

ONYX-153/173/193

15"/17"/19" Pentium® M

High Brightness

Low Noise Medical Station

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Packing List

Before you begin installing your Medical Station, please make sure that the following items have been shipped:

- Onyx-153 or 173 or 193 Medical Station
- Power Cord
- HDD screws
- Utility CD-ROM
Contains User's Manual (in PDF format), Drivers and Utilities

If any of these items are missing or damaged, you should contact your distributor or sales representative immediately.

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.**
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

- 14. If any of the following situations arises, get the equipment checked by service personnel:**
- The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the users manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
- 15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4°F) OR ABOVE 60° C (140° F). IT MAY DAMAGE THE EQUIPMENT.**
- 16. External equipment intended for connection to signal input/output or other connectors, shall comply with relevant UL / IEC standard (e.g. UL 1950 for IT equipment and UL 60601-1 / IEC 60601 series for systems – shall comply with the standard IEC 60601-1-1, Safety requirements for medical electrical systems. Equipment not complying with UL 60601-1 shall be kept outside the patient environment, as defined in the standard.**

Caution:

It may cause the danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer.

Classification

1. Degree of protection against electric shock: not classified
2. Degree of protection against the ingress of water: IPX0
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation: Continuous
5. Type of protection against electric shock: Class I equipment

FCC Safety



Warning!



This device complies with Part 15 FCC Rules.





Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

UL Module Description

 The logo consists of a circle with the word "CLASSIFIED" arched across the top. Inside the circle, the letters "UL" are prominently displayed, with a smaller "UL" below them. The letters "C" and "US" are positioned on the left and right sides of the circle, respectively.	<p><i>Onyx-153/173/193 AC modules are developed to suitable for the Classification Mark requirement</i></p>
 The logo features the letters "C", "UL", and "US" in a bold, stylized font. The "UL" is the largest and most central element, with "C" to its left and "US" to its right.	<p><i>Onyx-153/173/193 DC modules are developed to suitable for the Recognized Mark requirement</i></p>

Safety Symbol Description

The following safety symbols are the further explanations for your reference.

	<p><i>Medical equipment with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, and CAN/CSA C22.2 NO. 601.1</i></p>
	<p><i>Attention, consult ACCOMPANYING DOCUMENTS.</i></p>
	<p><i>Ground wire Protective Ground wire.</i></p>
	<p><i>Medical equipment with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, and CAN/CSA C22.2 NO. 601.1</i></p>

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Chapter

1

**General
Information**

1.1 Introduction

The ONYX-153/173/193 are the flagships of AAEON's medical Stations. The high brightness LCD, Low Noise solution, integrated multimedia functions and extensive expansion options make them the perfect platform upon which to build comprehensive lifestyle computing applications.

The ONYX-153/173/193 includes all the features of a powerful computer into a slim and attractive chassis. The ONYX-153 has a 15" 400 nits TFT display with 1024 x 768 resolution. The ONYX-173 has a 17" 300 nits TFT display with 1280 x 1024 resolution. ONYX-193 has a 19" 400nits TFT display with 1280 x 1024 resolutions. Integrating with high brightness LCD is easier to analyze DICOM image. This model owns sidemount slim 8 in1 card reader, slim DVD ROM, and smart card reader to support vivid storage read/write and ID check by smart card reader.

These two models designed with Pentium® M CPU by higher 2MB L2 cache to improve system effectiveness. It accommodates one 2.5" hard disk drive and up to 1GB DDR SDRAM.

The ONYX-153/173/193 are compact, selectable WLAN and Giga LAN network compatible PC with full safety and medical approval and features to control a dedicated system with a wide variety of applications. Combining the ONYX-153/173/193 into your system can achieve both cost-saving and efficient improvements.

Common applications include point of sale systems, healthcare

utility, interactive information displays, automation control systems, general desktop use, multimedia recreation, and other medical requirements. The ONYX-153/173/193 are definitely your perfect choices.

1.2 Feature

- 15" /17" /19" True color TFT LCD display
- 400/300 nits high brightness to X-ray films
- Latex-free
- Integrated RFID security (optional)
- Integrated Smart card reader (optional)
- Integrated fingerprint scanner (optional)
- Integrated Web-CAM (optional)
- Mini capture card support Non-DICOM CAM to DICOM (optional)
- High performance low power system solution
- Celeron[®]M Processors/ Pentium[®] M 1.6 GHz up to 2.0GHz(optional)
- 802.11g wireless antenna (optional)
- Resistive touch screen (optional)
- Plastic construction with medical outlook color

1.3 Specification

Hardware Specifications

Display	<p>ONYX-153: 15" XGA color TFT LCD</p> <p>ONYX-173: 17" SXGA color TFT LCD</p> <p>ONYX-193: 19" SXGA color TFT LCD</p>
CPU Board	<p>Supports Socket 478-based Intel® Pentium® M Processor and Celeron® M up to 2.0GHz with FSB 400MHz</p>
Disk Drive Space	<p>2.5" Hard Disk Drive (ATA100)</p> <p>Suck-in DVD-ROM</p> <p>8 in 1 card reader</p> <p>Smart Card reader (optional)</p>
Expansion	<p>One Mini PCI slot; One PCI expansion</p>
Button	<p>Brightness: "+" / "-"; Sound: "+" / "-"; Power SW</p>
I/O	<p>3 RS-232 ports, 1 RS-232/422/485 port</p> <p>7 USB 2.0 ports</p> <ul style="list-style-type: none"> 1 x on up side for Web-CAM 2 x internal for card reader and smart card (optional) 4 x on rear bracket <p>1 parallel port</p> <p>1 PS/2 keyboard and 1 PS/2 mouse</p> <p>Sound:</p> <ul style="list-style-type: none"> 1 x Line-in 1 x line-out 1 x Mic-in 2 x Speakers on back side <p>(ONYX-153 with 1W speakers; ONYX-173/193 with 2W speakers)</p>

LCD Specifications

Model Name	ONYX-153 series	ONYX-173 series	ONYX-193 series
Display Type	15" color TFT LCD	17" color TFT LCD	19" color TFT LCD
Max. Resolution	1024 x 768	1280 x 1024	1280 x 1024
Max. Colors	16.7M	16.7M	16.7M
Dot Size (mm)	0.297 x 0.297	0.297 x 0.297	0.294 x 0.294
Luminance (cd/m2)	400 (TYP)	300 (TYP)	400 (TYP)
Viewing Angle	170°(H)	150°(H)	140°(H)
	170°(V)	130°(V)	135°(V)
Operating Temperature	0°C~40°C (32°F~104°F)	0°C~ 40°C (32°F~104°F)	0°C~ 40°C (32°F~104°F)
Brightness Control	Yes	Yes	Yes
Back Light MTBF	50,000 Hrs	40,000 Hrs	50,000 Hrs

Note:

All AAEON's LCD products are manufactured with High precision technology. However, there are a small number of defective pixels in all LCD panels that are not able to change color. This is a normal occurrence for all LCD displays from all manufacturers and should not be noticeable or objectionable under normal operation. AAEON LCD panels are qualified for industry standard conditions in the following: total 7 dead pixels on a screen or if there are 3 within 1 inch square area of each other on the display.

Mechanical Specifications

Architecture	Close-frame
Front Bezel	Plastic bezel with resistive touch screen
Color	Blue-white (Sky series) and Green-white (Garden series)
Mounting / Holder	VESA 75/100mm, ONYX-153 supports VESA 75 only
Construction	3mm ABS + PC TYPE Plastic housing
Dimension (W x H x D)	ONYX-153: 398 x 330 x 92.5 mm (15.7"x13"x3.6") ONYX-173/193: 460 x 385 x 97 mm (18.1"x97.8"x3.8")
Carton Dimension	ONYX-153: 510x 213x465mm (20.1"x 8.4"x 18.3") ONYX-173/193: 605x 230x 610mm (23.8"x 9.1"x 24")
Net Weight	ONYX-153: 6.3 kg ONYX-173: 7.6 kg ONYX-193: 8.8 kg
Gross Weight	ONYX-153: 9.3 kg ONYX-173: 10.6 kg ONYX-193: 11.8 kg
Packing Filler	PE

Power Supply Specifications

<p>Power</p>	<p>AC Model:</p> <p>ONYX-153HT(T):180W</p> <p>ONYX-173HT(T):180W</p> <p>ONYX-193HT(T):180W</p> <p>DC Model:</p> <p>ONYX-153DT(T):150W</p> <p>ONYX-173DT(T):150W</p>
<p>Input Voltage</p>	<p>AC Model: (input power rating)</p> <p>100~240 V AC, 2A/1A max. @ 50 ~ 63 Hz</p> <p>DC Model: (input power rating)</p> <p>15-24 V AC, 6A max</p>
<p>Output Voltages</p>	<p>AC Model:</p> <p>+5 V@12 A, +12 V@12 A,</p> <p>+3.3 V@16.8 A, +5 Vsb@ 2.0 A,-12 V@0.8A</p> <p>DC Model:</p> <p>+5 V@7 A, +12V/ 8 A, +3.3 V@ 7 A, +5 Vsb@2.0A,</p> <p>-12V/0.2A</p>
<p>MTBF</p>	<p>100,000 hrs operation at 25°C</p>

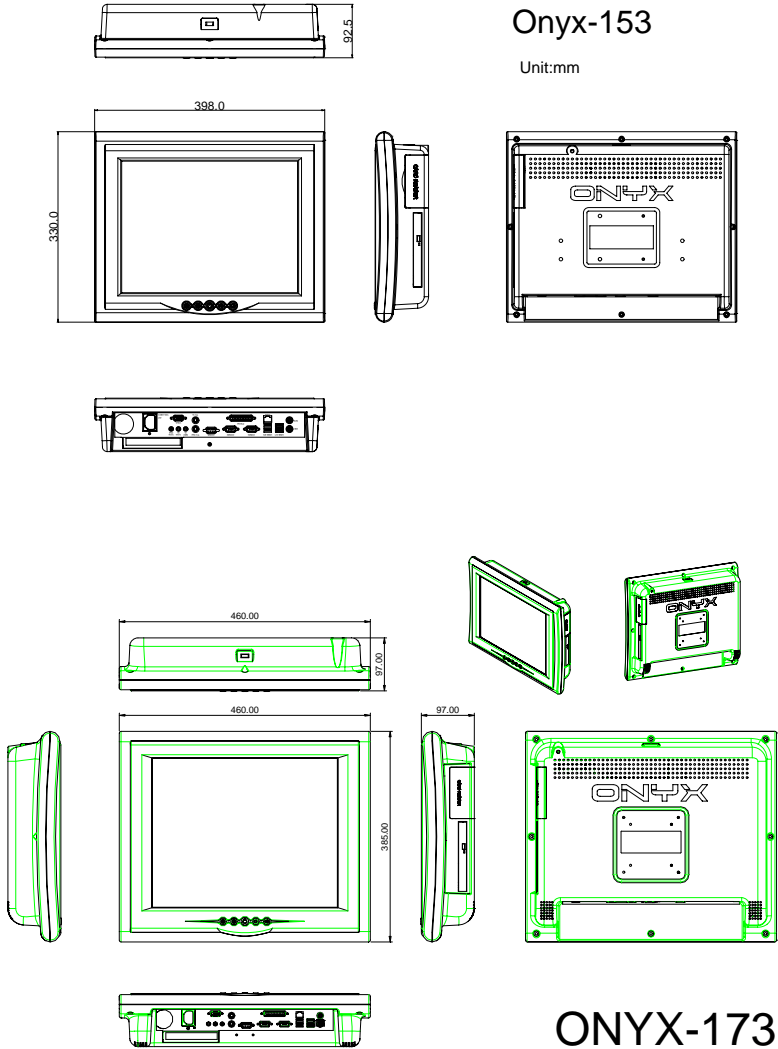
Environmental Specifications

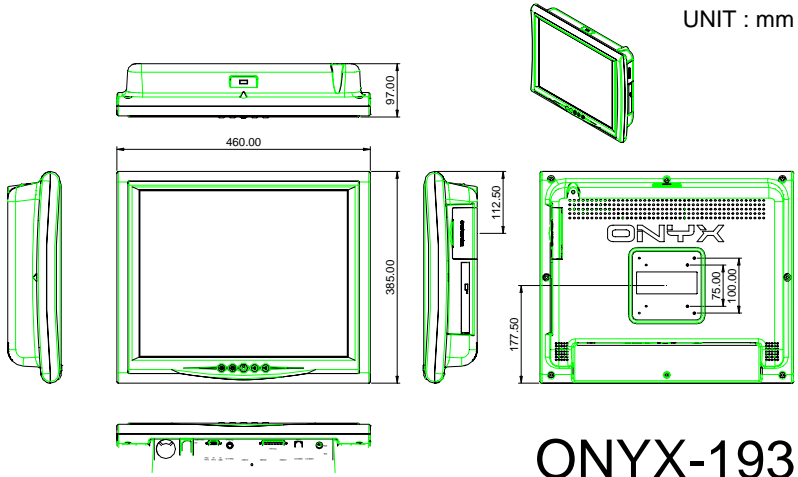
Operating Temperature	0°C to 40°C (32°F ~104°F)
Storage Temperature	-20°C to 60°C (-4°F ~140°F)
Storage Humidity	5% to 95%@ 40°C, non-condensing
Vibration	0.5G / 5 ~ 500Hz (Random) / operation
Shock	15G peak acceleration (11 msec. duration) / operation
Drop	76cm (1 Corner, 3 Edge, 6 Surface)
EMI / Safety	CE / FCC Class B/UL 60601-1/EN 60601-1
IP	Front bezel, IP-65 compliant
Noise	35db
Input Power Rating	100~240V/47~63Hz, 2A/1A
Power Consumption	70W

TouchScreen (Optional)

Type	8-wire, Analog Resistive
Interface	RS-232 interface
Resolution	2048 x 2048
Light Transmission	> 75%
Life Time	1 million activations

1.4 Dimension





ONYX-193

Chapter

2

Hardware Installation

2.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

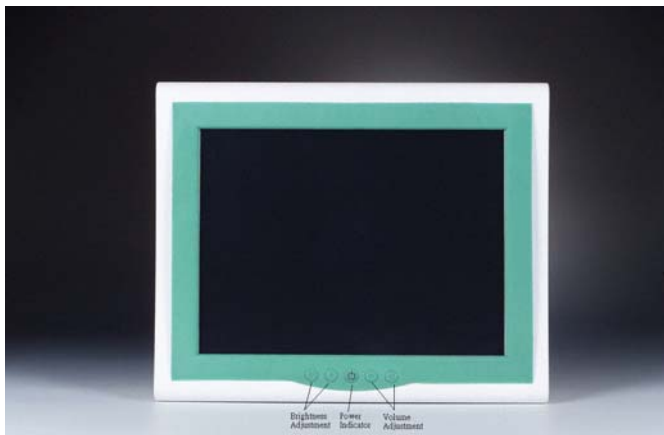
Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 A Quick Tour of the ONYX-153/173/193

Before you start to set up the ONYX-153/173/193, take a moment to become familiar with the locations and purposes of the controls, drives, connections and ports, which are illustrated in the figures below.

When you place the ONYX-153/173/193 upright on the desktop, its front panel appears as shown in Picture 2-1.



Picture 2.1: Front View of the Medical Station

When you turn the Medical Station around and look at its rear cover, the sunken I/O section is at the bottom of the station, as shown in Picture 2-2. (The I/O section includes various I/O ports, including serial ports, VGA port, the Ethernet port, USB ports, the

microphone jack, PCI slot, and so on.) The S-video in option function will need Mini PCI slot. Only assemble with the Mini PCI capture card; the S-Video in function will work. The medical Station integrates with WLAN function by using Mini PCI.



Figure 2.2: Rear view of the Medical Station

When you turn the Medical Station around and look at its left side, the smart card reader, all in one card reader, and DVD ROM are on the left side of the Medical Station as shown in Picture 2-3.

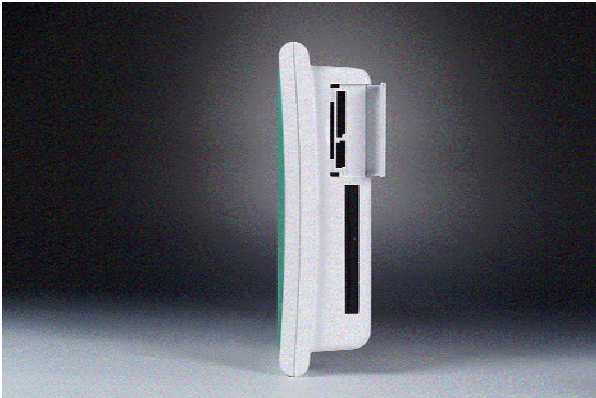


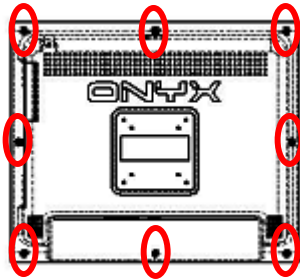
Figure 2.3: Left view of the Medical Station

2.3 Removing the rear maintenance cover

Pull USB cover; Unscrew the attachment screws used to hold the rear maintenance cover and remove rear cover.

2.4 2.5" Hard Disk Drive (HDD) Installation

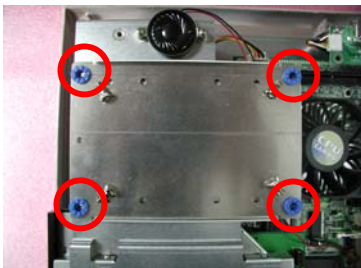
1. Unscrew the rear cover screws.



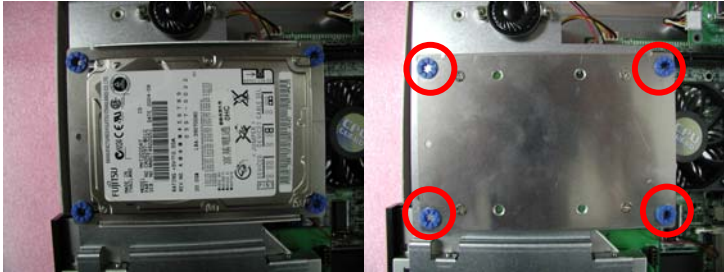
2. Unscrew the rear screws.



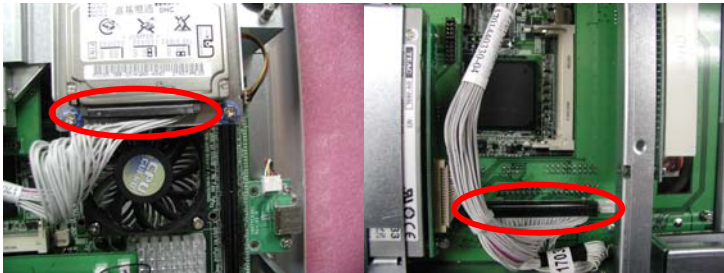
3. Remove rear cover and unscrew the disk module screws.



4. Assemble 2.5" HDD into disk module.



5. Connect HDD cable to 2.5" HDD and IDE connector



2.5 RS-232/422/485 Selection (JP8)

JP8	Function
1-2, 3-4, 5-6, 7-8, 9-10	RS-232 (Default)
11-12, 13-14, 15-16, 17-18, 19-20	RS-422/485

RS-232**RS-422/485**

Chapter

3

**Award
BIOS Setup**

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The ONYX-153/173/193 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering setup

Power on the computer and press immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu shows you the status of PC.

Frequency/Voltage Control

This menu shows you the display of frequency/Voltage Control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.3 Standard CMOS Features

Choosing the Standard CMOS Features option from the INITIAL SETUP SCREEN menu, and the standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the right box of the Menu screen.

3.4 Advanced BIOS Features

Choosing the Advanced BIOS Features option from the INITIAL SETUP SCREEN menu, and you will see this screen contains the manufacturer's default values for the ONYX-153/173/193.

3.5 Advanced Chipset Features

Choosing the Advanced Chipset Features option from the INITIAL SETUP SCREEN menu, and you will see the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.6 Integrated Peripherals

Choosing the Integrated Peripherals from the INITIAL SETUP SCREEN menu, and you will see the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.7 Power management Setup

Choosing the Power Management Setup from the INITIAL SETUP SCREEN menu, and the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.8 PnP/PCI configuration

Choosing the PnP/PCI configurations from the Initial Setup Screen menu, and you will see the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.9 PC Health Status

Choosing the PC Health Status from the Initial Setup Screen menu, and you will see the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.10 Frequency/Voltage control

Choosing the Frequency/Voltage Control from the Initial Setup Screen menu, and you will see the screen contains the manufacturer's default values for the ONYX-153/173/193.

3.11 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

3.12 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are manufacturer's settings for optimal performance system operations.

3.13 Set Supervisor/User Password

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System Enter a password each time the system boots and whenever you enter Setup.

Setup Enter a password whenever you enter Setup.

***NOTE:** To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.*

3.14 Save & Exit Setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn on your system and compare this to what it finds as it checks the system. This record is required for the system to operate.

3.15 Exit without saving

Selecting this option and pressing <Enter> allows you to exit the Setup program without recording any new value or changing old one.

For more detailed information, you can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

**Driver
Installation**

There are several installation ways depending on the driver package under different Operating System application.

Please follow the sequence below to install the drivers:

Step 1 – Install Intel INF Update for Windows 9x-2003 Driver

Step 2 – Install Intel Extreme Graphics 2 Driver

Step 3 – Install Intel LAN Driver

Step 4 – Install Realtek AC97 codec Driver

Card Reader Driver Installation

Touch Screen Driver Installation

Smart Card Driver Installation

USB 2.0 Drivers are available for download using Windows Update for both Windows XP and Windows 2000. For additional information regarding USB 2.0 support in Windows XP and Windows 2000, please visit www.microsoft.com/hwdev/usb/.

For installation procedures of each driver, you may see the details in the following.

4.1 Installation

Applicable for Windows 9x-2003

1. Place the CD into DVD-ROM. The CD automatically displays the drivers menu if Autorun is enabled in your computer. If Autorun is NOT enabled in your computer, browse the contents of the support to locate the file AUTORUN.EXE to run the CD.
2. A driver installation screen will appear, please follow the onscreen instructions to install the driver in sequence and click on the **Next** button.

3. Click on the **Finish** button to finish installation process. And allow the system to reboot.

The LCD signal may be turned off automatically after the VGA driver is installed, please press "Ctrl+Alt+F3" to enable LCD signal again.

4.2 LAN Driver Installation

We strongly recommend that you shall not install LAN driver by clicking on Autorun Exe. Please follow the steps in order to finish the process of installation.

1. Click on **Start** button → **Settings** → **Control Panel** → **System**
2. Select **Device Manager** under the **Hardware** category.
3. Double click on the **Ethernet controller** and select **update Driver** button under the **Driver** category.
4. Click **Next** twice and tick the **Specify a location** option.
5. Click **Next** and choose a route where you want place the folders on before you click on **open**.

Click **Next** → **Yes** → **Finish** and the window will show you how to finish the installation process.

4.3 Card Reader Driver Installation

1. Click on the **Card_Reader_driver** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows you
3. The system will help you install the driver automatically

4.4 Touch Screen Driver Installation

1. Click on the ***Touch*** folder and select an appropriate OS
2. Double click on ***exe** file and follow the instructions that the window shows you
3. The system will help you install the driver automatically

4.5 Smart Card Driver Installation

1. Click on the ***Smart_Card*** folder
2. Double click on ***Setup*** file and follow the instructions that the window shows you
3. The system will help you install the driver automatically

Appendix

A

Miscellanea

A.1 General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

1. Never spray or squirt the liquids directly onto any computer component. If you need to clean the device, please rub it with a piece of dry cloth.
2. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
3. Turn the system off before you start to clean up the component or computer.
4. Never drop the components inside the computer or get circuit board damp or wet.
5. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
6. Try not to put any food, drink or cigarette around the computer.

A.2 Cleaning tools

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning tips.

- **Cloth** - A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.
- **Water or rubbing alcohol** – You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- **Vacuum cleaner** - Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.

- **Cotton swabs** - Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- **Foam swabs** - Whenever possible it is better to use lint free swabs such as foam swabs.

Note:

We strongly recommended that you should shut down the system before you start to clean any single components.

Please follow the steps below.

1. Close all application programs.
2. Close operating software.
3. Turn off power switch
4. Remove all device
5. Pull out power cable

A.3 Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform us as soon as possible for the suitable solution. For the computers that are no longer useful or work well, please contact with worldwide distributors for recycling.

The worldwide distributors show on the following website:

<http://www.aaeon.com/?TabIndex=Contact&TabID=Distributors>

Note:

Follow the national requirement to dispose unit