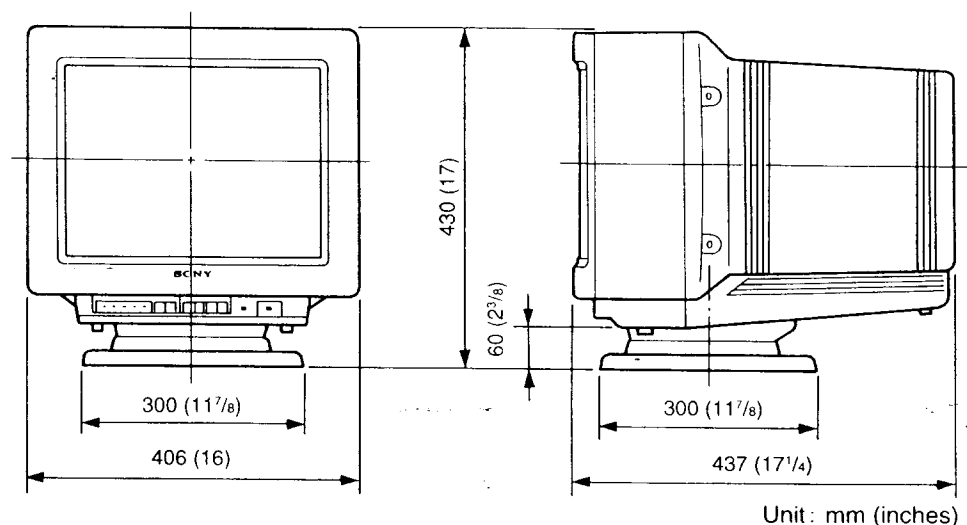
With the tilt-swivel, this unit can be adjusted to be viewed at your desired angle within 90° horizontally and 20° vertically.

To turn the unit vertically and horizontally, hold it at its bottom with both hands as illustrated below.



# Specifications

Computer display	Direct-driven monitor
Picture tube	Super Fine Pitch Trinitron color tube 17 inch (16 V) picture tube measured diagonally 90 degree deflection Anti-glaring dark screen Useful screen 328 mm × 242 mm Phosphor P22 0.25 mm Aperture Grille pitch
Viewable pixels	1024 × 768
Scanning frequency	Vertical sync signal frequency: 55 – 110 Hz Horizontal sync signal frequency: 28 – 58 kHz
Video input signal	Analog RGB positive 0.714 Vp-p/75Ω terminated
Sync input	TTL level Polarity free Composite sync is acceptable at Pin # 13. Sync on green is acceptable.
Power requirements	100 – 240 V AC 50 – 60 Hz, 2.0 – 1.0 A
Dimensions	406 × 430 × 437 mm (w/h/d) (16 × 17 × 17 1/4 inches)



Mass	20 kg (44 lb1oz) Including the tilt-swivel
------	---

Supplied accessory	AC power cord (1)
--------------------	-------------------

Design and specifications subject to change without notice.

# Specifications

## Detailed Timing Specifications of Preset-Type Models

Mode	1	2	3	4	5	6	7	8	9
Equiv. Standard	MCGA <sup>1)</sup>	VGA Text <sup>1)</sup>	VGA Graphic <sup>1)</sup>	8514A <sup>1)</sup>	SVGA	SVGA	Sony Std.	Macintosh II 13"	Macintosh II 16"
Resolution (H × V)	640 × 350	640 × 400	640 × 480	1024 × 768	800 × 600 72 Hz	1024 × 768 70Hz	1024 × 768	640 × 480	832 × 624
Dot Clock (MHz)	25.175	25.175	25.175	44.900	50.000	75.000	64.000	30.240	57.283
Horizontal <sup>2)</sup>									
Hor. freq. (kHz)	31.469	31.469	31.469	35.522	48.077	56.476	48.780	35.000	49.724
H-total	31.778	31.778	31.778	28.151	20.800	17.707	20.500	28.571	20.110
H-Front porch	0.636	0.636	0.636	0.178	1.120	0.320	1.000	2.116	0.559
H-Sync. width	3.813	3.813	3.813	3.920	2.400	1.813	1.500	2.116	1.117
H-Back porch	1.907	1.907	1.907	1.247	1.280	1.920	2.000	3.175	3.910
H-blanking	6.356	6.356	6.356	5.345	4.800	4.053	4.500	7.407	5.586
H-Active (μsec)	25.422	25.422	25.422	22.806	16.000	13.653	16.000	21.164	14.524
Vertical									
Ver. freq. (Hz)	70.08	70.08	59.94	86.96	72.188	70.069	60.000	66.289	74.55
V-total	449	449	525	408.5	666	806	813	528	667
V-Front porch	37	13	10	0.5/0	37	3	3	3	1
V-Sync. width	2	1	2	4	6	6	3	3	3
V-Back porch	60	35	33	20/20.5	23	29	39	42	39
V-blanking	99	49	45	24.5	66	38	45	48	43
V-Active (Lines)	350	400	480	384(768)	600	768	768	480	624
Sync.	External	External	External	External	External	External	Internal	Internal	Internal
H-polarity	(+)	(-)	(-)	(+)	(+)	(-)	N.A.	N.A.	N.A.
V-Polarity	(-)	(+)	(-)	(+)	(+)	(-)	N.A.	N.A.	N.A.
Scanning mode	Non-interlace	Non-interlace	Non-interlace	Interlace	Non-interlace	Non-interlace	Non-interlace	Non-interlace	Non-interlace

<sup>1)</sup> VGA/MCGA/8514A does not include border area.


<sup>2)</sup> Recommended horizontal timing conditions:

Horizontal front porch should be >0.1μsec  
Horizontal sync. width should be >1.0μsec  
Horizontal back porch should be >0.7μsec  
Horizontal blanking width should be >3.8μsec

# Power Saving Function

This monitor is capable of reduced power consumption when used with a computer equipped with VESA Display Power Management Signaling (DPMS). By sensing the absence of the vertical sync signal coming from the host computer, it will reduce power consumption as follows.

State	Normal Operation	Power Saving	
Horizontal sync signal	Present	Present	Not present
Vertical sync signal	Present	Not present	Not present
Power Consumption	100%	approx. 20%	
Required resumption time	—	approx. 3 sec.	

When Power Saving mode is activated, the  indicator will be extinguished, leaving only the Power indicator lit.

## NOTE

The Power Saving function will automatically put the monitor into the Power Saving state if the power switch is turned on without any video signal input. Once the vertical sync is sensed, the monitor will automatically return to its Normal operation state.


This monitor is Energy Star compliant (Power Saving mode < 30W) when used with a US (115 V) or European (220 V) power supply.

The Energy Star emblem does not represent EPA endorsement of any product or service. (EPA = U. S. Environmental Protection Agency)

VESA is a trademark of the non-profit organization, Video Electronics Standard Association.

# Troubleshooting

If you have a problem, check in the table below.

Symptom	Cause	Countermeasure
No picture	The power cord is disconnected.	Connect the power cord.
	The power is turned off.	Turn on the power.
The picture is dark.	The adjusted condition is improper.	Adjust  (brightness) (see page 8) or reset to factory-preset condition (see page 11).
The input signal from an equipment does not appear.	The equipment is disconnected.	Connect the cable.
	You are using a video board other than IBM, Macintosh II or VESA standard.	Use a video board that complies with signal timing and pin assignments on the CPD-1730.

# Appendix

## Sony Display Memory System

The CPD-1730 incorporates the Sony Display Memory System (SDMS) that allows it to discriminate between the types of input signals and to automatically display the optimum picture.

The SDMS has a large-capacity non-volatile memory in which the display conditions for each input signal is stored. When the signal is input, the corresponding display conditions are called back from the memory and the unit is automatically adjusted for the signal.

It also has a video muting function. The function eliminates display distortions that may occur when the input video signal is changed.

Detailed explanation of the SDMS memory and the muting function are given below.

### The SDMS memory

There are two types of memory: factory-preset memory and user memory.

#### Factory-preset memory

As explained in "Preset Mode" on page 7, optimum display conditions for the 9 preset-type models (see the chart to the right) are stored the memory area at the factory. No manual adjustment is necessary for these preset-type models. However, the contents in this memory area can be modified by users. If you modify conditions while the signals are input from a preset-type model, the newly set conditions will be stored in this memory area. Priority is given to the modified conditions.

#### User memory

The manual adjustments and modifications of an existing condition you make and the conditions of unique video signals are stored in this memory area.

They are stored together with the type of the input signal and called back from the memory when the signal is input again.

If you modify the condition already stored in the user memory, only the corresponding values are changed.

The modified condition is not newly added to the memory.

- 1 MCGA
- 2 VGA Text
- 3 VGA Graphic
- 4 8514A
- 5 SVGA 800 × 600
- 6 SVGA 1024 × 768
- 7 Sony Standard
- 8 Macintosh 640 × 480
- 9 Macintosh 832 × 624

- 1
- 2
- 3 The user can store
- 4 the conditions for
- 5 up to 9 unique
- 6 video signals in this
- 7 memory area.
- 8
- 9

The factory-preset conditions can be modified by user input. Upon reset of the system, all the contents of the user modifications are cleared, and reset to the factory-preset conditions.

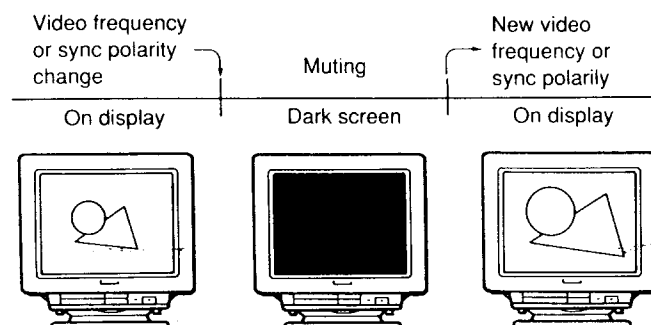
If more than 9 conditions are programmed into the user memory area, the last input condition will replace the first user input.

← The 10th entry moves to 1st location in the user memory.

### Sony Display Memory System memory map

#### The video muting system

If the input video signal changes, the muting circuit senses the change and mutes the screen. This function eliminates scrambled images during the scanning transition.



#### Note

The muting duration differs depending on the time that takes until the newly input signal is stabilized.

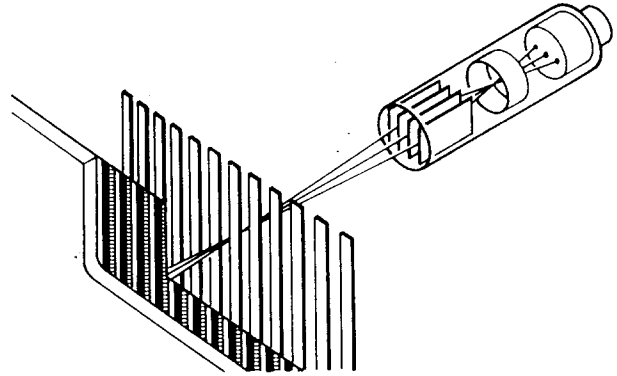
It will last a minimum of 1.5 seconds approximately.



---

## Sony Trinitron System

Sony used its skilled research and development teams to create the first Trinitron TV, introduced 20 years ago. Some 40 million Trinitrons have been sold worldwide so far, and Sony won the Emmy Award for technical quality in 1973. Its Super Fine Pitch (the narrowest dot pitch in the industry for each CRT size class) provides images that are just as sharp and clear as prints, making it most suitable for computer graphics, not to mention TV broadcasts.

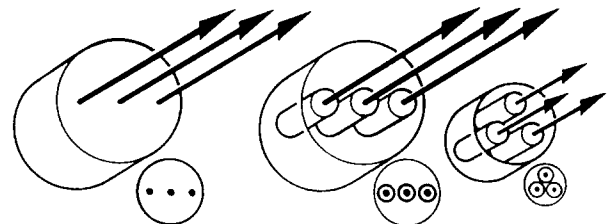


---

### Features

#### Clear, crisp, and easy-to-read screen

Trinitron's black screen increases the contrast by 50 percent, and its 1-gun, 3-beam system with one large lens allows more precise color beam focusing. Thus colors are reproduced more distinctly. Higher contrast also recreates computer graphics and characters that are crisp, clear, and easy to read.



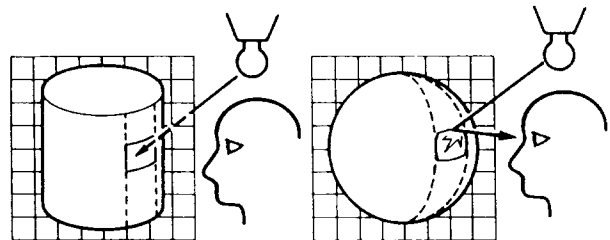
Trinitron's 1-gun, 3-beam System

Shadow mask

---

#### Display with less glare and distortion

Only Trinitron incorporates a cylindrical screen with a completely straight, vertically flat surface. The cylindrical screen delivers a clear undistorted picture, and also eliminates ambient light reflection, for long viewing without fatigue.



Trinitron's Flat Screen

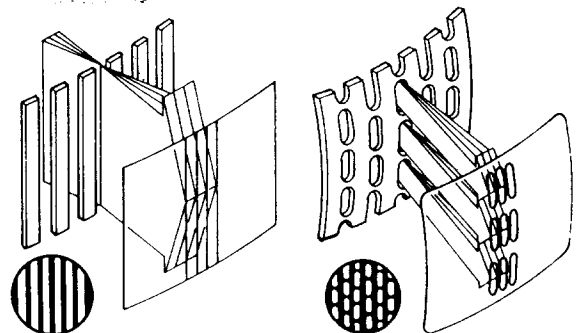
Shadow mask

---

#### Brighter picture and more accurate colors

Sony's exclusive Aperture Grille with long and unbroken slits delivers more color and brightness to the screen. The result is a brighter and more beautiful picture.

This Grille is stabilized with two damper wires. When viewing images with light backgrounds, these wires are sometimes visible as two fine lines.



Trinitron's Aperture Grille System

Shadow mask