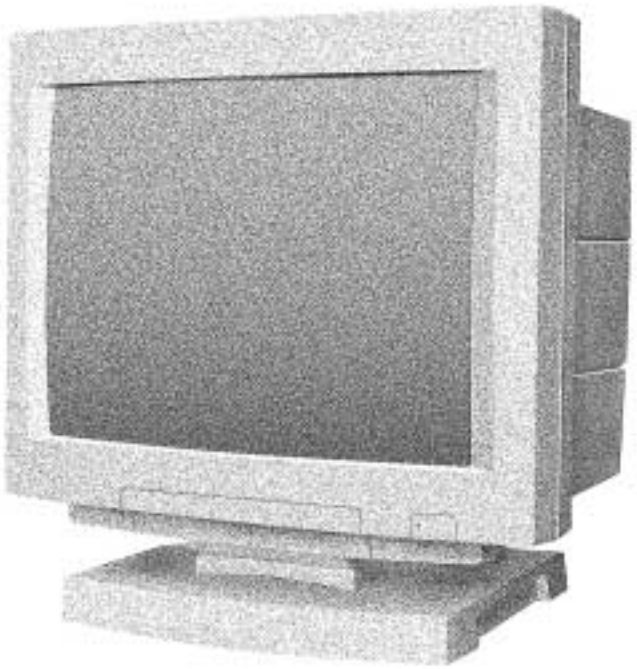
MITSUBISHI

AUTO-SCANNING WITH DIGITAL CONTROL
COLOR DISPLAY MONITOR

Diamond Scan 90ϵ

MODEL **FFT9905SKHFW**

USER'S GUIDE



For future reference, record the serial number of your display monitor in the space below:

SERIAL No. [ ]

The serial number is located on the rear cover of the monitor.

CAUTION

The power cord provided with this monitor is designed for safety and must be used with a properly grounded outlet to avoid possible electrical shock.

Do not remove the monitor cabinet as this can expose you to very high voltages and other hazards.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをしてください。

高調波ガイドライン適合品

RADIO INTERFERENCE REGULATIONS STATEMENT FOR U.S.A.

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.

THIS PRODUCT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS WITH SIGNAL CABLE SC-B102. USE IT TO REDUCE THE POSSIBILITY OF CAUSING INTERFERENCE TO RADIO, TELEVISION, AND OTHER ELECTRIC DEVICES.

NO USER SERVICEABLE PARTS INSIDE. DO NOT ATTEMPT TO MODIFY THIS EQUIPMENT. IF MODIFIED, YOUR AUTHORITY TO OPERATE THIS EQUIPMENT MIGHT BE VOIDED BY FCC.

WARNING!

This product is not designed for use in life support devices and Mitsubishi Electric corporation makes no representations to the contrary. Life support devices are those devices which are used to measure, diagnose, or evaluate the tissue, systems or functions of the human body; or other devices employed to support or sustain life or good health.

MANUFACTURER DECLARATION FOR CE-MARKING:

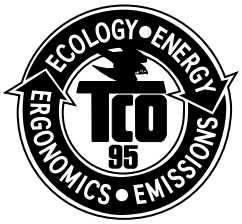
We, Mitsubishi Electric Corp., declare under our sole responsibillity, that this product is in conformity with the following standards:

EN60950
EN55022 Class B
EN50082-1
EN61000-3-2
EN61000-3-3

following the provisions of:

73/23/EEC Low Voltage Directive
89/336/EEC EMC Directive

As an ENERGY STAR Partner, Mitsubishi Electric Corporation has determined that this product meets the ENERGY STAR guidelines for energy efficiency.



Congratulations! You have just purchased a TCO'95 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 to the further development of environmentally-adapted electronic 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 electronic equipment are concerned is that environmentally harmful substances are used both in the products and during their manufacture. Since it has not been possible so far for the majority of electronic equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from both the working and natural environment viewpoints. Since all types of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronic equipment in offices consumes an enormous amount of energy, since it is often routinely left running continuously.

What does labelling involve?

This product meets the requirements for the TCO'95 scheme, which provides for international environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern among other things restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons), and chlorinated solvents. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan, which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display after a certain period of inactivity shall reduce its power consumption to a lower level, in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example in respect of the reduction of electric and magnetic fields, along with physical and visual ergonomics and good usability.

In and after the middle of this page, 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 Unit
S-114 94 Stockholm
Sweden
Fax: +46 8 782 92 07
E-mail (Internet): development@tco.se
Current information regarding TCO'95 approved and labelled products may also be obtained via the Internet, using the address:
http//www.tco-info.com/
TCO'95 is a co-operative project between

Naturskydds föreningen TCO NUTEK Närings- och teknikutvecklingsverket

Environmental Requirements

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

Lead

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

Cadmium

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

Mercury

is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses. The relevant bio-accumulative* TCO'95 requirement states that batteries may no contain more than 25 ppm (part per million) of mercury.

demands require that no mercury is present in any of the electrical or electronic components concerned with the display unit.

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

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

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Note : This manual is designed for use with Diamond Scan 90e color display monitor.

1 INTRODUCTION

Congratulations on your purchase of the Diamond Scan 90e high resolution color monitor. Mitsubishi designed this monitor to provide you with years of reliable trouble-free operation. Once again, thank you for selecting our product and welcome to Mitsubishi!
This guide tells you how to connect, adjust and care for your Diamond Scan 90e monitor. This guide also provides technical specifications and instructions for troubleshooting any basic problems you may experience with your monitor.

1.1 Features

The Diamond Scan 90e is a 49.5cm/19"(46cm/18.0" Diagonal Viewable Image) intelligent, microprocessor-based monitor compatible with most analog RGB (Red, Green, Blue) display standards, including PS/V®, PS/2®, Apple® Macintosh® Centris, Quadra, and Macintosh II family signals.
It provides crisp text and vivid color graphics with VGA, SVGA, XGA (non-interlaced), and most Macintosh compatible color video cards.

- The monitor's wide auto-scanning compatibility range makes it possible to upgrade video cards or software without purchasing a new monitor.

- Digitally controlled auto-scanning is done using an internal microprocessor, for horizontal scan frequencies between 30kHz and 95kHz, and vertical scan frequencies between 50Hz and 152Hz. The microprocessor-based intelligence allows the monitor to operate in each frequency mode with the precision of a fixed frequency monitor.

- The monitor contains resident memory for pre-programmed screen display standards and is also capable of storing additional user adjustment parameters.

- The monitor is capable of producing a maximum horizontal resolution of 1600 dots and a maximum vertical resolution of 1200 lines typically. This display is well suited for windowing environments.

- Because of the analog signal inputs, the monitor can display an unlimited palette of colors that can be manually adjusted to suit your specific needs.

- The monitor has a power management function accorded to VESA-DPMS-standard. To save energy, the monitor must be connected to a system compliant with the VESA DPMS-standard. (Refer to your computer and/or video card instructions for proper operation.)

- To ensure ease of installation and ongoing use, the monitor features Moire Clear Function and On-Screen Display (OSD) of all monitor set-up and adjustment functions.

- For use in a variety of applications, the monitor complies with UL 1950, CSA C22.2 No.950 and EN60950 for safety, FCC Class-B, VCCI Class II and EN55022 Class-B for EMI, MPR-II, ISO 9241-3 and ISO 9241-8 for ergonomics. The monitor also complies with TCO'95 guideline for environmental safe use.

- Digital Chassis design for lighter, more compact enclosure and increased screen performance.

- Short neck (ZENTAN) CRT with 0.25mm pitch shadow mask, advanced-focus DQ-DAF (Double Quadrupole-Dynamic Astigmatism and Focus system) electron gun and high contrast optical-quality coating.

- The monitor complies with Video Electronics Standards Association (VESA™) DDC1/2B(EDID) specification. If your computer provides DDC1/2B(EDID) function, setup will be done automatically.

- USB-HUB unit KT-X406 is prepared as an optional parts for this monitor.

1.2 Internal Preset Memory Capability

To minimize adjustment needs, the factory has preset popular display standards into the monitor, as shown in Table 1. If any of these display standards are detected, the picture size and centering are automatically adjusted. All of the factory presets may be overwritten by adjusting the user controls. The monitor is capable of automatically storing up to 6 additional display standards. The new display information must differ from any of the existing display standards by at least 1kHz for the horizontal scan frequency or 5Hz for the vertical scan frequency or the sync signal polarities must be different.

Table 1. Memory Buffer Factory Presets

Resolution	Fh (kHz)	Fv (Hz)	Polarity	
			H	V
640 x 480 N.I.	31.5	60.0	-	-
1024 x 768 N.I.	60.0	75.0	+	+
1280 x 1024 N.I.	80.0	75.0	+	+

1.3 Power Management Function

The monitor has the power management function which reduces the power consumption of the monitor when not in use. There are three reduced power level modes.

■ **Stand-by mode**
When the horizontal sync signal is off after about 10 seconds, the monitor is switched to a stand-by mode. When the monitor is in stand-by mode, the screen is off.
After the horizontal sync signal is restored, picture will be displayed immediately.

■ **Suspend mode**
When the vertical sync signal is off, after about 10 seconds the monitor is switched to a suspend mode which reduces the monitor power consumption to less than 15W.
When the monitor is in suspend mode, the screen is off and the power indicator will change to amber. After the vertical sync signal is restored, picture will be displayed within a few seconds.

■ **Power-off mode**
When the horizontal sync signal and vertical sync signal are off, after about 10 seconds the monitor is switched to a power-off mode, which reduces the monitor power consumption to less than the power consumed at suspend mode above.
When the monitor is in power-off mode, the screen is off, and the power indicator will change to amber.
After both the sync signals are restored, picture will be displayed within several seconds.

1.4 DDC

The monitor includes the DDC1 and DDC2B feature. DDC (Display Data Channel) is a communication channel over which the monitor automatically informs the host system about its capabilities (e.g. each supported resolution with its corresponding timing).
DDC is routed through previously unused pins of the 15-pin VGA connector.
The system will perform "Plug and Play" feature if both, monitor and host, implement the DDC protocol.

1.5 Location Considerations

When setting up and using the monitor, keep the following in mind:

* For optimum viewing, avoid placing the monitor against a bright background or where sunlight or other light sources may reflect on the display area of the monitor; place the monitor just below eye level.

* Place the monitor away from strong magnetic or electromagnetic fields, such as high capacity transformers, electric motors, large current power lines, steel pillars, etc.... Magnetism can cause distortion in the picture and/or color purity.

* Avoid covering the slots or openings of the monitor. Allow adequate ventilation around the monitor so the heat from the monitor can properly dissipate. Avoid putting the monitor into any enclosure that does not have adequate ventilation.

* Avoid exposing the monitor to rain, excessive moisture, or dust, as this can cause a fire or shock hazard.

* Avoid placing the monitor, or any other heavy object, on the power cord. Damage to the power cord can cause a fire or electrical shock.

* When transporting the monitor, handle it with care.

CAUTION

Keep your fingers away from the pivot area of the tilt/swivel base.

1.6 Cleaning Your Monitor

When cleaning the monitor, please follow these guidelines:

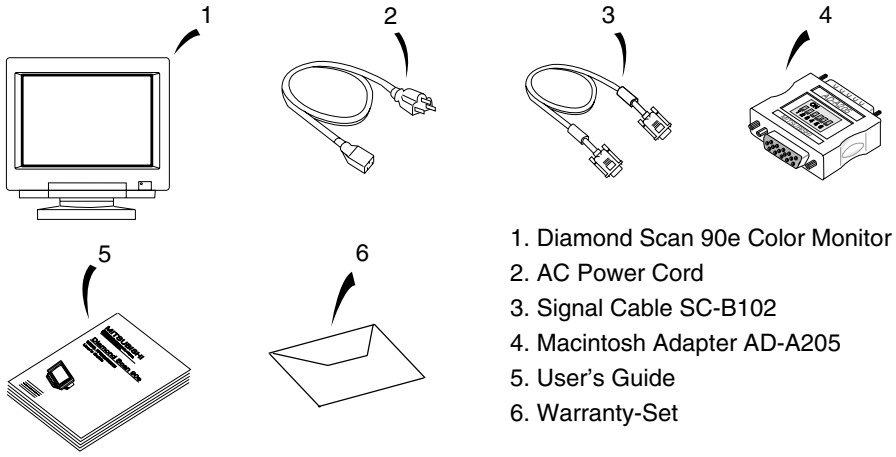
* Always unplug the monitor before cleaning.
* Wipe the screen and cabinet front and sides with a soft cloth.
* If the screen requires more than dusting, apply a household window cleaner to a soft cloth to clean the monitor screen.

CAUTION

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

1.7 Unpacking

After you unpack the box you should have all of the items indicated in Figure 1. Save the box and packing materials in case you ship or transport the monitor. Complete and mail in warranty cards.



1. Diamond Scan 90e Color Monitor
2. AC Power Cord
3. Signal Cable SC-B102
4. Macintosh Adapter AD-A205
5. User's Guide
6. Warranty-Set

Figure 1.

1.8 Tilt/Swivel Base

The monitor comes with a tilt/swivel base. This enables you to position the monitor to the best angle and tilt for maximum viewing comfort.

Screen Position Adjustment

Adjust the tilt and rotation of the monitor by placing your hands at opposite sides of the case, as shown in Figure 2. You can adjust the monitor 45 degrees right or left, 10 degrees up or 5 degrees down, as shown below.

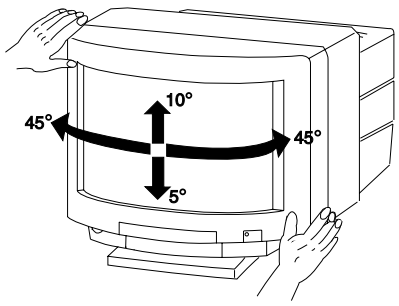
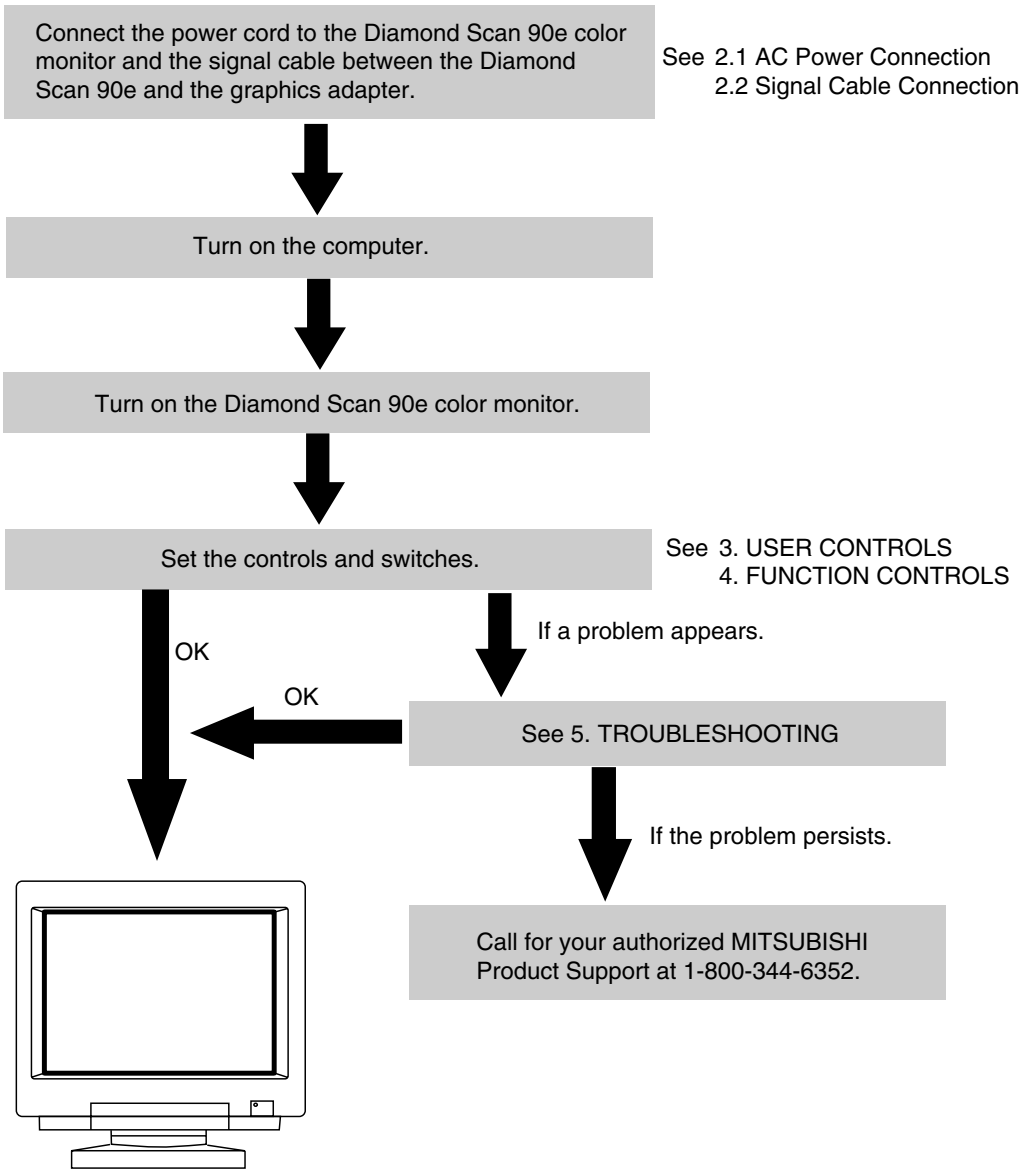


Figure 2.

1.9 Quick Operation Chart

To summarize the steps in connecting your computer and adapter with Diamond Scan 90e color monitor and setting the necessary controls and switches, refer to the chart below.



2 CONNECTING THE MONITOR

On the back of the monitor are four plug-in connections: one for the AC power cord, DB9-15P connector, BNC connector for video and a DIN-8P connector for the optional USB-unit.

2.1 AC Power Connection

One end of the AC power cord is connected into the AC power connector on the back of the monitor. The other end is plugged into a properly grounded three-prong AC outlet. The monitor's auto-sensing power supply can automatically respond to the power supply input of 100-240V AC and 50/60Hz.

2.2 Signal Cable Connection

The attached video signal cable provides a DB9-15P connector for the VGA compatible analog RGB outputs on your computer. The RGB signal may be derived from an IBM® PS/2, or compatible Apple Macintosh built-in video. Most third party color cards can also be interfaced using the free Mitsubishi Apple adaptor available from your dealer.

2.2.1 Connecting to Any IBM VGA Compatible System

Figure 3 shows the SC-B102 cable connection to the Video Graphics Array (VGA) port in an IBM Personal System/2® Model 50, 60, 70 and 80, or any VGA compatible system.

1. Power off, the monitor and the computer.
2. Connect the one end of the SC-B102 cable to the DB9-15P connector on the VGA controller card.
3. Connect the other end of the SC-B102 cable to the DB9-15P receptacle on the back of the monitor.
4. Power on the computer, then the monitor.
5. After using the system, power off the monitor, then the computer.

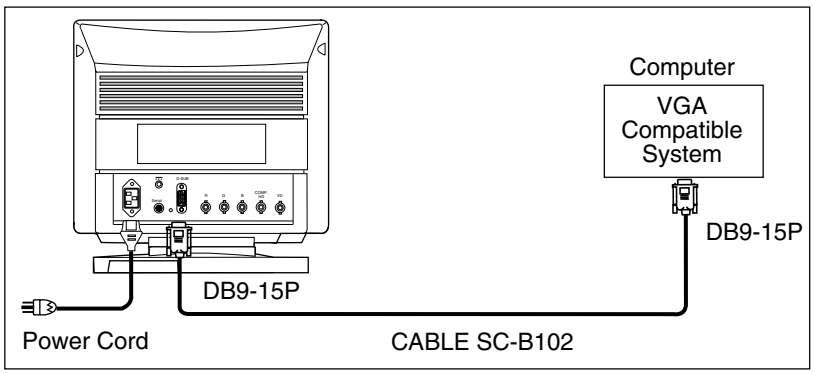


Figure 3.

CAUTION

The socket-outlet shall be installed near the equipment and shall be easily accessible. During servicing, disconnect the plug from the socket-outlet.

Méme si le moniteur est mis hors tension il reste toujours alimenté. La prise secteur devrait ainsi ètre facilement accssible en cas d'urgence.

2.2.2 Connecting to An Apple Macintosh Centris, Quadra, and Apple Macintosh II Family

Figure 4 shows the SC-B102 cable and AD-A205 Adapter to the video port in an Apple Macintosh.

1. Power off, both the monitor and the computer.
2. Set the DIP switches of Macintosh Adapter according to the setting chart. (See 7.4 Macintosh Adapter AD-A205 settings)
3. Connect the 15-pin (DB-15P) end of the AD-A205 Adapter to the straight 15-pin connector on the Macintosh video port on the CPU or on the video board.
4. Connect the sub-miniature 15-pin (DB9-15P) end of AD-A205 Adapter to the SC-B102 cable.
5. Connect the other end of the SC-B102 cable to the DB9-15P receptacle on the back of the monitor.
6. Power on the Macintosh, then the monitor.
7. After using the system, power off the monitor, then the Macintosh.

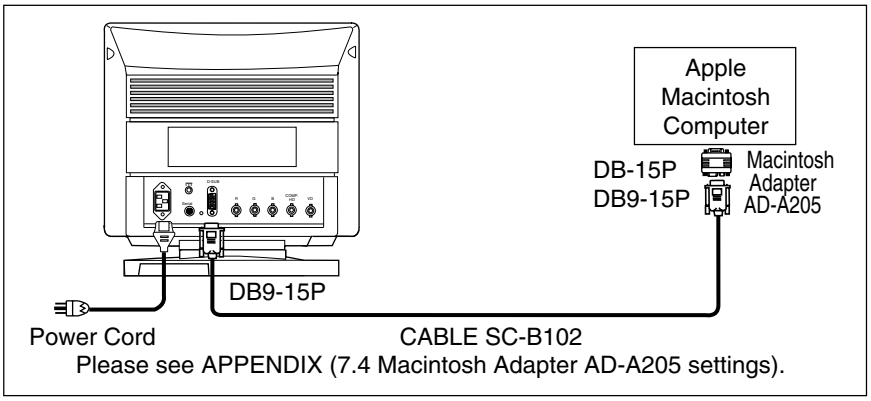


Figure 4.

2.2.3 Connecting to a Unix Workstation & Third Party Graphics Card

Figure 5 shows the SC-B102 or "75Ω" coaxial cable (not supplied) connection to the graphics video card (PC-CAD and workstation).

1. Power off, both the monitor and the computer.
2. Connect one end of the SC-B102 cable or the "75Ω" coaxial cable to the output connector on the CPU, or on the video board.
3. Connect the other end of the SC-B102 cable or the "75Ω" coaxial cable to the DB9-15P receptacle or the BNC receptacles on the back of the monitor.
4. Power on the computer, then the monitor.
5. After using the system, power off the monitor, then the computer.

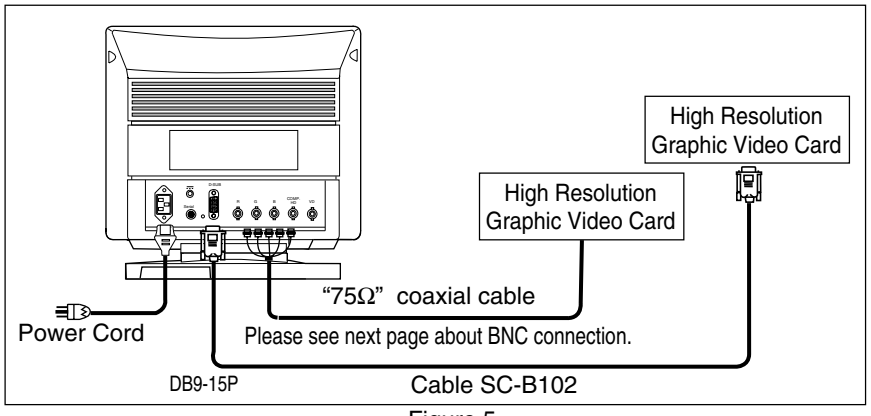
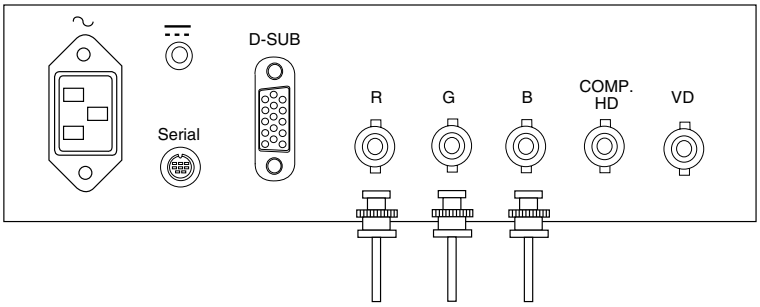


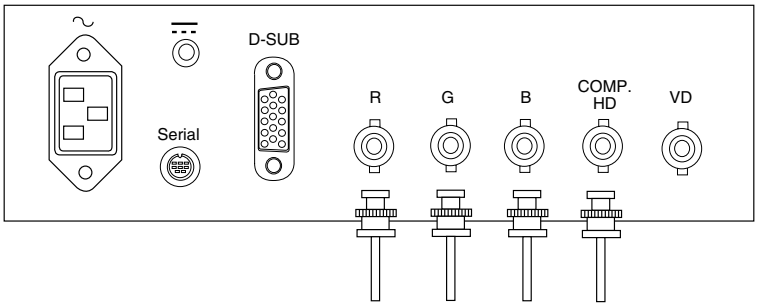
Figure 5.

BNC CONNECTION

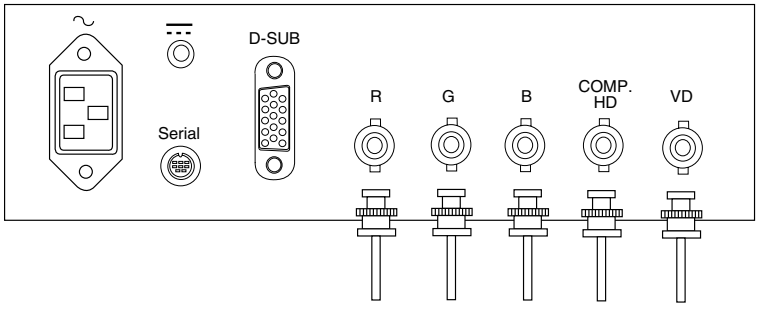
(1) IN CASE OF A COMPOSITE SYNC ON GREEN VIDEO SIGNAL (SYNC ON GREEN):
Connect the R, G and B video signals to the BNC receptacles on the back of the monitor.



(2) IN CASE OF EXTERNAL COMPOSITE SYNC SIGNAL:
Connect the R, G and B video signals and the Composite sync signal to BNC receptacles on rear panel, respectively.



(3) IN CASE OF SEPARATE HORIZONTAL AND VERTICAL SYNC SIGNALS:
Connect the R, G and B video signals and the horizontal and vertical sync signals to the BNC receptacles on the rear panel.



3 USER CONTROLS

3.1 Control Names

See Figure 6 and 7 for the location of the following user controls and indicators.
Each control is identified by number and is described individually on page 14.

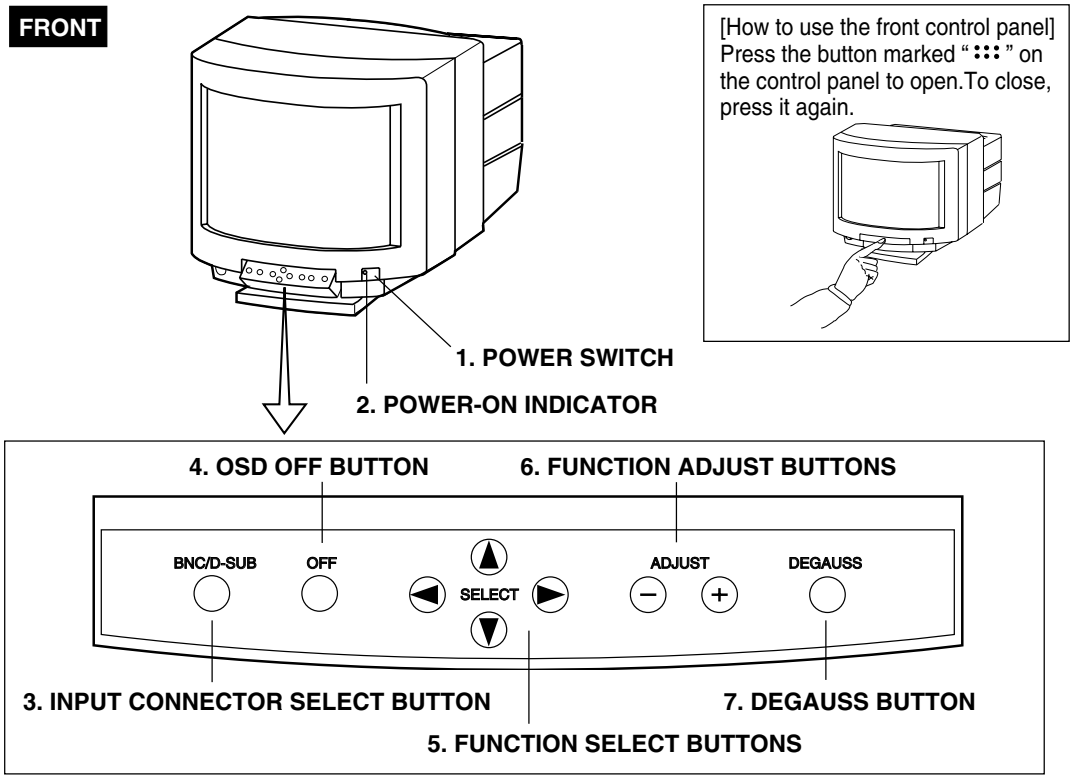


Figure 6

3.2 Function

1. **POWER SWITCH:** A push-on push-off switch for AC power.

2. **POWER-ON INDICATOR:** This indicator illuminates Green when AC power is on or Stand-by mode, and illuminates Amber when suspend or power-off mode.

3. **INPUT CONNECTOR SELECT BUTTON:** Push the BNC/D-SUB button to select the input signal BNC or D-SUB.

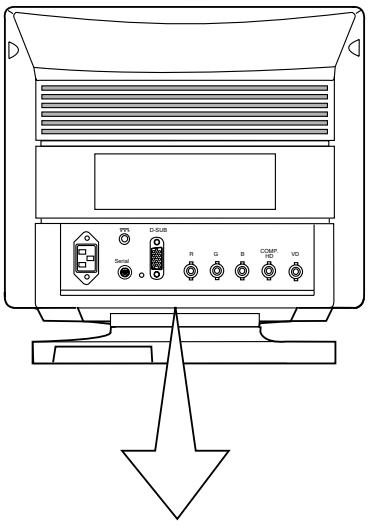
4. **OSD OFF BUTTON:** A push type button that is used to turn off the OSD.

5. **FUNCTION SELECT BUTTONS:** Push the select buttons to choose one of the functions that is superimposed on the display screen.

6. **FUNCTION ADJUST BUTTONS:** Push the adjust buttons to adjust the image on the screen that is selected via the function select buttons.

7. **DEGAUSS BUTTON:** A push type button that is used to eliminate possible color shading or impurity.

REAR



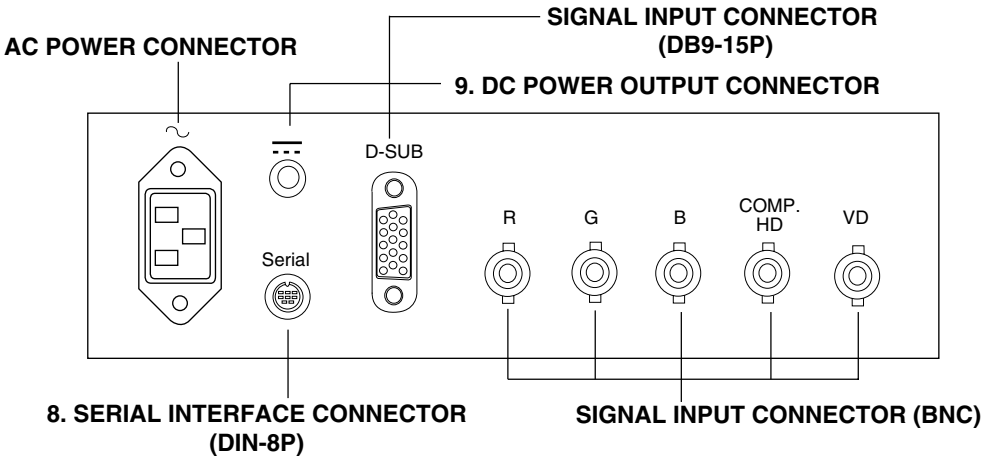


Figure 7

8. **SERIAL INTERFACE CONNECTOR:** The monitor has a DIN-8P connector for serial interface communication. This connector will be used for optional USB unit. For the information about connecting, please refer to the instruction which is included in each optional kit.

   For further information about the optional USB kit, please contact your authorized MITSUBISHI dealer.

9. **DC POWER OUTPUT CONNECTOR:**

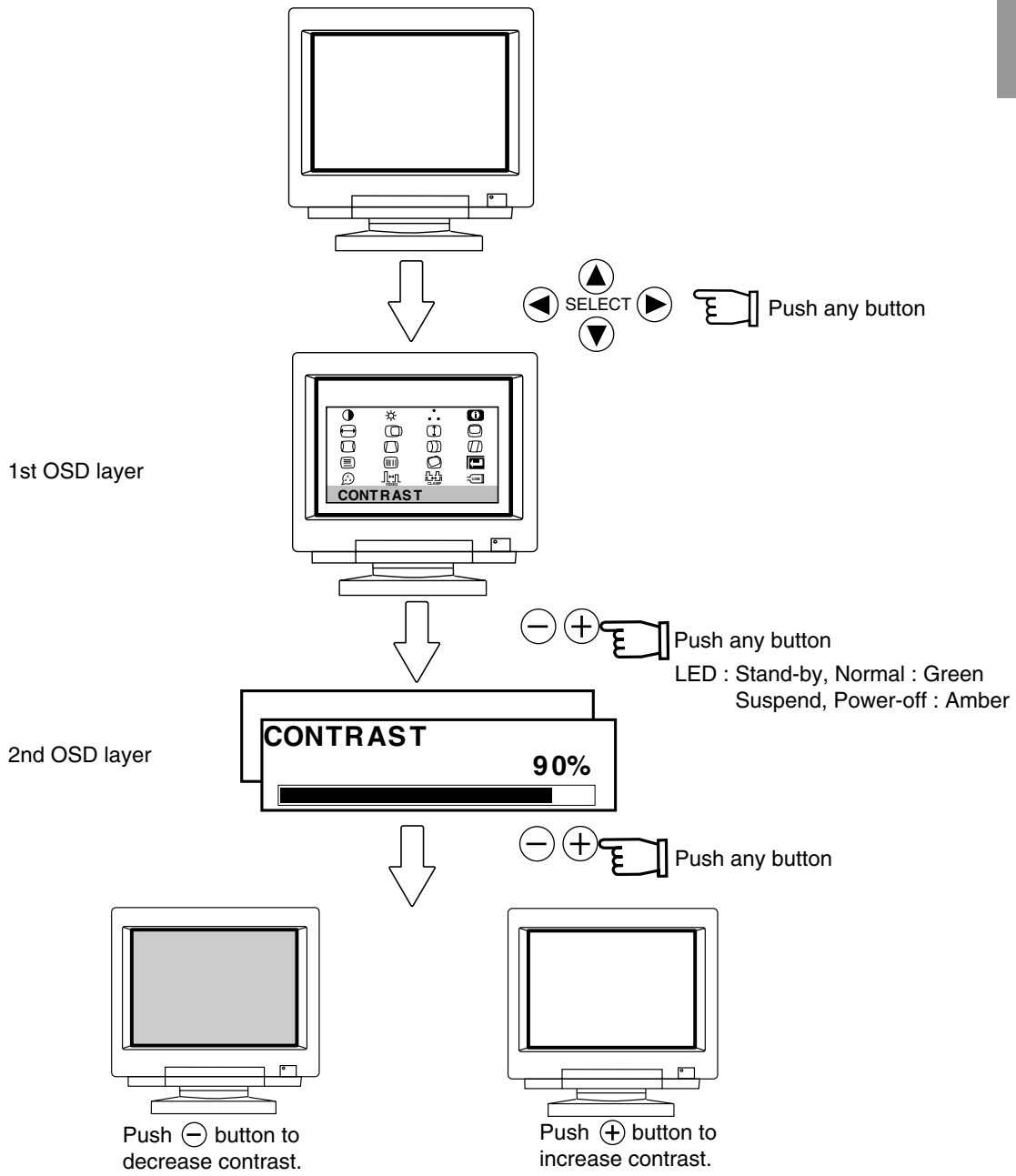
CAUTION Do not connect the DC power connector with any models except MITSUBISHI USB unit.

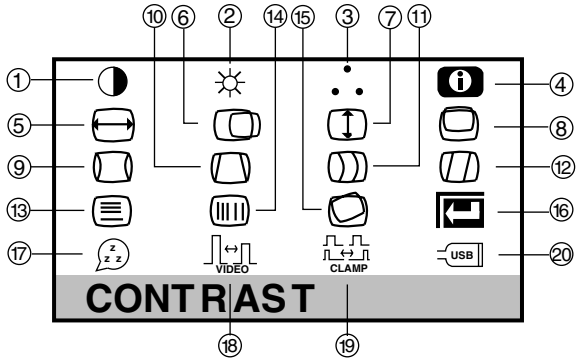
4 OSD(On Screen Display) FUNCTIONS

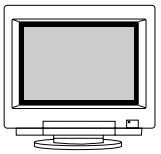
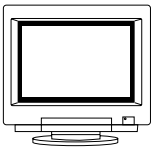
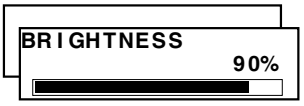
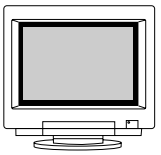
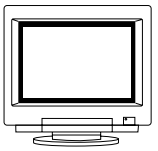
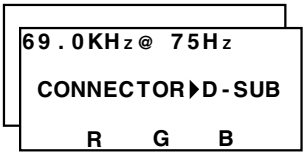
(1) **CONTRAST:** Adjusts to the desired contrast level.
(2) **BRIGHTNESS:** Adjusts to the black level of the screen.
(3) **COLOR-TEMPERATURE:** Adjusts the color temperature of the screen image.
(4) **INFORMATION:** Indicate current Scanning frequency and input Video signal port (signal connector)
(5) **H-SIZE (Horizontal Size):** Controls the horizontal size of the image on the screen.
(6) **H-PHASE (Horizontal Position):** Controls the horizontal position of the image on the screen.
(7) **V-SIZE (Vertical Size):** Controls the vertical size of the image on the screen.
(8) **V-POSITION (Vertical Position):** Controls the vertical position of the image on the screen.
(9) **SIDE-BOW (Pincushion or Bow Amplitude):** Straightens the left and right sides of the screen image.
(10) **KEY STONE:** Adjusts the parallelism of the left and right sides of the screen image.
(11) **PIN-BALANCE:** Adjusts the curvature of the left and right sides of the screen image.
(12) **KEY-BALANCE:** Adjusts the vertical slant or tilt of the screen image.
(13) **H-MOIRE:** Adjusts the horizontal moire level on the screen.
(14) **V-MOIRE:** Adjusts the vertical moire level on the screen.
(15) **ROTATION:** Adjusts the rotation or twist of the picture.
(16) **GEOMETRY-RESET:** Restore to factory preset following mode; H-SIZE, H-PHASE, V-SIZE, V-POSI, SIDE-BOW, KEY STONE, PIN-BALANCE, KEY-BALANCE.
(17) **POWER-SAVE (ON/OFF):** When adjusting ON, reduces the power consumption of the monitor when not in use.
(18) **VIDEO LEVEL:** Selects video levels 1.0V or 0.7V.
(19) **CLAMP-POSITION:** Use this function to eliminate excessive green or white background that may occur when both Sync-On-Green and external sync signals are applied to the monitor.
(20) **USB PORT SELECT:** Control upstream connection with using optional USB unit KT-X406.

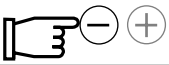
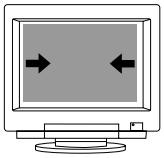
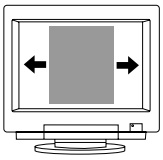
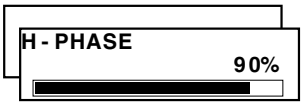
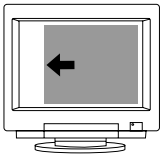
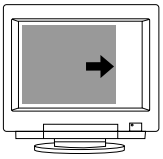
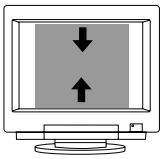
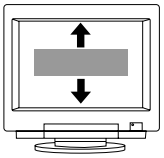
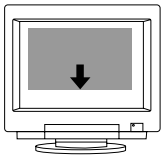
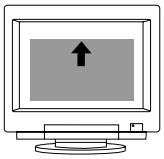
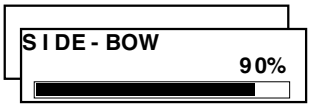
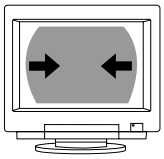
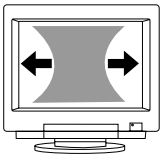
4.1 Operation

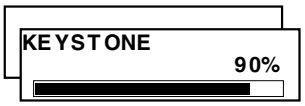
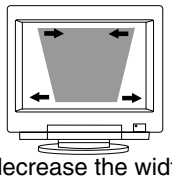
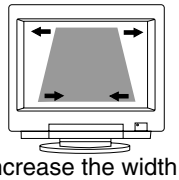
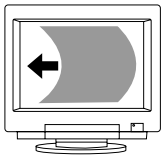
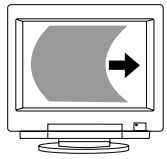
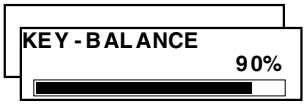
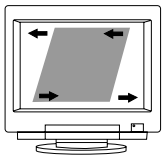
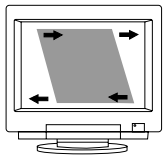
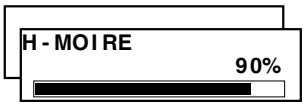
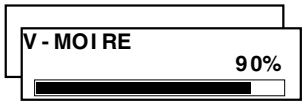
Press any select button and control indicators will be superimposed on the display screen called 1st layer.
Refer to Figure 6 for the location of the monitor function (◀ ▶ ▲ ▼) controls. Press the select buttons to choose one of the following controls.
The indication of a function symbol changes to blue.
When selected the function symbol of above OSD, press the adjust button (⊕ or ⊖), the OSD screen changes to following called 2nd layer. Then you can adjust each function by ⊕ ⊖ buttons.

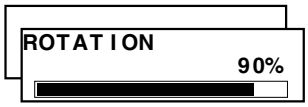
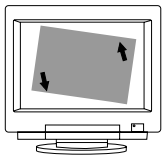
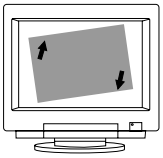
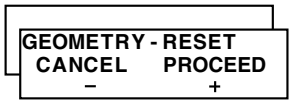
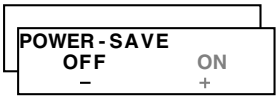
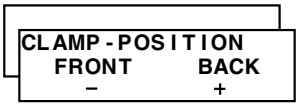




Symbol of 1st OSD layer	2nd OSD layer	Press the Minus Adjust Button:	Press the Plus Adjust Button:
① CONTRAST		 To decrease the contrast.	 To increase the contrast.
	LEVEL: 00 - 100%	Press plus and minus buttons together, to restore to factory preset level.	
② BRIGHTNESS		 To decrease the brightness.	 To increase the brightness.
	LEVEL: 00 - 100%	Press plus and minus buttons together, to restore to factory preset level.	
③ COLOR TEMPERATURE		To increase the red color level.	To increase the blue color level.
	LEVEL: 5000 - 9950K	Data indicates color temperature (k:kelvin)	
④ INFORMATION		• Indicate the horizontal frequency and the vertical frequency of input signal. • Indicate input connector.	

Symbol of 1st OSD layer	2nd OSD layer	Press the Minus Adjust Button: 	Press the Plus Adjust Button: 
⑤ H-SIZE 	 LEVEL: 00 - 100%	 To narrow the width of the image on the screen.	 To expand the width of the image on the screen.
⑥ H-PHASE 	 LEVEL: 00 - 100%	 To move the image to the left.	 To move the image to the right.
⑦ V-SIZE 	 LEVEL: 00 - 100%	 To narrow the height of the image on the screen.	 To expand the height of the image on the screen.
⑧ V-POSITION 	 LEVEL: 00 - 100%	 To move the image down.	 To move the image up.
⑨SIDE-BOW 	 LEVEL: 00 - 100%	 To collapse the center of the image.	 To expand the center of the image.

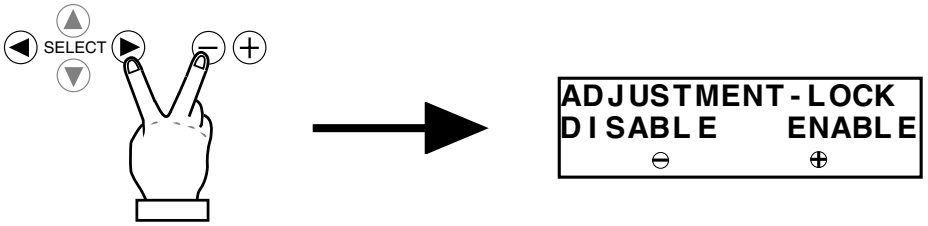
Symbol of 1st OSD layer	2nd OSD layer	Press the Minus Adjust Button:	Press the Plus Adjust Button:
⑩ KEYSTONE	 LEVEL: 00 - 100%	 The decrease the width at the top of the screen image and to increase the width at the bottom.	 The increase the width at the top of the screen image and to decrease the width at the bottom.
⑪ PIN-BALANCE	 LEVEL: 00 - 100%	 To move the top and bottom of the screen image to the right.	 To move the top and bottom of the screen image to the left.
⑫ KEY-BALANCE	 LEVEL: 00 - 100%	 To make the screen slant to the left.	 To make the screen slant to the right.
⑬ H-MOIRE	 LEVEL: 00 - 100%	Press the plus or minus button to decrease the level of the horizontal moire wave. Press plus and minus buttons together, to restore to factory preset level.	
⑭ V-MOIRE	 LEVEL: 00 - 100%	Press the plus or minus button to decrease the level of the vertical moire wave. Press plus and minus buttons together, to restore to factory preset level.	

Symbol of 1st OSD layer	2nd OSD layer	Press the Minus Adjust Button:	Press the Plus Adjust Button:
⑮ ROTATION	 LEVEL: 00 - 100%	 To rotate to the left.	 To rorate to the right. Press plus and minus buttons together, to restore to factory preset level.
⑯ GEOMETRY RESET		To cancel the geometry reset operation.	To reset the geometry data to factory adjusted condition. 
⑰ POWER-SAVE		To select the constant power-on mode. 	To select the power-save mode. 
⑱ VIDEO-LEVEL		To select 1.0V of video input. 	To select 0.7V of video input. 
⑲ CLAMP-POSITION		To clamp the video signal at the front of the H-Sync pulse. 	To clamp the video signal at the back of the H-Sync pulse. 

Symbol of 1st OSD layer	2nd OSD layer	Press the Minus Adjust Button:	Press the Plus Adjust Button:
⑳ USB PORT SELECT	USB STATUS PLEASE CHECK MONITOR CONNECTION OR USB IS SUSPENDED	This "USB PORT SELECT" is prepared for optional part "USB-unit KT-X406" installed only. Attention OSD screen is displayed without USB unit. For installing USB-unit, please read the manual of USB kit.	

㉑ ADJUST LOCK

1. Press the right of select button and minus of adjust button together, the "ADJUST LOCK" screen appears.



2. Press the plus button to lock on the OSD, and "LOCKED" character is indicated on 1st layer. You can operate OSD menu only CONTRAST, BRIGHTNESS and INFORMATION.

3. Press the minus button to lock off the OSD. You can operate OSD and all can be selected menu again.

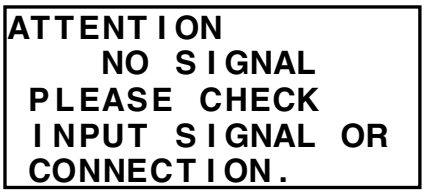
4.2 POWER SAVE

NOTE

When the monitor has no sync signal or incorrect connection and the signal frequency is out of range, the following CAUTION comes on the screen. Check input signal, signal cable connection and signal frequency.

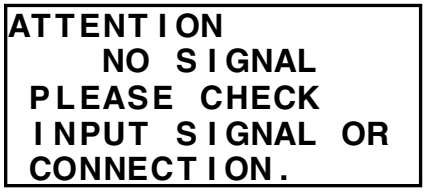
1. POWER SAVE IS OFF

When POWER SAVE is OFF and there is no sync signal, the following screen is displayed.



2. POWER SAVE IS ON

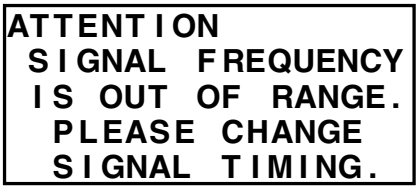
(1) When POWER SAVE is ON and there is no sync signal, the following screen is displayed for 5 seconds.



(2) Before 2 seconds POWER SAVE function works, the following screen is displayed. The power on indicator illuminates to change Amber.

3. POWER SAVE IS ON OR OFF

When signal frequency is out of range, the following screen(ex. 96.8kHz/73Hz timing input) is displayed.



5 TROUBLESHOOTING

Before calling your Authorized Product Support, please check that the items below are properly connected or set.
In case of using a non-standard signal, please check the pin assignments and the signal timing of your computer with the specification outlined in SPECIFICATION 6 and APPENDIX 7.

PROBLEM		ITEMS TO CHECK	LOCATION
No picture	LED On-Green	• Contrast and brightness controls.	• Front (Adjust to the maximum brightness or push the reset button)
	LED Off	• Power switch. • AC power cord disconnected.	• Front • Rear
	LED On-Amber	• Signal cable disconnected. • BNC cables are misconnected or the green cable is disconnected. • Computer power switch. • Power management function is active.	• Rear • Check the graphics adapter and cables • Computer • Check the power management function. (see P23)
Abnormal picture	Un-stable picture	• BNC cables are misconnected. • Input signal frequency range is disagreement. CGA MODE is not available. MDA MODE is not available. EGA MODE is not available.	• Rear • Check the specification of graphics adapter and monitor
	No green color with BNC	• BNC cables are misconnected. (Green and composite sync. connection is reversed)	• Rear
	Display is missing, center shifts, or too small or too large of a display size	• Adjust H.SIZE, V.SIZE, H.PHASE, and V.POSITION with non-standard signals • Monitor may not be able to get full-screen image depend on signal. In this case, please select other resolution, or other vertical refresh timing. • Make sure you wait a few seconds after adjusting the size of the image before changing or disconnecting the signal or powering OFF the monitor.	• Front (OSD) • Front (OSD)
	Display is not stable	• BNC cables are misconnected.	• Rear
	Display is dark or too bright	• Input video signal level select is not at the appropriate position for your graphics adapter output.(0.7V or 1.0Vp-p)	• Front (OSD)

6 SPECIFICATIONS

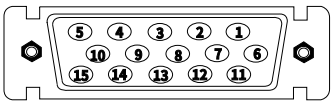
CRT	Size	49.5cm/19" (46cm/18" Diagonal Viewable Image)
	Mask type	Shadow Mask
	Gun	In-line
	Deflection angle	100°
	Phosphors	Red, Green, Blue EBU (medium short persistence) Crystal pigment
	Dot pitch	0.25mm
	Face Plate	Anti-glare, Anti-reflection and Anti-static coating
	Focusing method	Double Quadrupole-Dynamic Astigmatism and Focus system (DQ-DAF)
INPUT SIGNAL	Video	0.7 and 1.0Vp-p analog RGB
	Sync	Sync. on Green or separated H, V sync. or Composite sync
INTERFACE	Input Connector	5BNC, DB9-15P, DIN-8P(for USB kit)
	Input Impedance	75Ω (video), 1kΩ (sync)
SCANNING FREQUENCY	Horizontal	30 - 95kHz
	Vertical	50 - 152Hz
RESOLUTION (HxV)	1600dots x 1200lines Non-Interlaced maximum addressable resolution format at 75Hz	
WARM-UP TIME	30 minutes to reach optimum performance level	
BRIGHTNESS	≧100cd/m^2, standard full white video signal at 9300K + 8MPCD	
VIDEO AMPLIFIER	50Hz - 150MHz (typ.)	
BLANKING TIME	Horizontal	≧2.3 μsec (typ.)
	Vertical	≧500 μsec (typ.)
DISPLAY SIZE	340mm x 255mm (typ.) ratio 4:3, e.g. 1600dots x 1200lines	
COLOR	5000 ~ 9950K	
POWER SOURCE	100-240VAC ±10% 50/60Hz 150W (typ.) < 130W (typ.: without USB-Unit KT-X406) >	
OPERATING ENVIRONMENT	Temperature	5 - 35°C
	Humidity	10 - 90%RH (without condensation)
CABINET	(W)18.5inch x (H)18.5inch x (D)16.1inch (W)470mm x (H)468mm x (D)408 mm	
WEIGHT	22.5kg (49.6lbs.)	
TILT/SWIVEL BASE	Tilt Angle	-5° - +10°
	Swivel Angle	±45°
REGULATIONS	Safety	UL1950 (UL), CSA C22.2 No.950 (C-UL) EN60950 (TÜV-GS)
	EMC	FCC Class-B, DOC Class-B EN55022 Class-B, VCCI Class-2 EN50082-1, EN61000-3-2, EN61000-3-3
	X-Ray	DHHS, HWC Röv vom 8.1, 1987
	Other	CE-Marking, MPR-II ISO 9241-3, ISO 9241-8 (TÜV-ERGO) TCO '95 ZH1/618 (TÜV-GS) International Energy Star Program Guidelines for the Suppression of Harmonics in Appliances and General-Use Equipment

7 APPENDIX

7.1 Monitor Signal Input Connector (DB9-15P)

(Female)

DB9-15P



MOUNTED ON THE REAR PANEL

DDC ..... DISPLAY DATA CHANNEL
SDA ..... SERIAL DATA
SCL ..... SERIAL CLOCK
NC ..... NO-CONNECTION

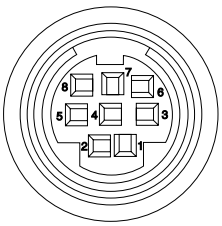
PIN ASSIGNMENT

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO or COMPOSITE SYNC with GREEN VIDEO
3	BLUE VIDEO
4	GROUND
5	DDC GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	NC
10	SYNC GROUND
11	GROUND
12	SDA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC(VCLK)
15	SCL

7.2 Serial Interface Input Connector (DIN-8P) For Serial Interface Function

(Female)

DIN-8P



MOUNTED ON THE REAR PANEL

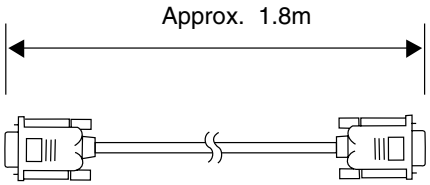
PIN ASSIGNMENT

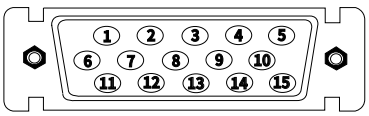
Pin No.	Signal
1	DTR (Data Terminal Ready)
2	NC
3	TXD (Transmited Data)
4	GND
5	RXD (Receive Data)
6	GND
7	NC
8	NC

NC..... NO-CONNECTION

7.3 SC-B102 Signal Cable

PIN ASSIGNMENT AND SIGNAL LEVEL





DB9-15P (Male)

DB9-15P (Male)

Wire : 5 coaxial

PIN ASSIGNMENT \ SIGNAL	ANALOG
1	RED
2	GREEN
3	BLUE
4	GROUND
5	DDC GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	NC
10	SYNC GROUND
11	GROUND
12	SDA
13	HORIZONTAL SYNC
14	VERTICAL SYNC(VCLK)
15	SCL

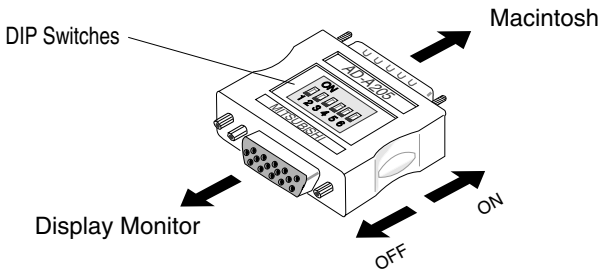
SIGNAL LEVEL
NC ..... NO-CONNECTION
DDC: DISPLAY DATA CHANNEL
SDA: SERIAL DATA
SCL: SERIAL CLOCK

7.4 Macintosh Adapter AD-A205 settings

The AD-A205 Macintosh Adapter allows you to take advantage of the built-in video capabilities of your Macintosh computer with the monitor.
With it, you may select any available video mode via the DIP Switches.

Using the following chart, find the computer/resolution combination you wish to configure. There are alternate settings available for most computer / resolution combinations, but we recommend you set the factory preset timing. (see 1.2 Internal Preset Memory Capability)

The chart shows all available modes for Macintosh systems plus all possible combinations with monitor. Please be aware that not all Macintosh modes are capable of driving all Macintosh video modes.



In case of the computer corresponding to Multimode, you can select the resolution on your computer by setting the following switch.
Please refer to instruction book of your computer about resolution setting.

21"Multimode

1,2,6 = Set DIP switches 1,2 and 6 "ON" (Supports 640X480@67Hz; 832X624@75Hz; 1024X768@75Hz; 1152X870@75Hz) or (Supports 640X480@67Hz; 832X624@75Hz; 1024X768@75Hz; 1152X870@75Hz; 1280X1024@75Hz) or (Supports 640X480@67Hz; 832X624@75Hz; 1024X768@75Hz; 1152X870@75Hz; 1280X960@75Hz; 1280X1024@75Hz)

17"Multimode

1,2,5 = Set DIP switches 1,2 and 5 "ON" (Supports 640X480@67Hz; 832X624@75Hz; 1024X768@75Hz)

13"Multimode

1,2,5,6 = Set DIP switches 1,2,5 and 6 "ON" (Supports 640X480@67Hz; 832X624@75Hz)

AD-A205 Mac Adapter settings Chart

Macintosh COMPUTER / RESOLUTION	Macintosh IIci IIsi	Macintosh LC,LC II -or- Performa 400,405, 410,430	Macintosh LC III, LC 475 -or- Performa 450,460, 466,467, 475,476	Macintosh IIvi,IIvx -or- Performa 600, 600 CD	Macintosh LC 630, Performa 630 -or- Quadra 630	Macintosh Quadra 700,900	Macintosh Quadra 605,610, 650,800, 950 -or- Centris 610,650	Macintosh Quadra 840AV, 660AV -or- Centris 600AV	Apple display Card 4•8,8•24, 8•24GC (revision B)	Apple display Card 24AC	Power Macintosh Workgroup Server 9150
640X480@60Hz		3,4	3,4	3,4	3,4	3,4	3,4	3,4		3,4	3,4
640X480@67Hz	**1,2**	**1,2**	1,2	**1,2**	1,2	1,2	1,2	1,2	1,2	1,2,6	1,2,5,6
800X600@56Hz						**—**	**—**	**—**			
800X600@60Hz					3,4					1,2,6	
800X600@72Hz					3,4			3,4			
800X600@75Hz											
832X624@75Hz			**2,4**		**2,4**	**2,4**	**2,4**	**2,4**	**2,4#**	**1,2,6**	**1,2,5,6**
1024X768@60Hz								3,4		1,2,6	
1024X768@70Hz								3,4			
1024X768@72Hz											
1024X768@75Hz											
1024X768@75Hz							**2,3**	**2,3**		**1,2,6**	
1152X870@75Hz						**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,6**	
1280X960@75Hz											
1280X1024@75Hz											

Macintosh COMPUTER / RESOLUTION	Power Macintosh 6100,6100AV, 7100,7100AV, 8100,8100AV -with- DRAM Video Port (HDI-45)	Power Macintosh 7100, 8100, -with- DRAM Video Card (DB-15)	Power Macintosh 6100AV, 7100AV, 8100AV -with- AV Video Card (DB-15)	Power Macintosh 6200	Power Macintosh 7200	Power Macintosh 7500, 8500	Power Macintosh 9500 -with- ATI Video Card	Macintosh PowerBook 160, 165,165C 180,180C	Macintosh PowerBook 520,520C, 540,540C	Macintosh PowerBook Duo 210,230, 250,270C -with- Duo Dock -or- Duo MiniDock	Macintosh PowerBook Duo 210,230, 250,270C -with- Duo DockII
640X480@60Hz	3,4	3,4	3,4	1,2,5,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
640X480@67Hz	1,2,5,6	1,2,6	1,2,6	1,2,5,6	1,2,6	1,2,6	1,2,6	1,2	**1,2,5,6**	1,2	1,2
800X600@56Hz		**—**	**—**				**—**	**—**	**—**	**—**	**—**
800X600@60Hz				1,2,5,6	3,4	3,4	3,4				
800X600@72Hz		3,4	3,4	1,2,5,6	3,4	3,4	3,4				
800X600@75Hz					3,4	3,4	3,4				
832X624@75Hz	**1,2,5,6**	**1,2,6**	**1,2,6**	**1,2,5,6**	**1,2,6**	**1,2,6**	**1,2,6**	**2,4**	**1,2,5,6**	**2,4**	**2,4**
1024X768@60Hz		3,4	3,4		3,4	3,4	3,4				
1024X768@70Hz		3,4	3,4				3,4				
1024X768@72Hz					3,4	3,4					
1024X768@75Hz					3,4	3,4	3,4				
1024X768@75Hz		**1,2,6**	**1,2,6**		**1,2,6**	**1,2,6**	**1,2,6**				**2,3**
1152X870@75Hz		**1,2,6**	**1,2,6**		**1,2,6**	**1,2,6**	**1,2,6**				**1,2,3,4**
1280X960@75Hz						**1,2,6**	3,4				
1280X1024@75Hz						**1,2,6**	**1,2,6**				

= Must have revision B of ROM on video board

— = Not working combination.

CP871C144A90

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TELEX J24532 CABLE MELCO TOKYO