

MID-190

**Medical Image Display with 19"
TFT LCD**

User Manual

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FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against radio frequency interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception (this 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 which the receiver is connected to.
- Consult the dealer or an experienced radio/ television technician for help.

Caution *To comply with the limits for a FCC Class B computing device, always use the shielded signal cord and shielded power cord supplied with this unit*

Caution *The Federal Communications Commission warns the user that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

NOTICE OF COMPLIANCE WITH CANADIAN INTERFERENCE CAUSING EQUIPMENT REGULATIONS

DOC COMPLIANCE NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

DOC AVIS DE CONFORMATION

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicable aux appareils numeriques de la class B prescrites dan le Reglements sur le brouillage radioelectriques edicte par le ministere des Communications du Canada.

SAFETY INSTRUCTIONS

• Power

- LCD Monitor Rated: 12 Vdc , 5.5A maximum.
- Use the type of power indicated on the marking label.
- Adapter: Only use an adapter designed for the LCD monitor (Ault / MW116KA1249F51)
- Rating: Input 100-240 Vac, 50-60 Hz , 1.0A max.
- Output: 12 Vdc, 6.67A max.

<i>Important</i>	<i>Use of another type of adapter will result in malfunction and /or danger.</i>
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• Plugs

- Do not remove any parts of the monitor's three pronged power plug.
- Disconnect the power plug from the AC outlet when the monitor will not be used for an indefinite period of time.
- Power and extension cords
- Use the proper power cord with the correct plug type. If the power source is 120V AC, use a power cord that has UL and CSA approvals. If the power source is a 240V AC supply use the tandem (T blade) type attachment plug with a ground conductor power cord that meets the

respective European country's safety regulations, such as VDE for Germany.

- We recommend using the power cord supplied with the product. However, if another type of power cord is required, power cord H05VV-F or VW-1, 18AWG x 3G should be used.
- Do not overload wall outlets or power cords. Be sure that the total of all units plugged into the wall outlet does not exceed 7 amperes.
- Be sure that the total ampere ratings on all units plugged into the extension cord does not exceed the rating of the cord.
- If the monitor power supply cord requires a connection to the PC instead of the wall outlet, this equipment is to be used with a UL approved computer which has a receptacle rate of 100-240V AC, 50/60Hz, 1.5A (minimum).
- Do not place anything on the power cord. Do not locate this product where a person may walk or trip over the cord.
- Environment
 - Place the monitor on a flat and leveled surface.
 - Place the monitor in a well-ventilated area.
 - Keep the monitor away from:
 - Rain or water
 - Excessive heat, cold or humidity.
 - Areas exposed to direct sunlight.
 - Dusty surroundings.
 - Equipment that generates strong magnetic fields.

- Warning**
- 1. Do not use in the presence of flammable anesthetics.*
 - 2. Do not obstruct the ventilating holes.*
 - 3. Do not use if the product has been exposed to liquids.*
 - 4. Do not use if the cable have been frayed or damaged.*
 - 5. Only connect to the device which has SELV Circuitry or Medical approval.*

Packing List

Before operating this monitor, please make sure that all items listed below are present in your package:

- The LCD monitor
- This user manual
- Warranty statement
- AC Power cord
- AC/DC adapter
- D-sub 15-pin signal cable
- DVI Cable

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CHAPTER
1

General Information

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Chapter 1 General Information

1.1 Introductions

With style, versatility and visual brilliance, the LCD monitor incorporates analog and digital interfaces. The LCD monitor provides the utmost in display performance and compatibility of today's analog video standards while guaranteeing compatibility for tomorrow's advanced digital standards. This sleek ergonomically designed TFT display provides flexible four-way adjustments for optimum desktop use. Furthermore, its portrait mode provides maximum internet browsing convenience as considerably less scrolling required.

The LCD monitor is the ultimate flat panel solution for those who prefer more desktop working space, the highest video performance and flexibility, due to its smaller footprint and size coupling with crisp, sharp display image quality.

We truly believe you will enjoy using the LCD monitor. Thank you for making our product your choice.

1.2 Specifications

1.2.1 General

- **Dimensions (W x H x D):** 431 x 467 x 239mm (17.0"x18.4"x9.4") – with the base
- **Net Weight:** 8.5 kg (18.6 lbs.)
- **Power Consumption:** < 60W
- **Power (AC/DC Adapter):**
Input: 100~240 Vac, 60/50Hz, 1.0 A max.
Output: 12 Vdc, 6.67A max

1.2.2 Display Specifications

- **Panel Size/Type:** 19" TFT Active Matrix LCD, anti-glare and hard(2H) coated
- **Display Size (H x V):** 376.3mm x 301.1mm (14.8" x 11.8")
- **Pixel Pitch (H x V):** 0.294mm x 0.294mm
- **Maximum Resolution:** SXGA 1280 x 1024
- **Display Color:** 16.7 million true color
- **Contrast Ratio:** 500:1
- **Brightness:** 250 cd/m²
- **Viewing Angle:** 170° (Left/Right) 170° (Up/Down)
- **Digital Signal Input:** DVI D-type Connector
- **Analog Signal Input:** 15 pin D-Sub Connector (0.7 Vpp / 75 Ohm)

1.2.3 Environmental Specifications

- **Operating Temperature:** 41 °F to 95 °F (5 °C to 35 °C)
- **Operating Humidity:** 20% to 80% (No Condensation)
- **Operating Altitude:** 10,000 ft.
- **Storage Temperature:** -4 °F to 131 °F (-20 °C to 55 °C)
- **Storage Humidity:** 10% to 90% (No Condensation)
- **Storage Altitude:** 30,000 ft.
- **Transportation Temperature:** -4 °F to 131 °F (-20 °C to 55 °C)
- **Transportation Humidity:** 10% to 90% (No Condensation)
- **Transportation Altitude:** 30,000 ft.
- **Compliance:** FCC-B, CSA(C-UL), UL,CE, TUV, EPA Energy Star

Warning	<i>Do not disassemble this monitor. Contact your dealer if needed.</i>
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Warning	<i>According to factory specifications, during the precise manufacturing process of LCD panels, inevitably there will be some defective color pixels.</i>
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1.3 Connectors

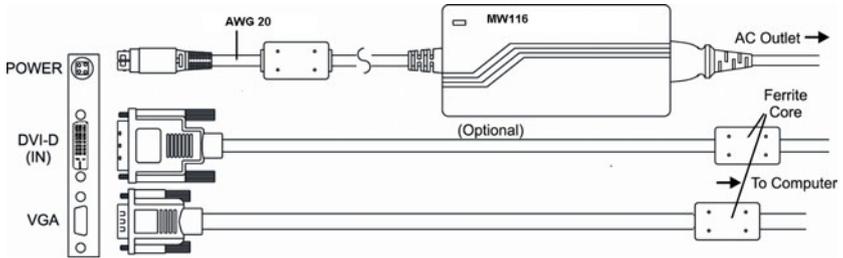


Figure 1.1: MID-190 Connector Ports

The following connectors are situated on the left-hand side of the MID-190 Series:

1.3.1 VGA Port (DB-15)

This DB-15 connector can be connected to the system via the external 15-pin DB-15 connector located on the left side of the system unit. (See Figure 1-1)

1.3.2 DVI Port (D-Type)

This DVI connector is a DVI input port that can be connected to the system via the external DVI connector located on the left side of the system unit.

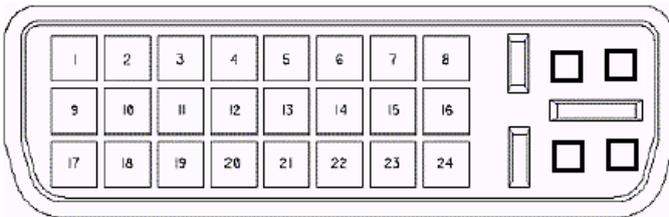


Figure 1.2: MID-190 DVI Connector Pin Assignments

Table 1.1: Description of the DVI port

Pin No.	Function Description
1	T.M.D.S. Data2-
2	T.M.D.S. Data2+
3	T.M.D.S. Data2/4 Shield
4	T.M.D.S. Data4-
5	T.M.D.S. Data4+
6	DDC Clock
7	DDC Data
8	NC
9	T.M.D.S. Data1-
10	T.M.D.S. Data1+
11	T.M.D.S. Data1/3 Shield
12	T.M.D.S. Data3-
13	T.M.D.S. Data3+
14	+5V Power
15	Ground (for +5V)
16	Hot Plug detect
17	T.M.D.S. Data0-
18	T.M.D.S. Data0+
19	T.M.D.S. Data0/5 Shield
20	T.M.D.S. Data5-
21	T.M.D.S. Data5+
22	T.M.D.S. Clock Shield
23	T.M.D.S. Clock
24	T.M.D.S. Data

1.3.3 DC 12V Power In

This connector will be connected to the DC 12V Switching Power Supply. (See Figure 1-1)

1.4 Dimensions

Landscape (longer side at the top)

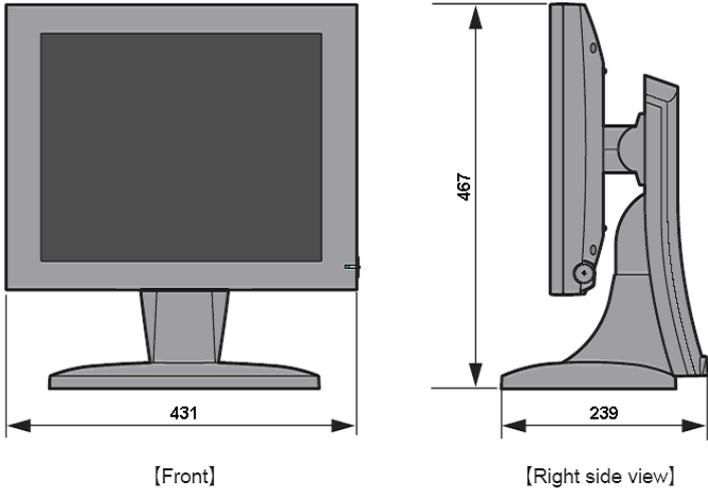


Figure 1.3: Mechanical Dimensions of MID-190 Landscape View

Portrait (shorter side at the top)

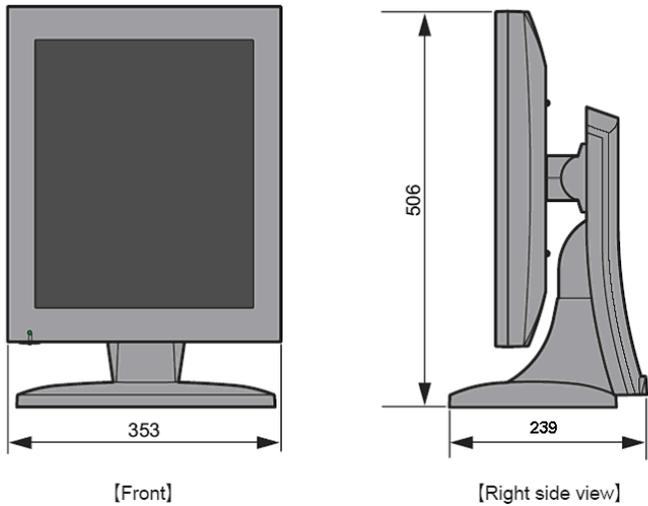


Figure 1.4: Mechanical Dimensions of MID-190 Portrait View

System Installation

This chapter shows how to setup your MID-190.

Sections Include

- A quick tour of MID-190
- Preparing for first-time use
- Installation Procedure

Chapter 2 System Installation

2.1 A Quick Tour of MID-190

Before you start to set up the MID-190, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below. When you place the MID-190 upright on the desktop, its front panel appears as shown in Figure 2-1.

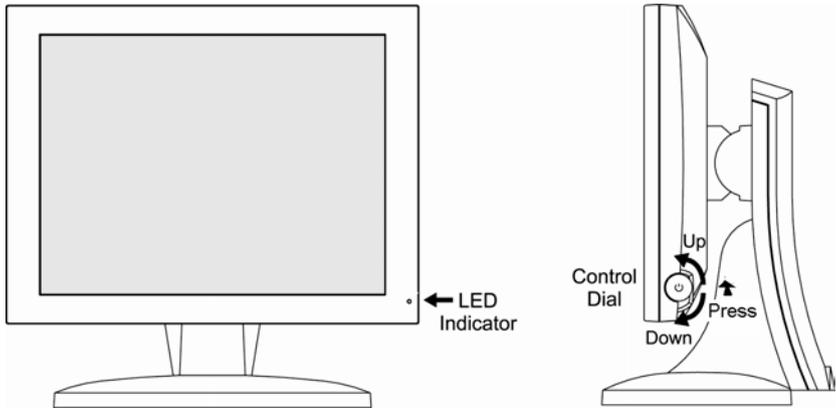


Figure 2.1: Front view of MID-190

This LED indicator turns green when the power is switched ON and the power cord is properly attached. It turns amber when the monitor goes into a power saving mode (Standby, Active Off)

The Control Dial is a multi-functional device located behind the LED Indicator on the right side of the front bezel. It has three movements - rotate upward, rotate downward and press inward as a button. While the monitor is on (green LED and image on the screen), pressing on the Control Dial activates the OSD. While the OSD menu is active, use the three way movements of the Control Dial to adjust the monitor. The more detail information please reference to Appendix A OSD Selections

When you open the connector cover, you will see the I/O ports, including the power inlet, DVI port, and VGA port.

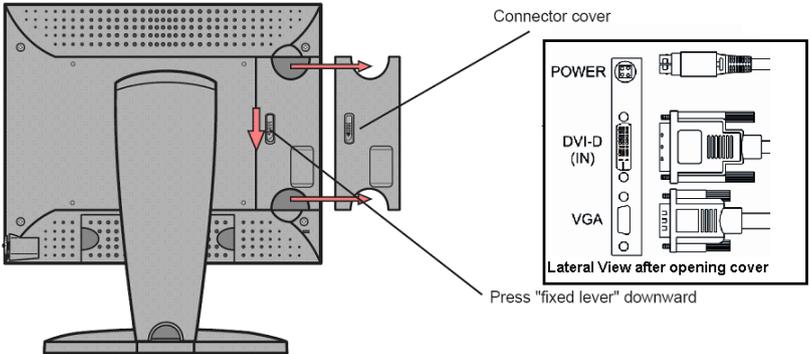


Figure 2.2: Back View of the MID-190

2.2 Preparing for First-Time Use

No tools are required to set up the LCD monitor. Simply follow the instructions outlined in the next few sections. Connectors for the signal cables and power are located on the back of the panel behind the cover door.

2.3 Installation Procedure

2.3.1 Connect DVI Cable

Connect the DVI cable to the DVI connector of the monitor. If the cable does not seem to fit, it may be facing the wrong direction. Please turn the cable over and try again.

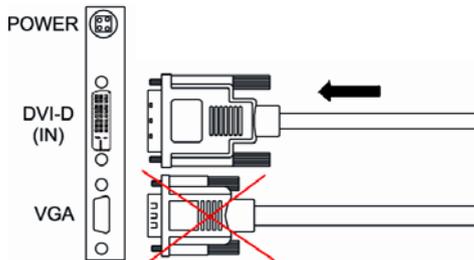


Figure 2.3: Connect the DVI Cable

Caution	<i>When using the DVI port, please disconnect the VGA connector.</i>
----------------	--

2.3.2 Connect VGA Cable

Attach the VGA signal cable end, which has the ferrite core furthest away from the plug, to the monitor and attach the other end to the graphics card adapter on your computer.

Be cautious in inserting the cable properly into both connectors. If the cable does not seem to fit it may be facing the wrong direction. Turn the cable over and try to match the shape of the connector with that of the graphics adapter.

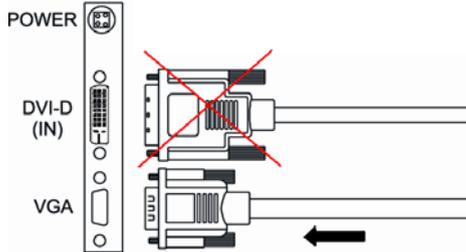


Figure 2.4: Connect the VGA Cable

Caution	<i>When using the VGA port, please disconnect the DVI connector.</i>
----------------	--

2.3.3 Connect Power Adapter and Cable

1. Connect the round shape plug end of the AC/DC adapter to the DC Power input connector of the LCD monitor.
2. Connect the female end of the power cable to the AC power input receptacle on the AC/DC adapter.
3. Then, plug the male end of the power cable into an AC outlet.

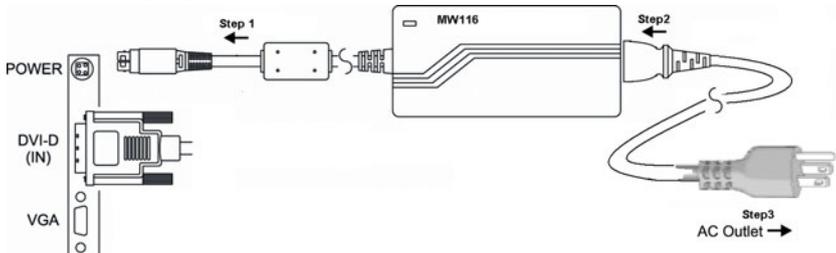


Figure 2.5: Connect the Power Cord

2.3.4 Switch On/Off the Power

Press the Control Dial to power the unit on from the off stage (the LED is off). To turn the power off, press the Control Dial and hold for at least 1 second until the LED turns off.

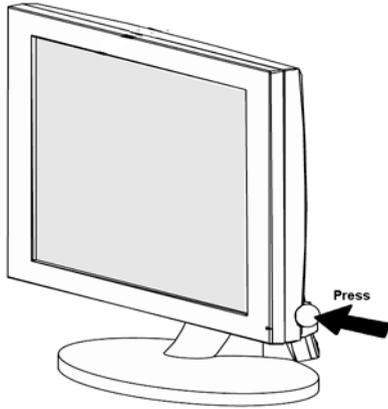


Figure 2.6: Switch on/off the Power

Caution	<i>When you disconnect the cord/cables, be sure to hold the connector and not the cable itself.</i>
----------------	---

2.3.5 Cable Management

The LCD monitor has built-in cable guides and cover to help you organize and route the cables neatly on your desktop space. The cable cover is located on the back of the monitor stand and it is opened by gently pulling it off the stand. Under the cover, the cables can be held in position by numerous clips.

There are several ways to route the cables and you may use any way you find suitable for your situation. However, the routing method illustrated by the drawing on the Figure 2.7 is recommended to give the best result in most situations both aesthetically and functionally. Once the cables are in position, gently snap the cover back on to the stand.

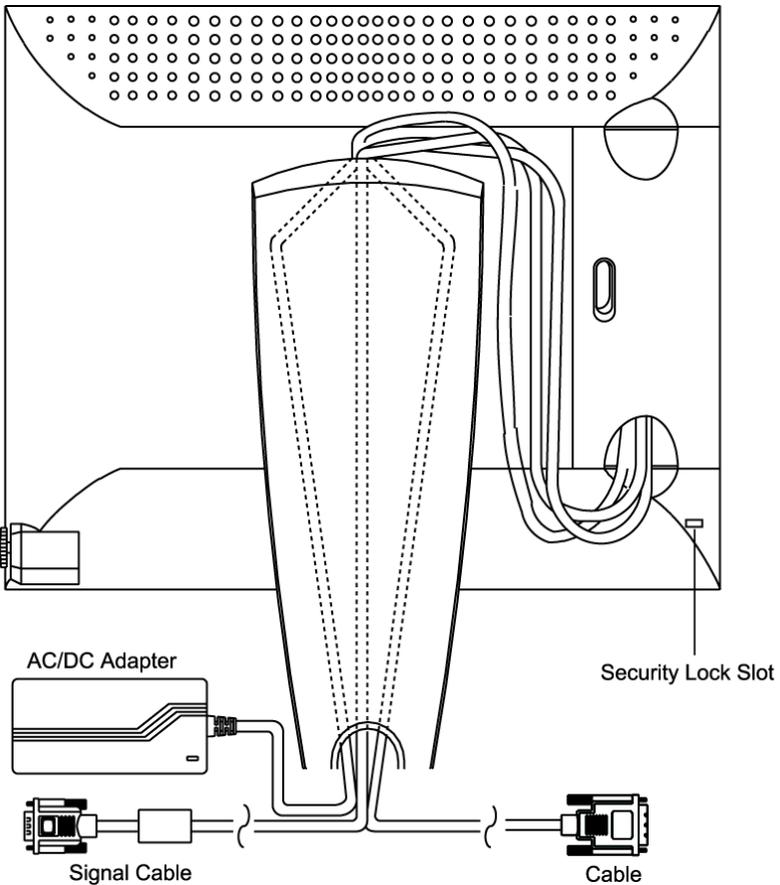


Figure 2.7: Illustration of Cable Management

2.3.6 Adjust the Four-Way Ergonomic Stand

Adjust the four-way (tilt, height, swivel and pivot) ergonomic stand for your maximum viewing comfort. To minimize eye fatigue, we suggest you allow a minimum viewing distance of 18 inches.

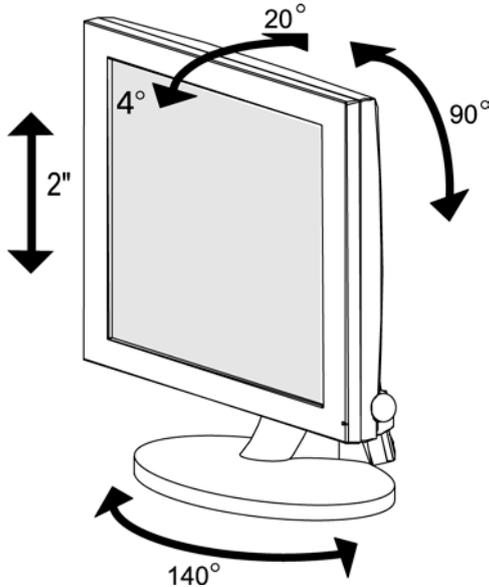


Figure 2.8: Range of the Four-Way Ergonomic Stand Adjustment

Caution	<i>In order to protect the LCD, be sure to hold the edge of bezel whenever you adjust it and do not touch the screen.</i>
Caution	<i>Before pivoting to portrait mode, tilt the panel up to the maximum (20°) upward angle so that the corner of it does not touch the base while rotating.</i>

APPENDIX A

OSD Selections

This appendix shows the functionality of all selections in the OSD menu.

Appendix A OSD Selections

A.1 Introduction

The OSD menu is activated by pressing the Control Dial inward, and you can select and adjust the function of your choice by rotating and clicking the Control Dial. The main menu displays a list of submenu icons and the current video input mode. Rotate the dial to move the highlights to the control you would like to adjust, then press the Control Dial inward to select that control or to activate that function.

Depending on the control you selected, a submenu of the control with a status bar will appear. The status bar indicates in which direction, from the factory preset, your adjustments are being made. Rotate the Control Dial to adjust the control.

When you have finished making the adjustments, the setting is saved automatically by exiting the control function. If you do not touch the control dial for 20 seconds, the OSD is automatically exited saving your current settings.

A.2 Menu Descriptions

The LCD monitor is capable of accepting both digital and analog signal inputs and therefore has two different sets of OSD control functions. Because the digital signaling always gives optimum display quality without much adjustment, it requires much less OSD functions than the analog input mode. The functions that are not available in digital input mode are Auto Setup, Sharpness, Position, Clock/phase, denoted by asterisk (*) in the following descriptions. If selected while in digital input mode, you will encounter a “Not Available” message.



Figure A.1: Item "Menu" in OSD display

A.3 Auto Setup Descriptions*

Selecting and executing this control makes automatic adjustments to the horizontal and vertical size, horizontal and vertical positions, frequency and phase for a quick and easy setup of the display. There will be a few seconds of delay while the Auto Setup function is in process.

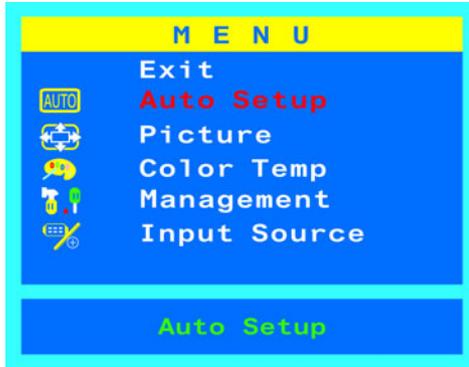


Figure A.2: Item "AutoSetup" in OSD Display

A.4 Picture Descriptions

Selecting this control allows you to select brightness, contrast, black level, sharpness, position, or clock/phase.

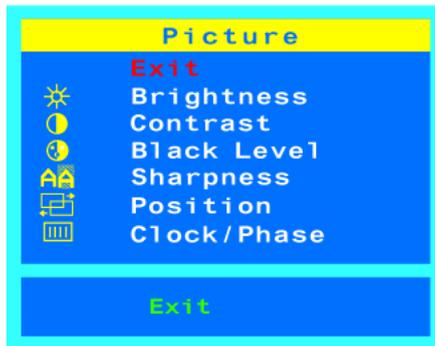


Figure A.3: Item "Picture" in OSD Display

A.4.1 Brightness Descriptions

Selecting this control allows you to make adjustments to the luminosity level of the display screen in the scale of 0 to 100.

Rotating the Control Dial up/down to adjust the Brightness any time while the OSD is off.



Figure A.4: Item "Brightness" in OSD display

A.4.2 Contrast Descriptions

Selecting this control allows you to make adjustments to the contrast level of the display screen in a scale of 0 to 100.



Figure A.5: Item "Contrast" in OSD display

A.4.3 Black Level Descriptions

Selecting this control allows you to make adjustments to the black level of the display screen in the scale of 0 to 100.



Figure A.6: Item "Black level" in OSD Display

A.4.4 Sharpness Descriptions*

Selecting this control allows you to make adjustments to the sharpness of the display screen in the 5 levels of 0, 25, 50, 75, 100.

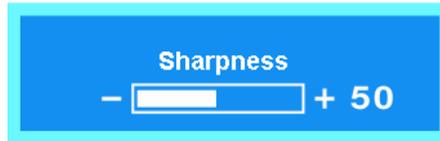


Figure A.7: Item "Sharpness" in OSD Display

A.4.5 Position Descriptions*

Selecting this control, then rotate Control Dial to select the Horizontal or Vertical position control on the screen.



Figure A.8: Item "Position" in OSD Display

A.4.5.1 H-Position (Horizontal Position)*

Select this control and then use the Control Dial to center the image horizontally on the screen.



Figure A.9: Item "H-Position" in OSD Display

A.4.5.2 V-Position (Vertical Position)*

Select this control and then use the Control Dial to center the image vertically on the screen.



Figure A.10: Item "V-Position" in OSD display

A.4.6 Clock / Phase Descriptions*

Selecting this control allows you to adjust the ADC (analog/digital conversion) sampling clock phase so that the screen image appear crisp and focused. Normally, the Auto Tune is sufficient to complete this task in the automatic way without user intervention; the Phase control allows you to adjust it manually in more precise manner.



Figure A.11: Item "Clock/Phase" in OSD display

A.4.6.1 Clock*

Selecting this control allows you to adjust the frequency, sampling rate of horizontal pixels, to equal the video source's value, thus minimizing the screen artifacts of shimmering vertical lines.



Figure A.12: Item "Clock" in OSD Display

A.4.6.2 Phase*

Selecting this control allows you to adjust the ADC (analog/ digital conversion) sampling clock phase so that the screen image appear crisp and focused. Normally, the Auto Tune is sufficient to complete this task in the automatic way without user intervention; the Phase control allows you to adjust it manually in more precise manner.

The Phase and Clock adjustments allow you to more closely adjust your monitor to your preference. If satisfactory results are not obtained using the Phase adjustment, use the Clock adjustment and then use Phase again.



Figure A.13: Item "Phase" in OSD Display

A.5 Color Temp Descriptions

Select and use the Control Dial to select preset color temperatures for Cool, Neutral , Warm or User for custom red, green and blue levels.



Figure A.14: Item "Color Temp" in OSD Display

- **Cool:** Selecting this control then use control dial to select cool. Ideal for general use, CAD/CAM.
- **Neutral :** Selecting this control then use control dial to select neutral. Ideal for desktop publishing.
- **Warm :** Selecting this control then use control dial to select warm. Ideal for photo retouching.
- **User :** Adjust the Red (R-Gain), G (G-Gain) and B (B-Gain) individually to match personal preference.

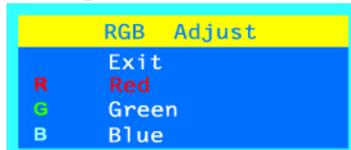


Figure A.15: Item "RGB Adjust" in OSD Display

A.6 Management Descriptions

Selecting this control, then use Control Dial to select OSD Display, Language, Source or Recall.



Figure A.16: Item "Management" in OSD Display

A.6.1 OSD Display Descriptions

Selecting this submenu allows you to adjust various settings of the OSD to make the display adjustment process an easier task.



Figure A.17: Item "OSD Display" in OSD Display

A.6.1.1 OSD Horizontal Position

Selecting this control allows you to move the OSD menu horizontally on the screen.



Figure A.18: Item "H-Position" in OSD Display

A.6.1.2 OSD Vertical Position

Selecting this control allows you to move the OSD menu vertically..



Figure A.19: Item "V-Position" in OSD Display

A.6.2 Language Descriptions

Selecting this control, then rotate the Control Dial to select the language you want. Press the Control Dial to execute when selected.



Figure A.20: Item "Language" in OSD Display

A.6.3 Recall Descriptions

Selecting this control restores all of the OSD control adjustments to the factory default settings.



Figure A.21: Item "Recall" in OSD Display

A.7 Input Source Descriptions

Selecting this control allows you to select between Digital DVI and Analog RGB signal inputs.



Figure A.22: Item "Input Source" in OSD display

A.8 Exit Descriptions

Selecting this exits the OSD.

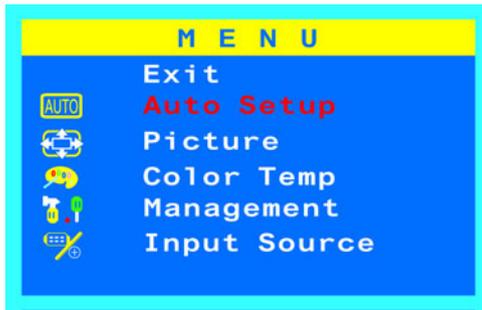


Figure A.23: Item "Exit" in OSD Display

A.9 Directory of OSD Display

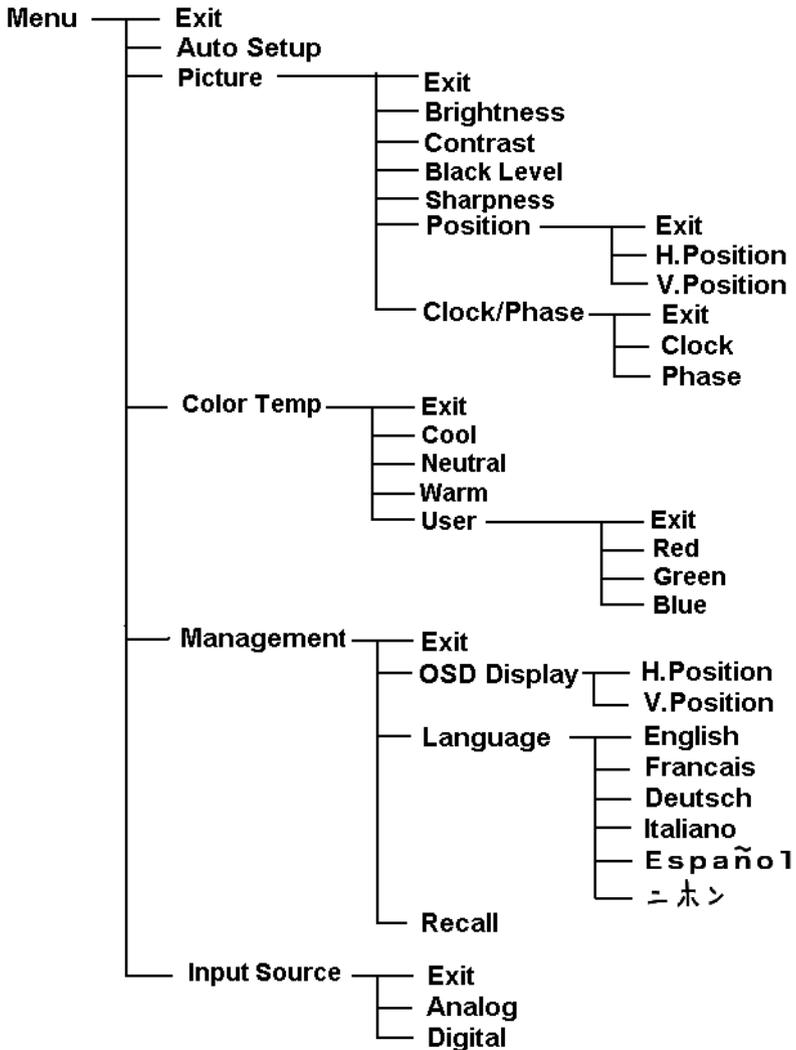


Figure A.24: Directory of the MID-190 OSD

APPENDIX **B**

Timing of Input Signals

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Appendix B Timing of Input Signal

B.1 Definition

The LCD monitor is a dual input type LCD monitor that is capable of accepting both traditional analog RGB video signals and the new digital DVI (Digital Visual Interface) signals. For digital DVI input, the LCD monitor will support resolutions used in the digital DVI standard up to 1280 x 1024.

Due to its digital design and the implementation of this new digital standard interface, setting the frequency mode will be handled automatically between the monitor and the digital graphic card adapter.

For analog input, the LCD monitor operates at horizontal frequencies between 30 kHz and 92 kHz, with vertical frequencies between 50 Hz and 85 Hz. Because of its microprocessor-based design, it offers auto-synchronization and auto-sizing capabilities. This monitor offers 20 preprogrammed settings that are listed in Table B.1. These preset modes cover most of the common video modes supported by popular graphics adapters. However, each adapter's implementation of these video modes may vary slightly in timings.

Note that the monitor is not limited to these preset factory timing modes. Because the monitor is multi-scanning, it can accept any signal within its specified frequency range. Due to its Auto Adjustment capability, the monitor sets up clock frequency, phase, position and contrast level automatically when a new video mode is encountered.

Table B.1: Acceptable Frequency and Resolution of Input Signal

Mode Name	Resolution		Frequency	
	H	V	H(kHz)	V(Hz)
VGA	720	400	31.5	70
	640	480	31.5	60
VESA	640	480	37.9	72
	640	480	37.5	75
	640	480	43.3	85
	800	600	35.1	56
	800	600	37.9	60
	800	600	48.1	72
	800	600	46.9	75
	800	600	53.7	85
	1024	768	48.4	60
	1024	768	56.5	70
	1024	768	60.0	75
	1024	768	68.7	85
	1280	1024	64.0	60
	1280	1024	80.0	75
	1280	1024	75.0	60
	1600	1200	75.0	60
Mac	640	480	35.0	67
	832	624	49.7	75
	1024	768	60.2	75

