▲ MITSUBISHI

AUTO-SCANNING WITH DIGITAL CONTROL
COLOR DISPLAY MONITOR

Diamond Pro 920

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.

Internet Home Page: **http://www.necmitsubishi.com/**

Supplying Windows® 95/98/2000 INF File download service, new
product information, etc.

Limited Warranty

NEC-Mitsubishi Electronics Display of America, Inc. (hereinafter "NMD-A") warrants this Product to be free from defects in material and workmanship and, subject to the conditions set forth below, agrees to repair or replace (at NMD-A's sole option) any part of the enclosed unit which proves defective for a period of three (3) years from the date of first consumer purchase. Spare parts are warranted for ninety (90) days. Replacement parts or unit may be new or refurbished and will meet specifications of the original parts or unit.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty is limited to the original purchaser of the Product and is not transferable. This warranty covers only NMD-A-supplied components. Service required as a result of third party components is not covered under this warranty. In order to be covered under this warranty, the Product must have been purchased in the U.S.A. or Canada by the original purchaser. This warranty only covers Product distribution in the U.S.A. or Canada by NMD-A No warranty service is provided outside of the U.S.A. or Canada. Proof of Purchase will be required by NMD-A to substantiate date of purchase. Such proof of purchase must be an original bill of sale or receipt containing name and address of seller, purchaser, and the serial number of the product.

It shall be your obligation and expense to have the Product shipped, freight prepaid, or delivered to the authorized reseller from whom it was purchased or other facility authorized by NMD-A to render the services provided hereunder in either the original package or a similar package affording an equal degree of protection. All Products returned to NMD-A for service MUST have prior approval, which may be obtained by calling 1-800-632-4662. The Product shall not have been previously altered, repaired, or serviced by anyone other than a service facility authorized by NMD-A to render such service, the serial number of the product shall not have been altered or removed. In order to be covered by this warranty the Product shall not have been subjected to displaying of fixed images for long periods of time resulting in image persistence (afterimage effects), accident, misuse or abuse or operated contrary to the instructions contained in the User's Manual. Any such conditions will void this warranty.

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This Product is warranted in accordance with the terms of this limited warranty. Consumers are cautioned that Product performance is affected by system configuration, software, the application, customer data, and operator control of the system, among other factors. While NMD-A Products are considered to be compatible with many systems, specific functional implementation by the customer of the Product may vary. Therefore, suitability of a Product for a specific purpose or application must be determined by consumer and is not warranted by NMD-A.

For the name of your nearest authorized NEC-Mitsubishi Electronics Display service facility, contact NEC-Mitsubishi Electronics Display at 1-800-632-4662.

CONTENTS

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.

WARNING!

This product is not designed for use in life support devices and NEC-Mitsubishi Electronics Display of America, Inc. 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, NEC-Mitsubishi Electric Visual Systems Corporation, declare under our sole responsibility, 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

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Congratulations!

You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

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

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

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.
Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

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

Environmental requirements

Flame retardants
Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative[*] processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.
The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium[**]
Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury[**]
Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit.

CFCs (freons)
The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

Lead[**]
Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO´99 requirement permits the inclusion of lead since no replacement has yet been developed.

[*] Bio-accumulative is defined as substances which accumulate within living organisms
[**] Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

1 INTRODUCTION

Congratulations on your purchase of the high resolution color monitor. We designed this monitor to provide you with years of reliable trouble-free operation.

This guide tells you how to connect, adjust and care for your monitor. This guide also provides technical specifications and instructions for troubleshooting any basic problems you may experience with your monitor.

1.1 Features

This monitor is a 50cm/19"(46cm/18" Diagonal Viewable Image) intelligent, microprocessor-based monitor compatible with most analog RGB (Red, Green, Blue) display standards.

It provides crisp text and vivid color graphics with both PC and Macintosh platforms.

- 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 108kHz, and vertical scan frequencies between 50Hz and 140Hz. 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 non-interlaced maximum addressable resolution format of 1600 dots x 1200 lines. 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 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 and EN55022 Class-B for EMI, MPR-II, ISO 9241-3, ISO9241-7 and ISO9241-8 for ergonomics. The monitor also complies with TCO'99 guideline for environmental safe use.

- The monitor features the world's standard DIAMONDTRON NF CRT upgraded with improved focus and convergence for supersharp and pure picture images.

- The monitor complies with Video Electronics Standards Association (VESA™) DDC™1/2B(EDID) specification. If your computer is Plug & Play compliant setup will be done automatically.

- The CRT provides fine 0.24mm uni aperture grille pitch/ Maximum addressable resolution of 1600x1200.

- The monitor has a contrast enhancement function (FPM: Fine Picture Mode) and it is to accentuate pictures and graphical images.

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 position are automatically adjusted. All of the factory presets may be overwritten by adjusting the user controls. This monitor is capable of automatically storing up to 16 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

PRESET TIMING	Fh(kHz)	Fv (Hz)	Polarity H	Polarity V
640 x 480 N.I.	31.5	60.0	–	–
640 x 400 N.I.	31.5	70.1	–	+
800 x 600 N.I.	37.9	60.3	+	+
640 x 480 N.I.	43.3	85.0	–	–
800 x 600 N.I.	53.7	85.1	+	+
1024 x 768 N.I.	60.0	75.0	+	+
1024 x 768 N.I.	68.7	85.0	+	+
1152 x 870 N.I.	68.7	75.1	–	–
1280 x 1024 N.I.	80.0	75.0	+	+
1280 x 1024 N.I.	91.1	85.0	+	+
1600 x 1200 N.I.	81.3	65.0	+	+
1600 x 1200 N.I.	87.5	70.0	+	+
1600 x 1200 N.I.	93.8	75.0	+	+
1600 x 1200 N.I.	106.3	85.0	+	+

1.3 Power Management Function

The monitor has a power management function which reduces the power consumption of the monitor when not in use.
The power saving mode is invoked by a VESA DPMS-compliant computer. Check your computer's manual for setting this function.

Mode	Power	Power-On Indicator
Normal	120 W	Green
Power Saving Mode	5 W	Amber

1.4 DDC

The monitor includes the VESA DDC™1 and DDC™2B feature. DDC (Display Data Channel) is a communication channel over which the monitor automatically informs the computer 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 "Plug and Play" if both monitor and computer 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.

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.*

- *Do not spray directly on the screen as cleaner may drip into the monitor and damage the circuitry.*

- *Never use an abrasive cleaner on the screen surface as this will damage the anti-reflection coating.*

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 transport the monitor.
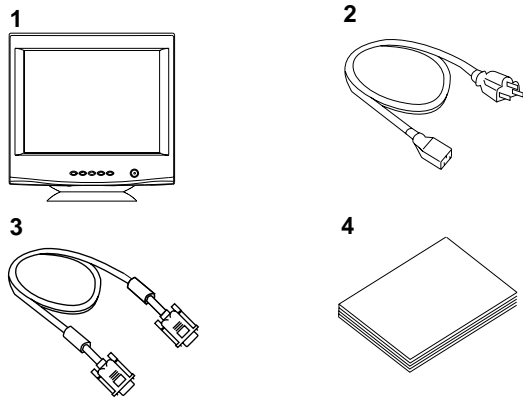
Figure 1

1. Color Monitor
2. AC Power Cord
3. Signal Cable SC-B104

4. User's Guide
    (this document)

1.8   Tilt/Swivel Base

The monitor comes with a tilt/swivel base. This enables you to position the monitor at 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. You can adjust the monitor 90 degrees right or left, 15 degrees up or 5 degrees down, as shown below.

15°
90°
90°
5°
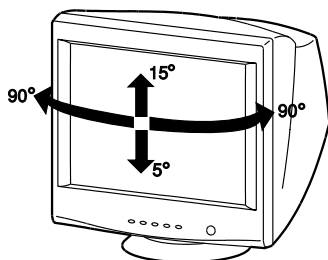
Figure 2

CAUTION

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

1.9   Quick Operation Chart

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

Connect the color monitor and computer with the necessary cords and cables.

See
Section 3. INSTALLATION AND CONNECTION

Turn on the color monitor.

Turn on the computer.

Set the controls.

See
Section 4. OSD(On Screen Display) FUNCTIONS

OK

If a problem appears.

OK

See Section 5. TROUBLESHOOTING

If the problem persists.

Call for your authorized Product Support.
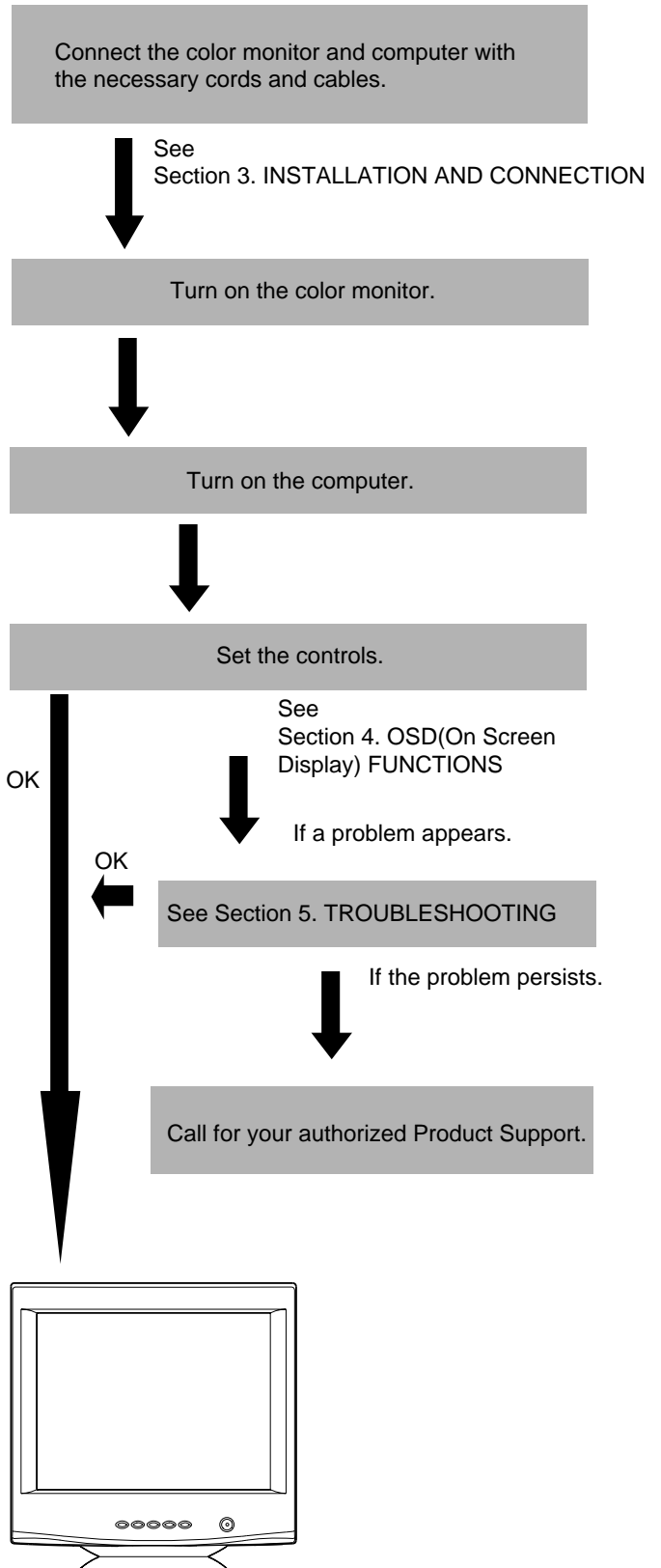
2 PART NAME

2.1   Control Names

See Figures 3 and 4 for the location of the user controls, indicator and connectors.

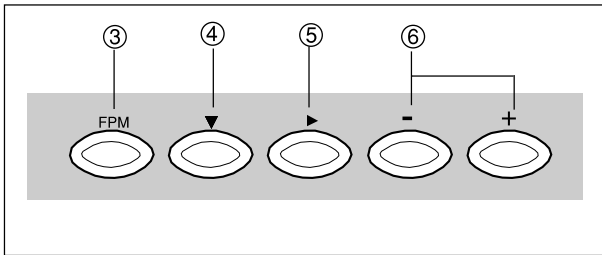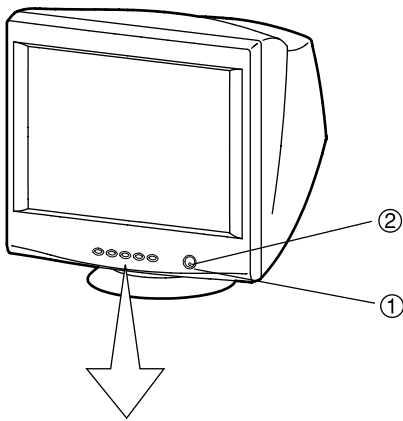Each part is identified by number and is described individually.

FRONT
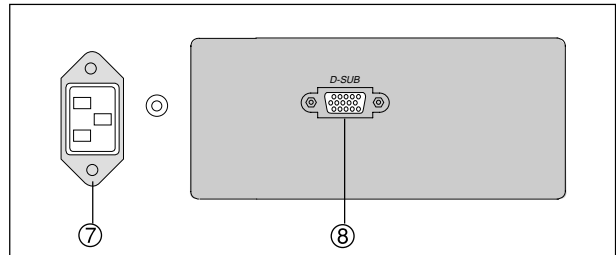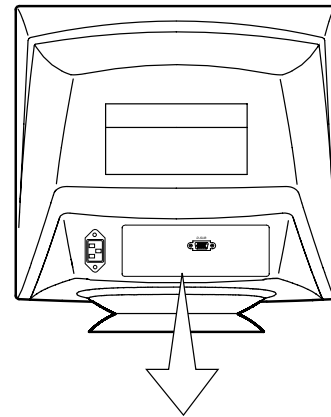

Figure 3

REAR

Figure 4

2.2   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, and illuminates amber when the monitor is in the power management modes.

3. **FPM (FINE PICTURE MODE):**
   Push to on/off the contrast enhancement function.

4. **DOWN BUTTON:** Push to select group icon.

5. **ITEM SELECT BUTTON:** Push to select the item icon.

6. **FUNCTION ADJUST BUTTONS:** Push the adjust buttons to adjust the image on the screen.

7. **AC POWER CONNECTOR**

8. **SIGNAL INPUT CONNECTOR (DB9-15P)**

3 INSTALLATION AND CONNECTION

On the back of the monitor two kinds of plug-in connections are provided: AC power connector for the AC input, DB9-15P connector for video signal input.

3.1 AC Power Connection

One end of the AC power cord is connected to 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 detect 100-120V AC or 220-240V AC and 50 or 60Hz.

3.2 Signal Cable Connection

The DB9-15P(VGA) connector is provided for compatible analog RGB outputs from your computer. Apple Macintosh computers can also be interfaced with using the optional Mitsubishi Macintosh adapter AD-A205.

3.2.1 Connecting to Any IBM VGA Compatible System

Figure 5 shows the SC-B104 cable connection to the Video Graphics Array (VGA) port in an IBM Personal System/2® series, or any VGA compatible system.

1. Power off, both the monitor and the computer.
2. Connect the one end of the SC-B104 cable to the DB9-15P connector on the VGA controller card.
3. Connect the other end of the SC-B104 cable to the DB9-15P receptacle on the back of the monitor.
4. Power on the monitor, then the computer.
5. After using the system, power off the monitor, then the computer.
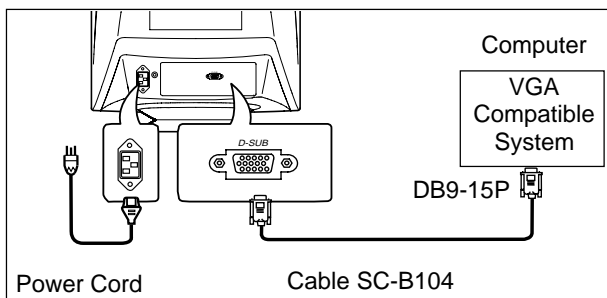
Figure 5

3.2.2 Connecting to An Apple Macintosh Computer

Figure 6 shows the SC-B104 cable and AD-A205 Adapter(option) to the video port in an Apple Macintosh.

The Macintosh Adapter is available that converts the 2 row D-sub video connector on legacy Macintosh computers to a 3 row D-sub(VGA) connector compatible with your Mitsubishi monitor. The Macintosh Adapter is not needed on G3 (ice and blue) and later version of the Macintosh. If the Macintosh Adapter is required for your system, please contact our Information Support line at (800)843-2515 and Mitsubishi will provide this to you free of charge.

1. Power off, both the monitor and the computer.
2. Set the DIP switches of Macintosh Adapter according to the setting chart.
   (See Section 7.3 Optional 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 computer or on the video board.
4. Connect the sub-miniature 15-pin (DB9-15P) end of the AD-A205 Adapter to the SC-B104 cable.
5. Connect the other end of the SC-B104 cable to the DB9-15P receptacle on the back of the monitor.
6. Power on the monitor, then the Macintosh.
7. After using the system, power off the monitor, then the Macintosh.
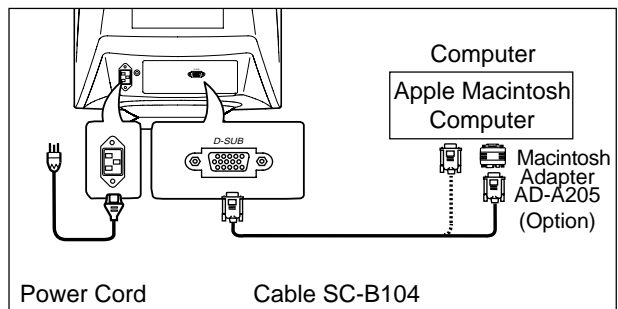

Figure 6

NOTE

- For the Apple Macintosh Computers having a VGA compatible port, steps 2 through 4 are not necessary. Connect the end of the signal cable to the port directly.
- In case of Apple Macintosh G3 series, use "Control Panel" of "Apple Menu" when selecting a resolution. If select the resolution from "Control Bar", no screen may be displayed and the computer may freeze.
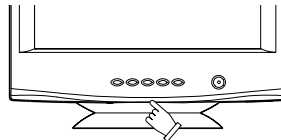
4 OSD (On Screen Display) FUNCTIONS

4.1 How to adjust the screen

The monitor has an OSD(On Screen Display) function. The following procedure shows how to adjust the screen using the OSD function.
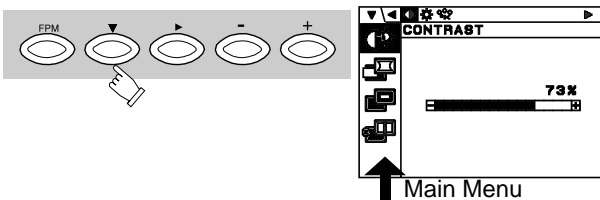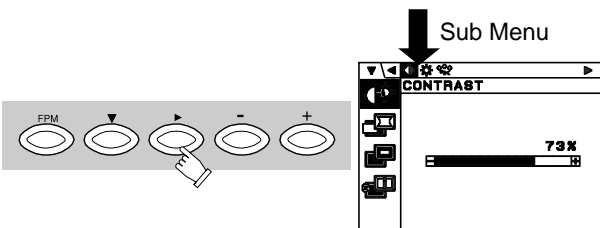
(1) Turn on the monitor.
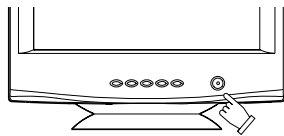
(2) Press button ⌣⌣⌣⌣ to display the OSD screen.

(3) Select the group icon on Main Menu by pressing ⌣.

Main Menu

(4) Select the item icon on Sub Menu by pressing ⌣ button.

Sub Menu

NOTE

When pressing both ⌣ and ⌣ buttons simultaneously, item selection moves to the reverse.

(5) Adjust by pressing ⌣ or ⌣ button.

73%

(6) To turn the OSD off, press ⌣ when ⌣ is selected.
If you don't press any button for about 12 seconds, the OSD will turn off automatically.

4.2 Adjustment Items

X: Available

Items	Function	A	B	C
CONTRAST	Adjusts the contrast level.		X	X
BRIGHT	Adjusts the black level of the screen		X	X
COLOR TEMPERATURE	Adjusts the color temperature of the image on the screen.		X	X
HORIZ-SIZE	Adjusts the horizontal size of the image on the screen.	X		
HORIZ-PHASE	Adjusts the horizontal position of the image on the screen.	X		
VERT-SIZE	Adjusts the vertical size of the image on the screen.	X		
VERT-POSITION	Adjusts the vertical position of the image on the screen.	X		
PINCUSHION	Straightens the left and right sides of the image on the screen.	X		
KEYSTONE	Adjusts the parallelism of the left and right sides of the image on the screen.	X		
TOP-PIN	Adjusts the pincushioning at the top corners of the screen.	X		
BOTTOM-PIN	Adjusts the pincushioning at the bottom corners of the screen.	X		
PIN-BALANCE	Adjusts the curvature of the left and right sides of the image on the screen.	X		
KEY-BALANCE	Adjusts the vertical slant or tilt of the screen image.	X		
ROTATION	Adjusts the rotation of the image on the screen.			X
GEOMETRY RESET	Restores to the factory preset level.(See "NOTE" below.)	-	-	-
HORIZ-STATIC	Adjusts the horizontal alignment of the red, green and blue beams.		X	X
VERT-STATIC	Adjusts the vertical alignment of the red green and blue beams.		X	X
MOIRE CANCEL LEVEL	Adjusts the moire level on the screen.		X	
CORNER PURITY (TL)	Adjusts the purity of the top-left corners of the screen.		X	X
CORNER PURITY (TR)	Adjusts the purity of the top-right corners of the screen.		X	X
CORNER PURITY (BL)	Adjusts the purity of the bottom-left corners of the screen.		X	X
CORNER PURITY (BR)	Adjusts the purity of the bottom-right of the screen.		X	X
CLAMP PULSE POSITION	Uses this function to eliminate excessive green or white background that may occur when external sync signals are applied to the monitor.			
VIDEO LEVEL	Selects video level 1.0V or 0.7V. (0.7V Standard)			
DEGAUSS	Eliminates possible color shading or impurity.	-	-	-
POWER-SAVE	When setting to ON, the power consumption of the monitor will be reduced when not in use if your computer is set for power management.			X
CONTROL LOCK	Locks the OSD function except for "BRIGHT" and "CONTRAST".			X
OSD POSITION	Moves the OSD screen position.			X
DIAGNOSIS	Indicates the current scanning frequency, factory or user preset timing number, and signal input connector.	-	-	-
LANGUAGE	Selects the language used on OSD screen.			X

A. Press "GEOMETRY RESET" to restore to the factory preset level.

B. Press ⌣ and ⌣ buttons together, to restore to the factory preset level.

C. Set data does not change by the change of the signal timing.

 NOTE
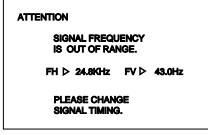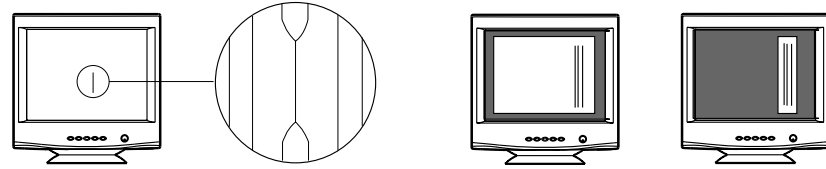
If a non-Factory Preset timing is used, "GEOMETRY RESET" does not work.
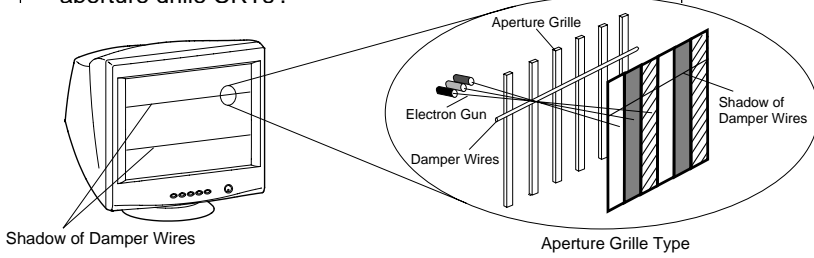
Group Icon	Item Icon	Item	Press the Minus Button	Press the Plus Button
SCREEN		CONTRAST	To decrease the contrast.	To increase the contrast.
		BRIGHT	To decrease the brightness.	To increase the brightness.
		COLOR TEMPERATURE	To increase the red color level.	To increase the blue color level.
GEOM-ETRY		HORIZ-SIZE	To narrow the width of the image on the screen.	To expand the width of the image on the screen.
		HORIZ-PHASE	To move the image on the screen to the left.	To move the image on the screen to the right.
		VERT-SIZE	To narrow the height of the image on the screen.	To expand the height of the image on the screen.
		VERT-POSITION	To move the image down.	To move the image up.
		PINCUSHION	To collapse the center of the image.	To expand the center of the image.
		KEYSTONE	To decrease the width at the top of the screen image and to increase the width at the bottom.	To increase the width at the top of the screen image and to decrease the width at the bottom.
		TOP-PIN	To expand the width of the screen image near the corners of top.	To narrow the width of the screen image near the corners of top.
		BOTTOM-PIN	To expand the width of the screen image near the corners of bottom.	To narrow the width of the screen image near the corners of bottom.
		PIN-BALANCE	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.
		KEY-BALANCE	To make the screen slant to the left.	To make the screen slant to the right.
		ROTATION	To rotate the image counterclockwise.	To rotate the image clockwise.
		GEOMETRY RESET	——————	To restore to factory preset level.

ENGLISH

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Group Icon	Item Icon	Item	Press the Minus Button	Press the Plus Button
VIDEO	[HORIZ icon]	HORIZ-STATIC	To adjust the horizontal beam alignment on the full screen area.	
	[VERT icon]	VERT-STATIC	To adjust the vertical beam alignment on the full screen area.	
	[MOIRE icon]	MOIRE CANCEL LEVEL	To decrease the level of the moire-clear wave.	
	[TL icon]	CORNER PURITY(TL)	To adjust the purity condition on the top-left corner.	
	[TR icon]	CORNER PURITY(TR)	To adjust the purity condition on the top-right corner.	
	[BL icon]	CORNER PURITY(BL)	To adjust the purity condition on the bottom-left corner.	
	[BR icon]	CORNER PURITY(BR)	To adjust the purity condition on the bottom-right corner.	
	CLAMP	CLAMP PULSE POSITION	To eliminate an excessive green or white-back ground that may occur when external sync signals are applied to the monitor. 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. If you connect to an older Macintosh, you may need to press plus button.
	VIDEO	VIDEO LEVEL	To select 1.0V of video input.	To select 0.7V of video input.
MISC.	[DEGAUSS icon]	DEGAUSS	——————	To eliminate possible color shading or impurity due to magnetic effects.
	[POWER icon]	POWER SAVE	To select the constant power consumption mode.	To select the power-save mode. (Your computer must be set for power management.)
	[LOCK icon]	CONTROL LOCK	To permit all OSD adjustments.	To lock the OSD function except for "BRIGHT" and "CONTRAST".
	[OSD icon]	OSD POSITION	To move the OSD screen position in a counter clockwise direction.	To move the OSD screen position in a clockwise direction.
	[i icon]	DIAGNOSIS	Shows the current scanning frequency, Preset No., and signal input connection.	
	[AX icon]	LANGUAGE	To choose the language used on OSD. ENG......English, FRA......French, ESP......Spanish, GER......German, JPN......Japanese	

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 Section 6. SPECIFICA-TIONS and Section 7. APPENDIX.

PROBLEM		ITEMS TO CHECK	LOCATION
No picture	LED On (Green)	• Contrast and brightness controls.	• Front (OSD)
	LED Off	• Power switch. • AC power cord disconnected.	• Front • Rear
	LED On (Amber)	• Signal cable disconnected. • Computer power switch. • Power management function is active.	• Rear • Computer • Press any key on the keyboard or move the mouse.
The following message appeared. INPUT CHECK H ▶ V ▶ COLOR CHECK R G B		• Signal cable disconnected. • Computer power switch. • Power management function is active.	• Rear • Computer • Press any key on the keyboard or move the mouse.
The following message appeared. ATTENTION SIGNAL FREQUENCY IS OUT OF RANGE. FH ▷ 24.8KHz FV ▷ 43.0Hz PLEASE CHANGE SIGNAL TIMING.		• Input signal frequency range is too high or too low for the monitor to synchronize with.	• Check the specification of graphics adapter.
Abnormal picture	Display is missing, center shifts, or too small or too large of a display size	• Do "GEOMETRY-RESET" for a standard signal. • Adjust HORIZ-SIZE, VERT-SIZE, HORIZ-PHASE, and VERT-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.	• Front (OSD) • Front (OSD)
	Display is dark or too bright	• "VIDEO LEVEL" is not at the appropriate position for your graphics adapter output.(0.7V or 1.0Vp-p)	• Front (OSD)
	Black vertical lines are visible on the screen.	• Thin vertical black lines on one or both sides of the screen. This minor condition is caused by grille element overlap which can occur during shipping. • Position an open white window over the affected area of the screen and maximize the brightness and contrast controls. This will cause localized heating of the overlap which will clear in a few minutes. Be sure to readjust the brightness and contrast controls back to the normal viewing levels after this procedure.	• –

PROBLEM	ITEMS TO CHECK	LOCATION
Two fine horizontal lines are visible on the screen.	• The 2 very faint thin lines across the screen are normal. They are caused by the aperture grille stabilization filaments(Damper Wires) which are required for all aperture grille CRTs'. Shadow of Damper Wires / Aperture Grille / Electron Gun / Damper Wires / Shadow of Damper Wires / Aperture Grille Type	• −
A buzzing sound when power on.	• A brief vibration or hum sound that is heard just after power up is normal. This is caused by the automatic degaussing function. This sound will be heard each time the monitor is powered up from a cold start and each time the manual degauss button is used.	• −

6 SPECIFICATIONS

CRT	Size	50cm/19"(46cm/18" Diagonal Viewable Image)
	Mask type	Aperture grille
	Gun	In-line
	Deflection angle	90°
	Phosphors	Red, Green, Blue EBU (medium short persistence)
	Aperture grille pitch	0.24mm
	Face Plate	Anti-glare, Anti-reflection and Anti-static film
	Focusing method	Dynamic Beam Forming (DBF)
INPUT SIGNAL	Video	0.7 or 1.0Vp-p analog RGB
	Sync	Separate H, V sync., or Composite sync
SIGNAL INTERFACE	Input Connectors	DB9-15P
	Input Impedance	75 (video), 2.2k (sync.)
SCANNING FREQUENCY	Horizontal	30 - 108kHz
	Vertical	50 - 140Hz
RESOLUTION (HxV)	1600 dots x 1200 lines Non-Interlaced maximum addressable resolution format at 85Hz	
WARM-UP TIME	30 minutes to reach optimum performance level	
BRIGHTNESS	100cd/m^2, standard full white video signal at 9300K (+ 8MPCD)	
BLANKING TIME	Horizontal	2.3 μsec (typ.)
	Vertical	500 μsec (typ.)
DISPLAY SIZE	350mm x 262mm(typ.) ratio 4:3	
COLOR	5000K~9300K	
POWER SOURCE	AC100-120/220-240V±10% 50/60Hz 120W (typ.)	
OPERATING ENVIRONMENT	Temperature	5 - 35°C
	Humidity	10 - 90%RH (without condensation)
DIMENSIONS	(W)17.9inch x (H)18.2inch x (D)18.0inch / (W) 454mm x (H) 462mm x (D) 456mm	
WEIGHT	Approx. 23.0kg (50.7lbs.)	
TILT/SWIVEL BASE	Tilt Angle	-5° - +15°
	Swivel Angle	±90°
REGULATIONS	Safety	UL1950 (UL), CSA C22.2 No.950 (C-UL) EN60950 (TÜV-GS)
	EMC	FCC Class-B, DOC Class-B EN55022 Class-B EN50082-1, EN61000-3-2, EN61000-3-3
	X-Ray	DHHS, HWC, Röv vom 8.1, 1987
	Other	CE-Marking, MPR-II/TCO'91 ISO9241-3, ISO9241-7, ISO9241-8 (TÜV-GS) TCO '99 International ENERGY STAR Program

∗ This model is registered / certified with Model No. NUR1905STTKW.

7 APPENDIX

7.1 Monitor Signal Input Connector (DB9-15P)

(Female)

DB9-15P

MOUNTED ON THE REAR PANEL
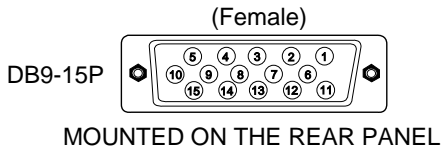
PIN ASSIGNMENTS

Pin No.	Signal
1	RED VIDEO
2	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

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

7.2 SC-B104 Signal Cable

Approx. 1.8m

DB9-15P(Male)   DB9-15P(Male)
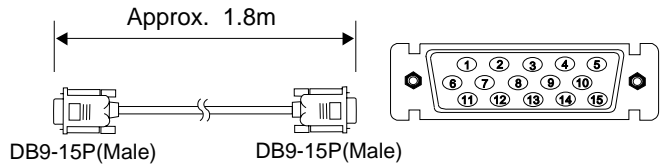
PIN ASSIGNMENTS

Pin No.	Signal
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

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

7.3 Optional Macintosh Adapter AD-A205 settings

The AD-A205 Macintosh Adapter(option) allows you to take an advantage of the built in video capabilities of your Macintosh computer with the monitor.

(1)   Set the dip switches of the adapter, before connect to the computer.

(2)   Set the dip switches according to the following chart. By using the following chart, you can choose a main resolution, quickly.
If you wish to operate by other resolution, refer to next page; "AD-A205 Mac Adapter Setting Chart"

Dip Switches   Macintosh

Display monitor
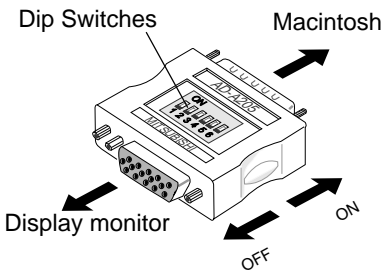
Apple Macintosh	Switch ON	Switch Setting
Macintosh IIsi, IIci, IIvi, IIvx, LC, LC II	1,2	
Macintosh LC III, LC475, LC630	2,4	
Macintosh Quadra 610, 650, 700, 800, 840AV, 900, 950 Macintosh Centris 610, 650, 660AV	1,2,3,4	
Performa 6260, 6310, 6410, 6420 Power Macintosh 6100, 6100AV, 6200, 6300 Power Macintosh 7100AV, 7200, 7300, 7500, 7600 Power Macintosh 8100, 8100AV, 8500, 8600 Power Macintosh 9500, 9600 Workgroup Server 7350, 8150, 9150, 9650	1,2,6	
Power Macintosh 4400, G3	3,4	

(3)   "AD-A205 Mac Adapter Setting Chart" shows all available modes for Macintosh systems and all possible combinations with the monitor.
We recommend that you use the monitor with a preset timing. (See Section 1.2 Internal Preset Memory Capability)

(4)   Please refer to the instruction book of your computer about the resolution setting.
Resolution may not be changed on some computers.

\<Optional Macintosh Adapter AD-A205 Setting Chart\>

● Set the dip switch "ON" as shown below.   (Example; "1,2")

RESOLUTION	IIsi IIci	IIvi IIvx	LC LCII	LCIII LC475	LC630	Quadra 700 900	Quadra 610 650 800 950 / Centris 610 650	Quadra 840AV / Centris 660AV	Performa 6260 6310	Performa 6410 6420	WS 8150 9150 / 6100 8100 6100AV 7100AV 8100AV DRAM Video Port (HDI-45)	8100 VRAM Video Card (DB-15) / 6100AV 7100AV 8100AV AV Video Card (DB-15)	6200 6300	7200	4400	7300 7500 7600 8500 8600 / WS 7350	9500	9600/233 / WS 9650	9600/300 9600/350	G3
640 x480 @60Hz		3,4	3,4	3,4	3,4	3,4	3,4	3,4	1,2,6	1,2,6	3,4	3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
640 x480 @67Hz	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
640 x480 @72Hz															3,4					3,4
640 x480 @75Hz															3,4					3,4
640 x480 @85Hz																				3,4
800 x600 @60Hz					3,4				1,2,6	1,2,6			1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600 @72Hz					3,4			3,4	1,2,6	1,2,6		3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600 @75Hz														3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600 @85Hz																				3,4
832 x624 @75Hz				2,4	2,4	2,4	2,4	2,4	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768 @60Hz								3,4		1,2,6		3,4		3,4	3,4	3,4	3,4	3,4	3,4	3,4
1024 x768 @70Hz								3,4				3,4			3,4		3,4		3,4	3,4
1024 x768 @72Hz									1,2,6					3,4		3,4		3,4		3,4
1024 x768 @75Hz							2,3	2,3				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768 @85Hz																				
1152 x870 @75Hz						1,2,3,4	1,2,3,4	1,2,3,4				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1280 x960 @60Hz																				
1280 x960 @75Hz															3,4	1,2,6	3,4	1,2,6	1,2,6	3,4
1280 x960 @85Hz																			1,2,6	
1280 x1024 @60Hz															3,4		3,4	1,2,6	3,4	3,4
1280 x1024 @75Hz															3,4	1,2,6	1,2,6		1,2,6	3,4
1280 x1024 @85Hz																			3,4	3,4
1600 x1200 @60Hz																			1,2,6	3,4
1600 x1200 @65Hz																			1,2,6	3,4
1600 x1200 @67Hz																				
1600 x1200 @70Hz																		1,2,6		3,4
1600 x1200 @75Hz																			1,2,6	3,4

1. The resolution does not change with the computer powered on when you set the dip switches.
   Be sure to power off the computer when you set the dip switches.
2. Set the dip switches by a pointed article like a pencil or ball point pen to touch end of the switch groove.

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