![Diamond Digital logo]

# DIAMOND DIGITAL
# DV197/DV197SB

## Colour TFT LCD Monitor

### 19" (48 cm) LCD Panel Size

# Table of Contents

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| Reference Information | |
|---|---|
| For future reference, write the following information about your monitor in the space below.  The serial number is found on the back of the product or on the bottom of its stand. | |
| **Monitor Information** | |
| Product Name: | Diamond Digital DV197/DV197SB |
| Serial Number: | |
| Date of Purchase: | |
| **Dealer Information** | |
| Dealer: | |
| Telephone Number: | |
| Address: | |

# I Important Safety Instructions

Please read the following safety instructions before installing or cleaning your Diamond Digital monitor:

1. Unplug the monitor's power cable from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a soft cloth to clean the monitor housing.

2. Slots and openings on the back or top of the cabinet are provided for ventilation. They must not be blocked or covered. This product should never be placed near or over a radiator or other heat source, or used in a built-in installation unless proper ventilation is provided.

3. Never push objects of any kind, or spill liquid of any kind into this product.

4. Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltages or other hazards.

5. If any abnormal operation or accident (such as dropping the unit) occurs, disconnect the monitor from the wall power outlet and contact qualified service personnel.

# 2 Features

Your Diamond Digital DV197/DV197SB Monitor features:

- **XGA (1280 x 1024 pixel) Resolution LCD Panel**

- **High Brightness – 270 cd/m$^2$ (typical)**

- **High Contrast Ratio – 550:1 (typical)**

- **Response Time – 8 ms (Tr + Tf)**

- **True Colour Display**
  With 16.2M colours, the Diamond Digital DV197/DV197SB monitor offers better image quality.

- **High Quality Ratiometric Expansion**
  With any resolution within the monitor's specified range, your Diamond Digital DV197/DV197SB monitor can expand the image to full screen.

- **Plug and Play Compatibility with Microsoft® Windows® 95, 98, 2000, Me and XP**

- **Space Saving - only 246 mm deep**

- **Light Weight - only 6.0 kg**

- **Lower Power Consumption**
  55W maximum during operation.

- **Power Saving**
  Power management complies with VESA DPMS standard. When the system is idle (in monitor off mode), the monitor automatically cuts its power consumption to less than 2W.

- **On Screen Display**
  Allows you to adjust all settings simply using on-screen menus.

# ∃ Unpacking the Monitor

Please check that the following items are included with your monitor. If they are missing or damaged, please contact your place of purchase immediately.
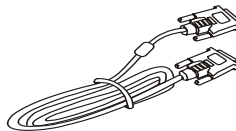
**LCD monitor**

**User's Manual**
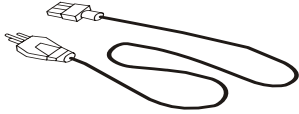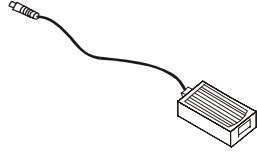
User's
Manual

**VGA Cable**

**DVI Cable**

**Power Cord**                    **AC Adapter**

Locate the model name and the serial number label on the back of your monitor, and write the details of the monitor and your place of purchase in the space on page (ii) of this manual for future reference.

# 4 Hardware Installation

**Viewing Angle Adjustment**

The LCD Monitor is designed to allow users to have a comfortable viewing angle. The viewing angle can be adjusted from -5°to +25° (See fig. 1-1)
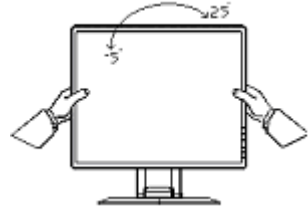


Figure 1-1

Warning

Do not force the LCD Monitor over its maximum viewing angle settings as stated above.

**VESA Mounting Instructions**

The rear of this LCD display has four integrated 4 mm, 0.7 pitch threaded nuts, as illustrated in Figure 1-2. (These specifications meet the VESA Flat Panel Monitor Physical Mounting Interface Standard).
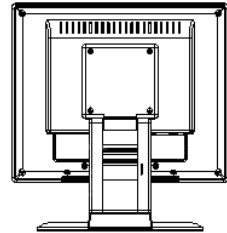


Figure 1-2

## Connecting the Display

1. Power off your computer.
2. Connect one end of the signal cable to the LCD Monitor's VGA or DVI port (See Fig 1-3)
3. Connect the other end of the signal cable to the VGA or DVI port on your PC.
4. Ensure all connections are fastened securely.
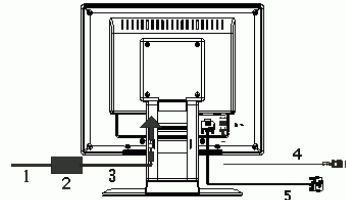


| 1. | AC Power Cord | 4. | Signal Cable |
|----|---------------|----|--------------|
| 2. | External Adapter | 5. | DVI Cable |
| 3. | DC-Jack Power Cable | | |

Figure 1-3

## Connecting the AC Power

1. Connect the AC Adapter to the LCD Monitor (See Fig. 1-3)
2. Connect the power cord to an AC power source.

# 5 Windows driver Installation

The DV197/DV197SB is fully Windows Plug and Play compatible so no specific Windows drivers are required to be loaded.

## Windows 98, ME, and 2000

The first time you start Windows after connecting your new monitor, the system will detect the monitor and automatically start the **Add New Hardware** wizard. Just follow the prompts to load the native Plug and Play drivers.

## Windows XP

The first time you start Windows after connecting your new monitor Windows XP will automatically load the native Plug and Play drivers.

# 6 Setting the Display Resolution

## <u>Choosing The Best Resolution</u>

All Liquid Crystal Displays (LCDs) have a fixed resolution that is the same as the maximum resolution that may be displayed on the LCD. In the case of the DV197/DV197SB the LCD resolution is 1280 x 1024 pixels. This is also known as the "native" resolution of the monitor. Lower resolutions can be displayed at full screen through an interpolation circuit. Because the lower resolution must be expanded, the quality of the displayed image is not as good as that available when the native resolution is displayed. For optimal performance from any LCD monitor, you must use the monitor's native resolution.

If you are using Windows 95, 98, 2000, Me, XP or NT 4.0, you can change the resolution as follows:

1. Double-click the **Display** icon in the control panel.
2. From the **Display Properties** dialogue box, select the **Settings** tab. There is a slider on the right-hand side in the middle of the dialogue box that alters the displayed resolution. Set the resolution to 1280 x 1024.
3. *For Windows NT users only:* select a refresh rate of 60Hz and click **Test**. A test pattern will be displayed. Make sure that there are no error messages shown by the monitor. If an error message is displayed, check the resolution and refresh rate settings or choose a different refresh rate.
4. Click **OK** to close **Display Properties.**

If you are using an Apple Macintosh, change the resolution by doing the following:

MacOS 8.x/9.x

1.  Click the Apple icon at the top, left corner of the screen, select **Control Panel** and then select **Monitors**.
2.  Select a resolution of 1280 x 1024 pixels with between 60Hz and 75Hz refresh rate.
3.  If refresh rates of 60Hz or 75Hz are not available, click **Recommended** in the **Show** drop-down box and change it to **All**. Select the resolution and refresh rate as above.

    A colour depth of either **Thousands** or **Millions** is recommended.

MacOS X

1.  Click the Apple icon at the top, left corner of the screen, select **System Preferences** and then select **Displays**.
2.  Select a resolution of 1280 x 1024 pixels with between 60Hz and 75Hz refresh rate.
3.  A colour depth of either **Thousands** or **Millions** is recommended.

## **Supported Graphics Modes and Refresh Rate Selection**

There is no need to choose the highest possible refresh rate when using an LCD monitor. It is not technically possible for an LCD monitor to flicker. Even at a refresh rate of 60 Hz you will get an absolutely flicker-free image.

For best results, it is important that you set the graphics adaptor to use one of the monitor's preset display modes shown in *Table 1* on the next page. Other graphics signals may be displayed poorly or not at all. Note that the DV197/DV197SB's preset modes correspond to VESA or Apple Macintosh standard graphics signals for these resolutions. All recent models of graphics adaptor should be able to support these modes. For the native resolution of 1280 x 1024 pixels, for example, refresh rates of 60, 70 and 75 Hertz are

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supported.

With Windows 95, 98, ME, 2000 or XP you can change the refresh rate of the graphics signal as follows:

1.  Double click the **Display** icon in the control panel.

2.  From the **Display Properties** dialogue box, select the **Settings** tab and click the **Advanced Properties** button.

3.  For Windows 95, 98, and ME select the **Adapter** tab, for 2000 and XP select the **Monitor** tab. The refresh rate selection field is located in the centre, at the bottom of the dialogue box.

4.  Choose a refresh rate that corresponds with one of the factory modes from the table below.

5.  Click **Apply**, and then **OK** twice.

**Please Note:**

- Graphics modes that are not listed in the table may not be supported. For an optimal picture it is recommended that you choose a graphics mode with a resolution of 1280 x 1024 pixels that is listed in *Table 1* on the next page. Resolutions of 640 x 480, 800 x 600 and 1024 x 768 pixels are supported. The default setting may require some adjustment before use.
- The displayed image may show some distortion or noise that can be caused by the signal from the VGA card if it does not correspond with the usual standard. This is not however, a problem with the monitor. If it is still visible after using the Automatic adjustment, you can usually improve the displayed image by manually adjusting the phase, horizontal position and pixel frequency settings using the "Geometry" menu. See Chapter 7, *Adjusting the Monitor*, for more details.
- When you shut Windows down you may see interference lines on your screen. This caused by the manner in which Windows controls the graphics card at this point and is normal with all LCD monitors.
- To extend the service life of the product, we recommend that you use your computer's power management functions to turn the monitor off after extended idle periods.

# Table 1

## Standard Timing Table

If the selected timing is NOT included in table below, this LCD monitor will use the most suitable available timing.

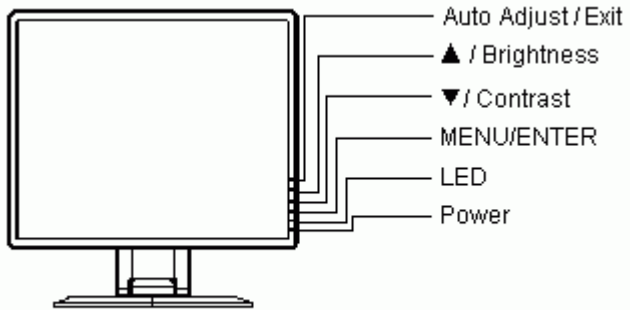| STANDARD | RESOLUTION | HORIZONTAL FREQUENCY | VERTICAL FREQUENCY |
|---|---|---|---|
| Dos-mode | 720 × 400 | 31.47kHz | 70Hz |
| VGA | 640 × 480 | 31.47kHz | 60Hz |
| | 640 × 480 | 37.50kHz | 75Hz |
| SVGA | 800 × 600 | 37.879kHz | 60Hz |
| | 800 × 600 | 46.875kHz | 75Hz |
| XGA | 1024 × 768 | 48.363kHz | 60Hz |
| | 1024 × 768 | 56.476kHz | 70Hz |
| | 1024 × 768 | 60.02kHz | 75Hz |
| SXGA | 1280 × 1024 | 64.00kHz | 60Hz |
| | 1280 × 1024 | 80.00kHz | 75Hz |

*Note: **The factory preset mode for DOS is 720x400 @ 70Hz***

**OSD Lock Function:** To lock the OSD, press and hold the MENU button while the monitor is off and then press power button to turn the monitor on.  To un-lock the OSD - press and hold the MENU button while the monitor is off and then press power button to turn the monitor on.

# 7 Adjusting the Monitor

## User Controls

A brief description and the location of all LCD Monitor function controls and indicators:



Figure 2-1

| 1 | **Auto / Exit** | Hold for 2 seconds to perform Auto Adjust.<br>If OSD is open, press to exit an OSD item |
|---|---|---|
| 2 | **▲ Brightness** | Adjust Brightness or adjust OSD item |
| 3 | **▼ Contrast** | Adjust Contrast or adjust OSD item |
| 4 | **MENU / Enter** | Press to display the OSD (On Screen Display)<br>or to select/confirm the settings of an OSD item. |
| 5 | **LED** | LED is Green -- Power is ON<br>LED is Red -- Standby mode<br>LED is Off -- Power is off |
| 6 | **Power** | Press the power button to switch the monitor ON/OFF |

## Adjusting the Monitor's Display

### *OSD Function Menu*

To access the OSD Main menu, press the **MENU** button on the monitor, and the OSD will pop up on the screen as shown in Fig. 2-2:

Use the ▲ or ▼ keys to scroll through the available options, then press the **MENU** button to open the selected item.

Adjust the setting of a selected item using the ▲ or ▼ keys, then press **MENU** to confirm. Press **Auto** to exit the OSD item, or to close the OSD.
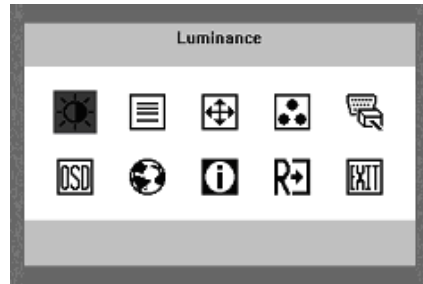


Figure 2-2

## Function Description

| Main Menu Item | Main Menu | Sub Menu Item | Sub Menu | Description |
|---|---|---|---|---|

|  | **Icon** |  | **Icon** |  |
|---|---|---|---|---|
| Luminance | ☀ | Contrast | ◑ | Contrast Adjustment. |
|  |  | Brightness | ☼ | Brightness Adjustment |
| Image Setup | ☰ | Focus | ☰ | Adjust Picture Phase to reduce Horizontal-Line noise |
|  |  | Clock | ⦀ | Adjust picture Clock to reduce Vertical-Line noise. |
| Image Position | ✛ | H. Position | ⬚ | Adjust the horizontal position of the picture. |
|  |  | V. Position | ⬒ | Adjust the vertical position of the picture. |
| Color Temp. | ⣵ | Warm | N/A | Select Colour Temperature 6500K. |
|  |  | Cool | N/A | Select Colour Temperature 7800K |
|  |  | User / Red | R | Red Gain from Digital-register. |
|  |  | User / Green | G | Green Gain Digital-register. |
|  |  | User / Blue | B | Blue Gain from Digital-register. |

| Main Menu Item | Main Menu Icon | Sub Menu Item | Sub Menu Icon | Description |
|---|---|---|---|---|
| Input Select | | Analog | N/A | Select VGA signal input |
| | | Digital | N/A | Select DVI signal input |
| OSD Setup | | H. Position | | Adjust the horizontal position of the OSD. |
| | | V. Position | | Adjust the vertical position of the OSD. |
| | | OSD Timeout | | Adjust the OSD timeout. |
| Language | | Language | N/A | Set OSD language |
| Information | | Information | N/A | Show the resolution, H/V frequency and input port of current input timing. |
| Reset | | Yes | N/A | Reset to factory defaults |
| | | No | N/A | Do not execute reset, return to main menu. |
| Exit | | N/A | N/A | Exit OSD |

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## Picture Optimisation

The easiest way to obtain an optimal picture is by using the **Auto** button on the front of the monitor. Hold the Auto button for 2 seconds to perform an auto adjust. This only works reliably if the graphics adaptor is set to use one of the monitor's factory modes (see *Table 1* in the previous chapter) and if you are displaying a suitable stationary image (such as the Windows desktop).

The monitor will remember the settings obtained by the auto calibration settings and use them whenever you turn the monitor on. Note that you may need to readjust the monitor if it is connected to a different computer or if the computer's graphics adaptor is replaced.

If you are still not satisfied with the result, you can enhance the image by using

the monitor's manual adjustment functions.

## Manual Picture Adjustment

Adjustments to the displayed image are made using the On-Screen Display

(OSD), and the buttons on the front of the monitor.

To manually adjust the image:

1. Display your operating system desktop
2. Open the OSD menu by pressing the **MENU** key on the monitor.
3. Press ▼or▲ to highlight **Image Setup**, then press **MENU**.
4. Select **Clock**
5. Press ▼or▲ to increase or decrease the sampling clock to get the optimum picture. Look closely at the picture displayed, especially surrounding text and icons, for any movement or change. Adjust the **Clock** setting and see how this affects this "noise" or movement. Make sure that in correcting noise in one part of the screen the setting does not create it in another. You should, with careful adjustment, be able to obtain a picture with no visible noise in any section of the screen.

6.  If some noise or distortion is still visible select **Phase** using the ▼or ▲ buttons.
7.  With the **Clock** set to the optimal value adjust the **Phase** to further optimise the displayed image. You should now be able, with a combination of the Focus and Clock settings, to obtain a perfectly stable image.
8.  Finalise the manual adjustment using the **H. Position** and **V. Position** functions, located in the **Image Position** category.

If you are still not satisfied with the result, try repeating the above procedure using a graphics signal that has a different refresh rate.

**Please Note:**

You must use one of the factory modes when manually adjusting the picture. If you are having difficulties generating a supported mode, ask your computer dealer or the distributor or manufacturer of your graphics card for assistance.

The procedures described in this chapter should be performed for every resolution and type of graphics signal that you wish to use. For example, if a particular application requires a resolution of 800 x 600 pixels, but all other applications use the monitor's native resolution, you will need to display the test pattern and make adjustments twice.

The monitor will remember your settings and use them whenever you turn the monitor on. Note that you may need to re-adjust the monitor if it is connected to a different computer or if the computer's graphics adaptor is replaced.

# 8 Frequently Asked Questions

**The image is blurred, how can I get the best quality picture?**

♦   Read chapter 6, *Setting the Display Resolution*, and select a graphics signal with the correct resolution and refresh rate. Then read chapter 7, *Adjusting the Monitor*, and make adjustments to the displayed image based on these instructions.

♦   Have you used a VGA extension cable?

If so, remove the extension cable and check the displayed image. Has the image quality improved? Optimise the image using the procedures in chapter 7 with the extension cable removed. Reconnect the extension cable once the image has been optimised. Depending on the characteristics and type of the extension cable, some blurring or distortion may occur due to conduction losses of the extension cable. You can minimise these losses by using an extension cable with better conduction quality or with a built-in booster.

♦   Does the blurring only occur at resolutions lower than the native (maximum) resolution?

Please read chapter 6, *Setting the Display Resolution*. Select a graphics signal that uses the monitor's the native resolution (1280 x 1024 pixels).

**Why does the image look yellow, blue or pink instead of showing the correct colours?**

♦   The most common cause of this problem is a loose VGA signal cable or connector. Check that the cable is securely connected to the computer.

♦   Check the VGA signal cable for damage. If any pins are bent or broken off, contact your dealer or an authorised Mitsubishi Electric service agent (see Chapter 10 for details).

**No image is displayed, what can I do?**

- Check that the light (LED) next to the monitor's power button is lit and is green in colour. If the LED is green, press the **MENU** button on the monitor to access the On Screen Display. If the message ***Image not supported*** appears on the screen, please read chapter 6, *Setting the Display Resolution* and reset the graphics card to one of the monitor's supported graphics signals.

- If the LED is red the monitor is in power saving mode. Press a button on the computer keyboard or move the mouse to wake the computer. If that does not help, check that the VGA cable is securely plugged into the computer. Also check the pins of the VGA cable's connector. If any pins are bent or broken off, then contact your dealer (see Chapter 10 for details).

- If the LED is not lit at all, check that the monitor is plugged into the power supply mains socket and that the power switch is turned on. Check that the monitor's power switch is also turned on.

**The image is distorted, flashes or flickers:**

- Check that the monitor's signal cable is securely connected to the computer.

- Read the chapters 6 and 7 of this manual, then select the correct resolution, refresh rate and make adjustments based on these instructions.

**The image is displaced in one direction:**

- Use the **H. Position** (horizontal position) adjustment in the monitor's OSD to reposition the image.

- Read the chapters 6 and 7 and then select the correct resolution, refresh rate and make adjustments based on these instructions.

# 9 Specifications

**Model:**   <u>**Diamond Digital DV197/DV197SB**</u>

## *Display Characteristics*

| | |
|---|---|
| **Display Type** | 19" active matrix Thin Film Transistor Liquid Crystal Display |
| **Viewable Diagonal Area** | 48 cm / 19" |
| **Native (Maximum) Resolution** | 1280 x 1024 pixels |
| **Colours** | 16.2 million |
| **Contrast Ratio** | 550:1 (typical) |
| **Brightness** | 270 cd/m² (typical) |
| **Response Time** | 8  ms (typical) |
| **Viewing Angle (Horizontal, Vertical)** | 140°, 135°(typical) |
| **Dot Pitch** | 0.294 mm |

## *User Interface*

| | |
|---|---|
| **Controls** | Power switch with LED selection adjustment |
| **On-Screen Display Functions** | Contrast, Brightness, Focus, Pixel Clock, Hor. & Vert. Position, Colour Temperature, Auto & Input Select, OSD Hor. & Vert. Position, OSD Timeout, Language, Information, Reset, Exit |
| **Microprocessor Controlled Graphics Modes** | 15 Preset modes |

## Input Signal

| | |
|---|---|
| **Line Frequency** | 30 – 83kHz multi-frequency |
| **Image Frequency (Refresh Rate)** | 55 - 75Hz |
| | |
| **Video Signal** | RGB analogue (Positive polarity) |
| | 0.7 Vpp/75 Ohm |
| **Synchronization** | H/V TTL Separate Sync |
| **Signal Connection** | 15-pin mini D-sub and |
| | 24 pin DVI-D connectors |

## Physical Characteristics

| | |
|---|---|
| **Power Management** | EPA Energy Star |
| **Maximum Power Consumption** | 55 Watts |
| **Power Saving Mode** | ≤ 2 Watts |
| **Operating Voltage** | Automatic switched mode power supply, 100 - 240 V, 50 - 60 Hz |
| **Dimensions (W x H x D)** | 406mm x 415mm x 246mm |
| **Weight** | 6.0 kg |
| **Temperature (Operating)** | 0°C – 40°C |
| **Air Humidity (Operating)** | 15% - 90% |

## Regulatory Certification

| | |
|---|---|
| **Safety** | AS/NZS 60950 |
| **EMI/EMC** | AS/NZS CISPR22:2002 (C-Tick) |
| **Other** | ISO 13406-2 |

# 10 Service Contacts

If problems remain after checking this manual, please contact your place of purchase or contact:

**Australian Service Contacts**

Visit the Customer Support section of Mitsubishi Electric Australia's web site at

## www.mitsubishielectric.com.au

for details of your nearest Mitsubishi Electric Authorized Service Center or contact the Service Department for your state:

**New South Wales and Australian Capital Territory**

348 Victoria Road

Rydalmere, NSW, 2116

Telephone:  (02) 1300 651-808
Fax:            (02) 9684-7684

**Queensland**

12 / 468 Nudgee Road

Hendra, QLD, 4011

(Airlink Business Park)

Telephone:  (07) 3623-2000
Fax:            (07) 3630-1888

**South Australia and Northern Territory**

77 Port Road

Hindmarsh, SA, 5007

Telephone:  (08) 8340-0444
Fax:            (08) 8340-0555

**Victoria and Tasmania**

4 / 303 Burwood Hwy

East Burwood, VIC, 3151

Telephone: (03) 9262-9899
Fax: (03) 9262-9850


**Western Australia**

5 / 329 Collier Road

Bassendean, WA, 6054

Telephone: (08) 9377-3411
Fax: (08) 9377-3499