

PE3M

Small Form-Factor PC

User Manual

Document Reference

PE3M Manual

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CONTENTS

CONTENTS	2
INTRODUCTION	4
COPYRIGHT.....	4
LIMITATIONS OF LIABILITY.....	4
TRADEMARKS	4
REGULATORY STATEMENTS.....	5
SAFETY WARNING FOR NORTH AMERICA.....	5
USER GUIDE	6
MANUAL ORGANISATION.....	6
OVERVIEW	7
SPECIFICATION	8
PRECAUTIONS.....	10
<i>General Precautions</i>	10
<i>Mounting</i>	10
<i>PS/2 Devices</i>	10
<i>Electro-Static Discharges</i>	10
<i>On-Board Battery</i>	10
<i>BIOS & CMOS Memory</i>	11
<i>Electromagnetic Compatibility</i>	11
QUICK START GUIDE	12
SOFTWARE CONFIGURATION	13
INSTALLING OPERATING SYSTEMS	13
<i>Microsoft XP</i>	13
<i>Microsoft Windows 2000</i>	15
INSTALLATION	16
MOUNTING.....	16
<i>NEC Plasma Display Panels</i>	16
<i>NEC 42PD3 Display</i>	16
<i>NEC 42VP4D Display</i>	18
EXTERNAL CONNECTIONS.....	20
<i>PS/2 Mouse Port</i>	20
<i>PS/2 Keyboard Port</i>	20
<i>Standard VGA Port</i>	20
<i>Serial Port (EIA-232)</i>	20
<i>Parallel Port</i>	20
<i>USB Ports</i>	20
<i>Ethernet Port</i>	21
<i>Audio – Microphone In</i>	21
<i>Audio – Line In (Stereo)</i>	21
<i>Audio – Line Out (Stereo)</i>	21
INTERNAL CONNECTIONS.....	22
<i>CPU Socket</i>	22
<i>Memory Sockets</i>	22
<i>Power</i>	22
<i>PCI Expansion Slot</i>	22
<i>AGP Graphics Slot</i>	22
JUMPERS	23
<i>CMOS Clear</i>	23

<i>Set FSB Speed</i>	23
UPGRADING THE SYSTEM HARDWARE	24
WARNING	24
UPGRADE OPTIONS	24
ADDING MEMORY	24
ADDING AN EXPANSION CARD	26
<i>Selection</i>	26
<i>Installation</i>	26
ADDING A CD-ROM OR DVD DRIVE.....	28
<i>Procedure</i>	28
UPGRADING THE CPU.....	31
<i>Removal Procedure</i>	31
<i>Replacement Procedure</i>	31
MAINTENANCE	32
<i>Replacing the Processor Battery</i>	32
<i>Fuses</i>	33
AMENDMENT HISTORY	34

INTRODUCTION

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Regulatory Statements

CE

This product meets the essential protection requirements of the European EMC Directive (89/336/EEC) and its amending Directives, and the Low Voltage Directive 73/23/EEC, and is eligible to bear the CE mark.

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING:

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Safety Warning for North America

If the power lead (cord) is not supplied with the computer, select a power lead according to your local electrical regulations. In the USA use a 'UL listed' lead. In Canada use a CSA approved or 'cUL listed' lead.

Si le cordon secteur n'est pas livré avec l'ordinateur, utiliser un cordon secteur en accord avec votre code électrique nationale. En l'Etat Unis utiliser un cordon secteur 'UL listed'. En Canada utiliser un cordon secteur certifié CSA, ou 'cUL listed'.

USER GUIDE

Manual Organisation

This manual describes in detail the PE3M range of Small Form-Factor PCs.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of the product.

The manual is sectioned as follows:

- Introduction;

- Overview, listing the unit's features and specification;

- Installation;

- Layout, showing where the various connectors are located, and their pin-out details;

- How to upgrade the system;

- Maintenance details.

We strongly recommend that you study this manual carefully before attempting to interface with the PE3M or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance. ***IT IS PARTICULARLY IMPORTANT THAT YOU READ THE SECTION 'PRECAUTIONS' BEFORE HANDLING THE BOARD.***

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Technical Services department with the relevant details.

Overview



The PE3M is a powerful slim-line Intel Pentium P4-based Personal Computer (PC) specifically designed to drive large plasma and other large displays panels. The unit is self-contained requiring as a minimum, only a power connection and a display. The applications are not limited to display applications: it may be used as a general purpose PC.

The basic unit comprises a highly integrated computer board employing Intel's latest 845G chipset that supports Intel Pentium 4 processors up to 3GHz with 400 MHz and 533MHz front side bus (FSB). Memory options allow up to 2GB of ultra fast PC1600/PC2100 DDR SDRAM. Storage is provided by a single 2½-inch ATA-100 hard disk drive.

The on-board Intel Extreme Graphics features Dynamic Video Technology and Zone Rendering Technology to deliver unrivalled 2D and 3D 16:9 performance with a wide range of resolutions. Displays may be driven in landscape or portrait modes. Options allow for the addition of an AGP graphics expansion card for specialist applications. A single short 32-bit PCI (2.2) expansion card may be fitted to expand the range of applications. Removable media options include a slim-line CD-ROM, CD-RW or DVD-ROM IDE drive. A removable section facilitates fitting the expansion options.

The on-board audio system may be configured from simple stereo to a full 5.1 surround system. The addition of a programmable hardware watchdog provides security against an application.

The unit is housed in a strong sheet-steel enclosure providing both mechanical and EMC protection. Fans draw cooling air into the unit and direct it through the chassis to ensure a wide operating temperature range. The unit may be mounted on the plasma display, or separately to suit the particular installation. Mounting kits are available for specific plasma displays, wall or desktop.

All connectors are on the front face of the chassis. There are connectors for a PS/2 mouse and keyboard, a standard analogue VGA display, two serial ports, a parallel port, two USB (2.0) ports, an Ethernet (10/100) LAN port, and three audio connectors. The front face of the chassis also includes the AC power inlet connector. The power supply unit is auto-ranging to cover most markets.

Indicators and controls are limited to a hard drive activity LED, a power on LED and a power standby pushbutton switch. The LAN connector also includes LEDs indicating a connection and data rate. A recessed reset switch is fitted but this is only accessible using a simple tool such as a paperclip or similar, to prevent inadvertent operation.

The available models are:

- ? PE3M-HDxx Basic PC with hard drive, and without a removable-media drive.
- ? PE3M-DVxx PC fitted with hard drive and DVD-ROM drive.
- ? PE3M-CDxx PC fitted with hard drive and CD-ROM drive.

where the characters 'xx' denote the hard disk drive capacity in GBytes.

Specification

CPU:	Intel Pentium and Celeron P4 mPGA478 processors auto-detected from 1.7 GHz to 3 GHz, with 400 or 533 MHz FSB.
CPU Voltage:	Auto-detection, providing voltages from 1.05V to 1.825V.
Chipset:	Uses the Intel 845GE/845GV Chipset. Selects FSB speed from within the BIOS.
Graphics Controller:	Integrated Intel Extreme Graphics controller with AGP 2.0 4x 2D & 3D graphics accelerator. The following wide-screen resolutions are supported by the software drivers: 848x480, 1280x720, 1280x768, 1368x768, 1024x512, 1024x1024 Picture rotation 0, 90, 180, 270 degrees without degradation, as standard.
BIOS:	2 Mbit Flash upgradeable Award AGP/PCI BIOS
Memory:	Two 184-pin DIMM sockets for 128, 256, 512MB or 1GB of PC1600 or PC2100 compliant 2.5V single or double side buffered DDR SDRAM. Provides up to 2GB of system memory.
LAN:	On-board Realtek RTL8100B supports 10/100 Mb/s rate, supports ACPI power management and WOL function.
System Management:	CPU and system voltage detection. CPU and secondary fan speed detection.
Audio:	On-board Realtek ALC650 provides AC'97 2.2 Sound interface.
Expansion Slots:	One 32-bit PCI v2.2 slot riser card for short PCI expansion card. Maximum card length 190 mm to front face of connector bracket. One AGP 2.0, 1.5V only, x4 slot riser card for short AGP expansion card. Maximum card length 190 mm to front face of connector bracket.
Primary Storage:	One 2½-inch IDE UDMA ATA33/66/100 hard disk drive.
Secondary Storage:	Single slim-line drive bay supports optional IDE slim-line CD-ROM, CD-RW or slim-line DVD-ROM drive.
External I/O Interface:	PS/2 Mouse connector. PS/2 Keyboard connector. Standard VGA connector. Two 9-way Serial connectors (16550 compatible). 25-way Parallel port connector (SPP, EPP, and ECP). Two USB 2.0 connectors. RJ-45 10/100Base-T Ethernet LAN connector. Audio Microphone In, Line In and Line Out sockets.
Indicators:	Power On LED, Hard drive activity LED
Control:	Power standby pushbutton switch, Recessed processor Reset switch.
Watchdog:	Programmable timer, 2.4 to 37 seconds.

System Management:	CPU temperature monitoring, system temperature monitoring, CPU fan speed monitoring and voltage monitoring of Vcore, +3.3V, +5V, +12V, -12V and Vbat are all available to the application for monitoring and reporting.
Power Requirements:	Auto-ranging 115 - 230V / 4 – 2A / 60 - 50Hz, with IEC320 power inlet.
Environmental Conditions:	Operating temperature range +5 °C to +40 °C in free air. Storage temperature range -20 °C to +70 °C Relative Humidity 10-85% non-condensing. Shock and vibration compatible with light industrial usage.
Construction:	Painted zinc-plated sheet steel, welded and riveted construction.
Dimensions:	425 x 245 x 62 mm, excluding the earth (ground) stud and the mounting brackets. Note that an additional 130 mm will be required in front of the CD/DVD for the tray to eject, and at least 60 mm to allow easy access to the cable connectors. Air vents must not be obstructed. A minimum gap of 25 mm between vents and any adjacent items is recommended.

Precautions

General Precautions

Before attempting any modification to, or internal adjustment of the PE3M PC, please read the following sections carefully. Certain precautions are necessary when handling circuit boards and equipment containing them. Failure to observe the precautions could result in being unable to operate the equipment, damage to the product, or in extreme cases, personal injury. It is imperative that precautions are taken at all stages to avoid electro-static discharges, which will damage boards. Boards fitted with an on-board lithium battery must be handled carefully to avoid maltreatment of the battery that could create a hazard.

Under no circumstances should the power supply unit be disassembled. Dangerous voltages exist within the power supply enclosure. Note that the IEC-320 AC supply connector is the AC supply disconnect device.

Mounting

The unit is supplied with M3 x 6 fixing screws to fix brackets to the ends of the chassis, or to fix directly to the underside of the chassis. If alternative screws are used, please ensure that they do not enter the chassis by more than 5 mm, otherwise internal damage may result.

PS/2 Devices

It is important that PS/2 devices (mouse and keyboard) are not connected or disconnected with the unit powered on. Damage or data corruption may occur if this precaution is not observed.

Electro-Static Discharges

If you are going to open up the unit, it is important to realise that the devices on the cards within this unit can be damaged by static electricity. Bear in mind that the damage caused by static electricity may vary from total destruction to partial damage, which may not be immediately obvious. This could have an effect on the product's reliability and warranty. Before opening the chassis, ensure that you take necessary static precautions. Ideally you should work at an anti-static bench and wear an approved wrist strap or if that is not possible, touch a suitable ground to discharge any static build up before touching the electronics. This should be repeated if the handling continues for any length of time.

If it is necessary to remove a board or electronic assembly, place it into an anti-static bag. This will prevent any static electricity build up damaging the board. Metallised bags are preferred. Do not use black anti-static bags for any item containing a battery because these tend to be conductive and will discharge the battery.

On-Board Battery

The processor board is fitted with a Lithium battery. Great care should be taken with this type of battery. If the battery is mistreated in any way there is a very real possibility of fire, explosion, and personal harm. Under NO circumstances should it be short-circuited, exposed to temperatures in excess of 100 °C or burnt, immersed in water, recharged or disassembled.

Expired batteries remain hazardous and must be disposed of in a safe manner, according to local regulations.

Le panneau de processeur est équipé d'une batterie de lithium. Le grand soin devrait être pris avec ce type de batterie. Si la batterie est mistreated il y a de dans de toute façon un possibility très vrai du feu, d'explosion et de mal personnel. Dans au cunes circonstances il est sous peu circuité, exposé aux températures au dessus de 100 degrés de centigrade ou brûlé, immergé dans l'eau, rechargée ou dissassembled.

Les batteries expirées restent dazaedous et doivent être reejetées d'une façon sûre, selon des règlements locaux.

BIOS & CMOS Memory

Please be aware that with personal computer products, it is possible to create configurations within the CMOS memory that make booting impossible. If this should happen, clear the CMOS settings; (see the description of the Jumper Settings for details).

Electromagnetic Compatibility

This product meets the requirements of the European EMC Directive (89/336/EEC) and its amending Directives, and the Low Voltage Directive 73/23/EEC. It is eligible to bear the CE mark. However, because the unit can be installed in a wide variety of situations, certain conditions have to be applied to ensure that the compatibility is maintained. Subject to those conditions, it meets the requirements for an ITE Class A product.

- ? The PE3M PC must be supplied with a clean AC supply, and the chassis should be connected to a sound earth (ground). As a minimum the power cord must be connected to an earthed (grounded) supply or outlet. Additionally, an earthing stud is provided on the chassis. It is good practice to connect this independently to a suitable earth in fixed installations.
- ? When installing additional items, any recommendations made by the component manufacturer/supplier must be complied with regarding earthing and the installation.
- ? The metal back plate of any expansion card must be securely screwed to the chassis of the computer to ensure good metal-to-metal (i.e. earth) contact.
- ? All connector bodies must be securely connected to the enclosure.
- ? Most EMC problems are attributable to the external cabling. It is imperative that any external cabling to the unit is totally screened, and that the screen of the cable connects to the metal end bracket of the board or the enclosure and hence to earth. It is recommended that round, screened cables with a braided wire screen be used in preference to those with a foil screen and drain wire. Use metal connector shells that connect around the full circumference of the cable screen: they are far superior to those that earth the screen by a simple "pig-tail" connection. This method attempts to extend the enclosure around the connecting cables, thereby trying to surround the whole of the internal equipment and external cabling.
- ? The keyboard and mouse will play an important part in the compatibility of the processor card since they are ports into the board. Similarly, they will affect the compatibility of the complete system. Fully compatible peripherals must be used otherwise the complete system could be degraded. They may radiate or behave as if keys/buttons are pressed when subject to interference. Under these circumstances it may be beneficial to add a ferrite clamp on the leads as close as possible to the connector.
- ? USB cables must be high quality screened types suitable for USB 2.0, and peripherals must be approved to equivalent EMC standards.
- ? Where possible ensure that the screens of any external cables are also bonded to a good RF earth at the remote end of the cable.

Failure to observe these recommendations may invalidate the EMC compliance.

QUICK START GUIDE

First ensure that you are familiar with the contents of the section "Precautions". It contains important information to avoid damage to the unit.

The unit may be used freestanding, but it is recommended that it be securely mounted to avoid accidental damage. The actual mounting details will vary depending upon the application.

There are four M3 tapped holes on each end of the chassis for mounting brackets, etc. Alternatively there are four M3 tapped holes on the underside of the chassis for direct mounting. Do not use screws longer than those supplied to mount the unit, otherwise internal damage may result. If alternative screws are used, please ensure that they do not enter the chassis by more than 5mm, otherwise internal damage may result.

Particular mounting arrangements exist for NEC plasma displays (these are detailed in the section "Installation"). Others will be available.

If the unit is to be used freestanding fit the adhesive synthetic rubber feet to the base. These will prevent the unit slipping on a smooth surface.

Connect the display to the VGA connector, and connect any other signals, e.g. LAN. Connect a PS/2 mouse and keyboard to the unit.

Connect the power lead to a suitable AC power source. It is recommended that the supply be fused at 5A.

Press the 'Power On' button and check that the unit boots up.

If your system was not supplied with an operating system pre-installed, load an operating system and drivers. The section "Software Configuration" contains details for the common operating systems.

Set up the required video display parameters.

The system is now ready to have the applications software loaded.

If the mouse and keyboard are to be removed for normal operation, shut down the computer and switch off the power before removing them.

SOFTWARE CONFIGURATION

Installing Operating Systems

Your PE3M Small Form-Factor PC may have been supplied complete with a software operating system, in which case the appropriate drivers will have been loaded.

If it has been supplied without an operating system, one must be loaded following the instructions supplied with the software. It is then necessary to add driver programs for the specific hardware of the motherboard and any additional expansion cards. The manner in which the drivers are loaded will vary depending upon the actual operating system used. Details follow for Microsoft XP and Windows 2000.

Microsoft XP

INFUpdate

This update must be applied before installing any other drivers.

To install, go to the following directory on the Support CD

\Drivers\INFUpdate\

Run infinst_enu.exe

Video Drivers

The Video drivers are located on the Support CD at

\Drivers\Video\

Run win2k_xp145.exe

and follow prompts

LAN Drivers

The LAN drivers are located on the Support CD at

\Drivers\Lan

From this directory, run the Setup.exe program and follow the on-screen instructions.

Audio Drivers

The Audio Drivers are located on the CD at

\Drivers\Audio\

Run Setup.exe and follow instructions to install the "AC97" Driver.

Windows XP will prompt with a warning about the driver not being digitally signed. This is normal and must be accepted to continue the installation.

USB2

The USB2 Drivers are installed from Device Manager.

From Device manager, double click on the USB2 device.

Select “Update Driver” and then “Install from a Specific Location”. Browse to the following directory on the CD

 \Drivers\USB2

and follow the on-screen instructions to install.

Windows XP will prompt with a warning about the driver not being digitally signed. This is normal and must be accepted to continue the installation.

Microsoft Windows 2000

INFUpdate

This update must be applied before installing any other drivers.

To install, go to the following directory on the Support CD

\Drivers\INFUpdate\

Run `infinst_enu.exe`

Video Drivers

The Video drivers are located on the Support CD at

\Drivers\Video\

Run `win2k_xp145.exe`

and follow prompts

LAN Drivers

The LAN drivers are located on the Support CD at

\Drivers\Lan

From this directory, run the `Setup.exe` program and follow the on-screen instructions.

Audio Drivers

The Audio Drivers are located on the CD at

\Drivers\Audio\

Run `Setup.exe` and follow instructions to install the "AC97" Driver.

Windows 2000 will prompt with a warning about the driver not being digitally signed. This is normal and must be accepted to continue the installation.

USB2

The USB2 Drivers are installed from Device Manager.

From Device manager, double click on the USB2 device.

Select "Update Driver" and then "Install from a Specific Location". Browse to the following directory on the CD

\Drivers\USB2

and follow the on-screen instructions to install.

Windows 2000 will prompt with a warning about the driver not being digitally signed. This is normal and must be accepted to continue the installation.

INSTALLATION

Mounting

The unit may be mounted in any orientation, but care must be taken to ensure easy access to any removable media drive (e.g. DVD or CD-ROM drive). This includes the installation of cables.

It is imperative that the areas around the cooling fan inlets and the venting holes are not obscured. Because of the small size of the fans, a cable passing in front of the fan inlet could present a significant obstruction to the airflow. Any restriction will lower the maximum ambient temperature at which the unit will operate. Always use the fixing screws provided. Using longer screws could cause internal damage.

The chassis is fitted with a number of M3 tapped holes to facilitate mounting. On the underside there is one hole at each corner. There are a total of four on each end. These may be used in pairs to fix a bracket in two possible positions on each end. M3 x 6 screws are provided with the unit. If using screws other than those supplied, please ensure that the screws do not enter the chassis by more than 5mm, otherwise internal damage may occur.

Specific mounting brackets are available for some types of plasma displays.

NEC Plasma Display Panels

Fixing kits are available comprising two brackets and fixing screws suitable for models 42PD3 and 42VP4D.

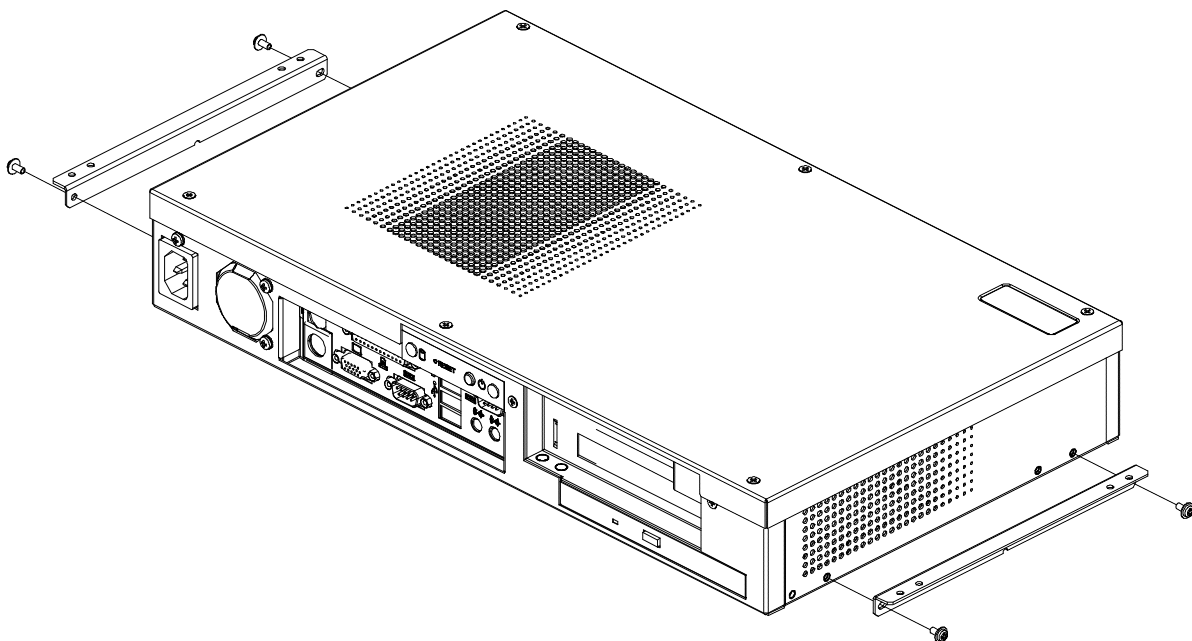
The preferred orientation for the chassis on these units is mounted vertically with the front connector face upward and the ventilated surface facing away from the body of the display.

The following sections indicate the mounting procedure.

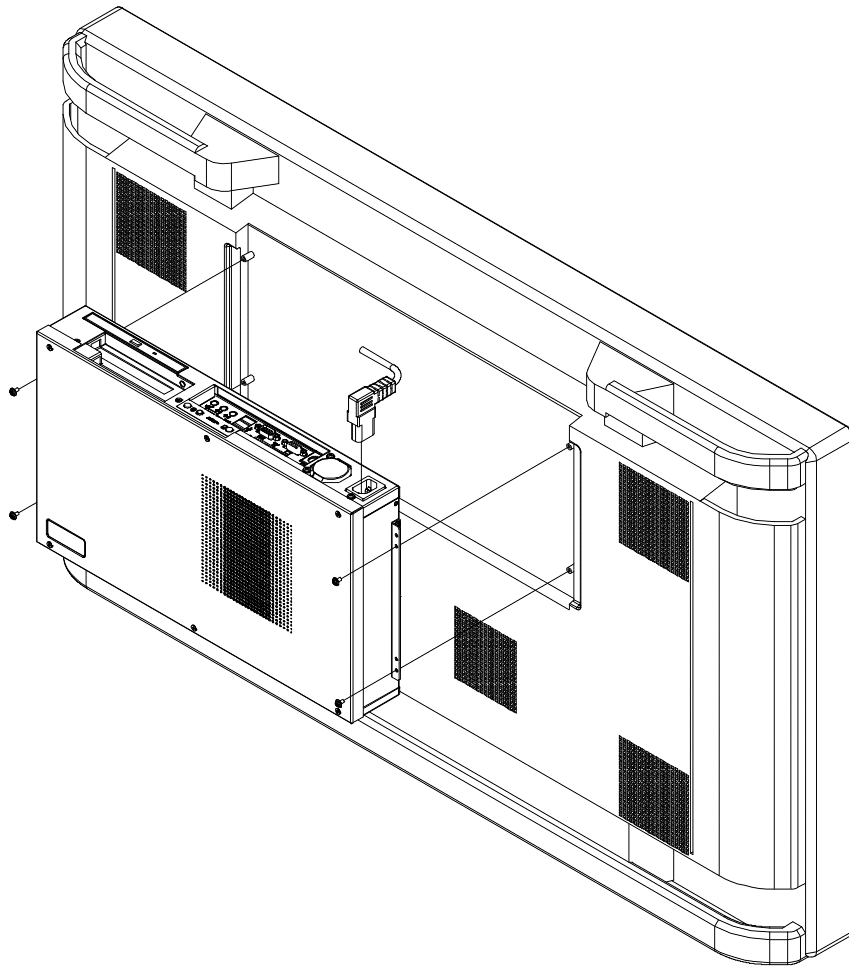
NEC 42PD3 Display

The NEC 42PD3 display has a recess in the rear face into which the PE3M PC is fitted.

Fit the two mounting brackets to the PC as shown in the diagram using four M3 x 6mm fixing screws. Note the orientation of the brackets to avoid any restriction of the side vents.



Fit the right-angle AC power connector to the PC. *DO NOT CONNECT THE AC POWER AT THIS STAGE.*
Assemble the PE3M to the display using four M3 x 6mm screws.



Fit the graphics output cable between the graphics output connector on the PC and the input connector of the display.

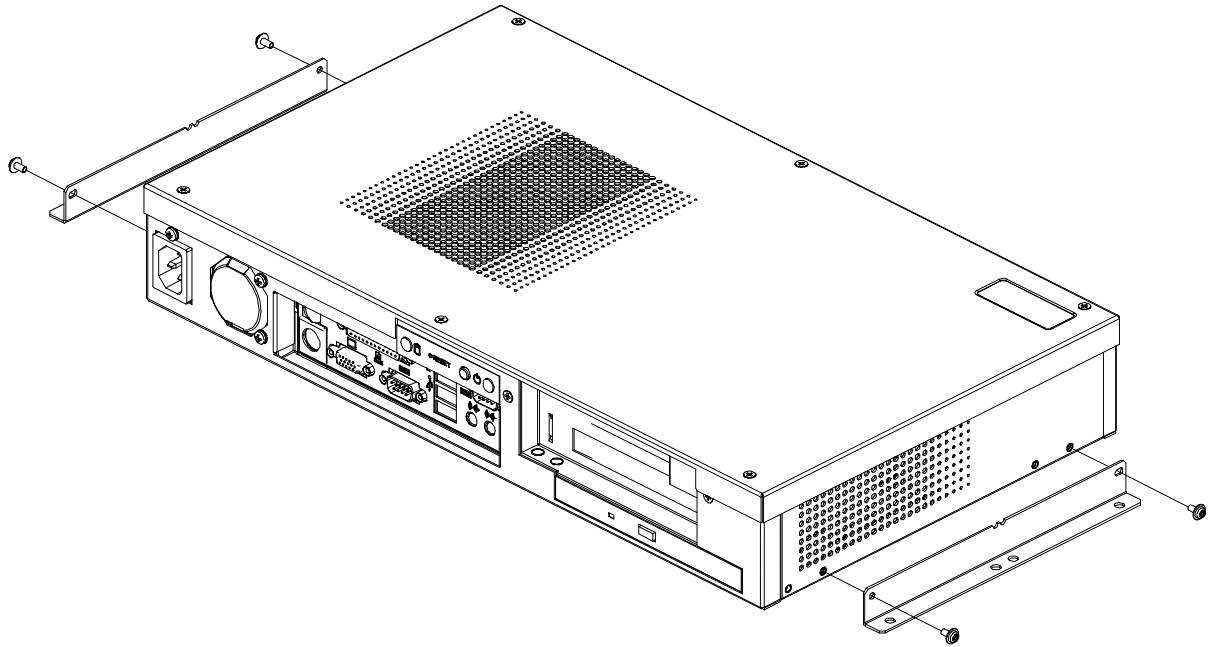
Fit any peripheral cables as required.

Connect the AC power lead to a suitably fused source and an earth (ground) point.

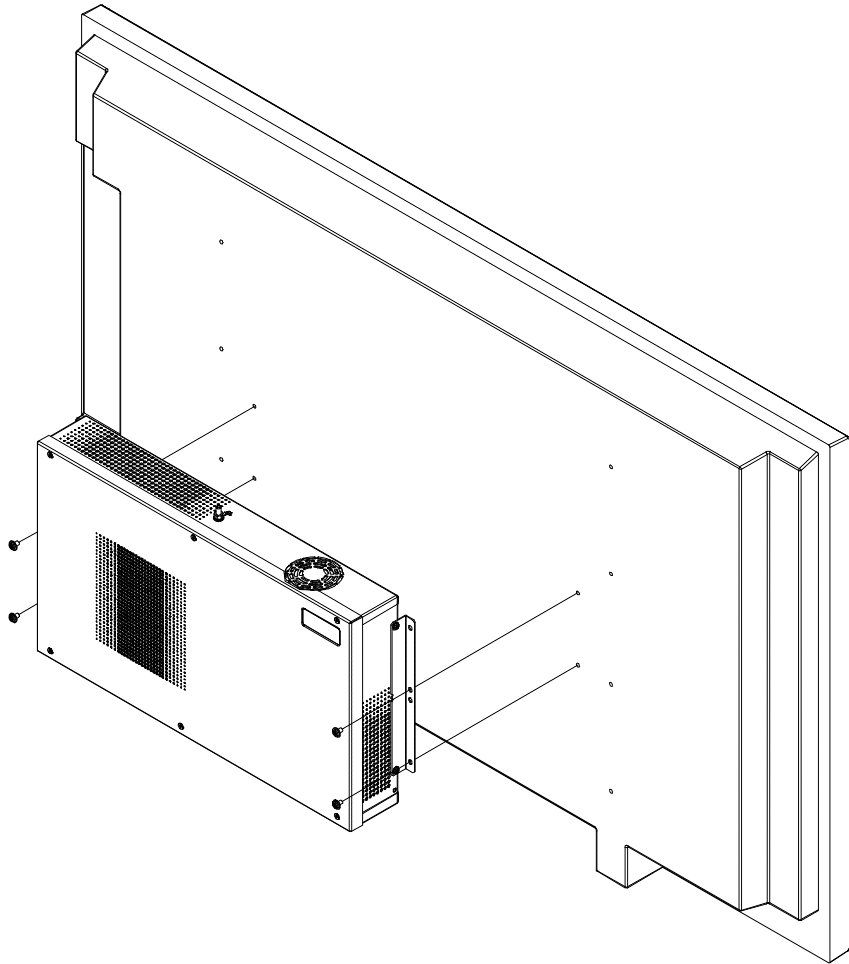
NEC 42VP4D Display

The NEC 42VP4D display has a flat ventilated rear face onto which the PC is mounted. Because of the ventilation holes, the PC must be mounted with at least a 10mm clearance from the rear of the display.

Fit the two mounting brackets as shown in the diagram using four M3 x 6mm fixing screws. Note the orientation of the brackets to avoid any restriction of the side vents.



Assemble the PE3M to the display using four M4 x 6mm screws.



Fit the graphics output cable between the graphics output connector on the PC and the input connector of the display.

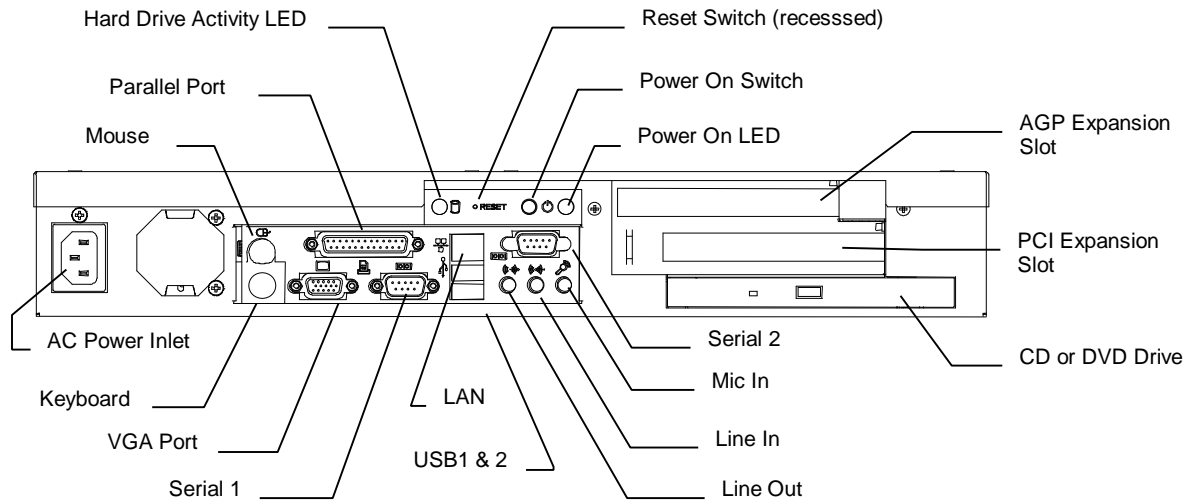
Fit any peripheral cables as required.

Fit the AC power connector to the PE3M.

Connect the AC power lead to a suitably fused source and an earth (ground) point.

External Connections

The external connectors on the front face are shown on the following diagram: -



PS/2 Mouse Port

PS/2 6-pin mini-DIN socket.

Mating Connector: PS/2 mouse connector.

[Standard Pin Out](#)

PS/2 Keyboard Port

PS/2 6-pin mini-DIN socket.

Mating Connector: PS/2 keyboard connector.

[Standard Pin Out](#)

Standard VGA Port

High-density 15-pin D-type socket.

Mating Connector: High-density 15-pin D-type plug.

[Standard Pin Out](#)

Serial Port (EIA-232)

9-way D-type plug.

Mating Connector: 9-pin D-type socket.

[Standard Pin Out](#)

Parallel Port

25-way D-type socket.

Mating Connector: 25-pin D-type plug.

[Standard Pin Out](#)

USB Ports

Series A USB socket.

Mating Connector: Series A USB connector

[Standard Pin Out](#)

Ethernet Port

RJ-45 8-pin shielded socket.

Mating Connector: RJ-45 8-pin plug.

[Standard Pin Out](#)**Audio – Microphone In**

3.5mm Jack-socket.

Mating Connector: 3.5mm Jack-plug

Tip is microphone input suitable for dynamic microphone of not greater than 600 Ohms impedance.

Audio – Line In (Stereo)

3.5mm Jack-socket.

Mating Connector: 3.5mm Jack-plug

Tip is right channel.

Audio – Line Out (Stereo)

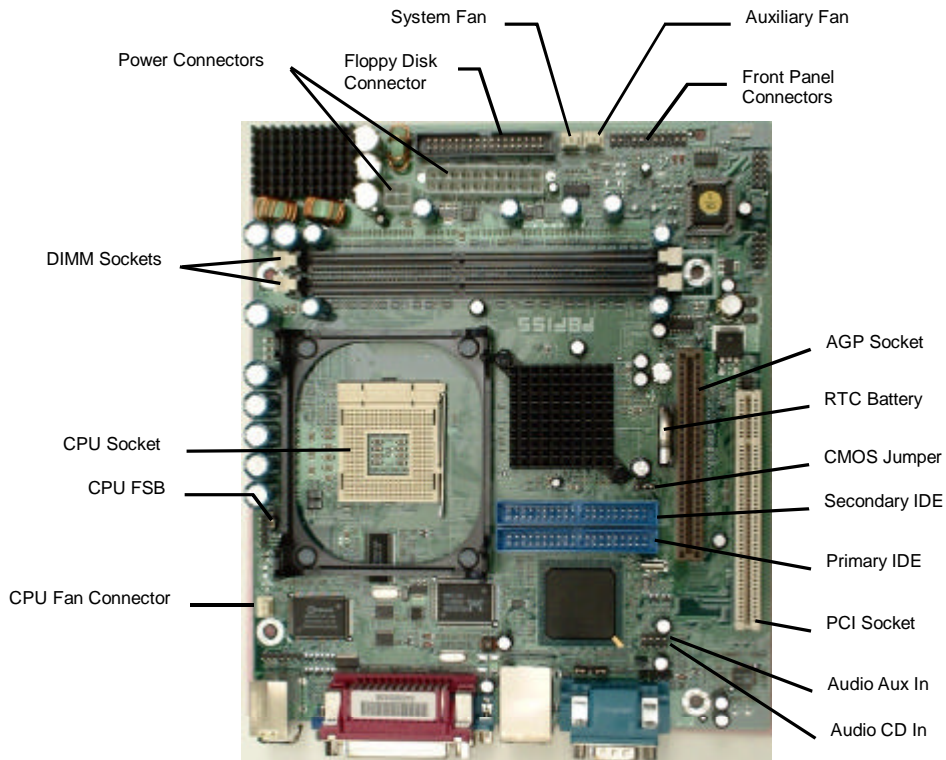
3.5mm Jack-socket.

Mating Connector: 3.5mm Jack-plug

Tip is right channel.

Internal Connections

There are connectors on the main processor board for the CPU, memory, power and various additional peripherals. For the location of these items please see the photograph below. Your board may vary slightly from that shown.



CPU Socket

Standard Socket mPGA478 Intel Pentium & Celeron P4 processors.

Memory Sockets

Two 184-pin DIMM sockets for 128, 256, 512MB or 1GB of PC1600 or PC2100 compliant 2.5V DDR SDRAM. Provides up to 2GB of system memory.

Power

Standard 20-pin ATX Power connector (**PW**).

Standard 4-pin ATX-12V Power Connector (**PW1**).

PCI Expansion Slot

The motherboard includes one 32-bit PCI v2.2 expansion slot (**PCI 1**). Into this is plugged a short riser card. The riser card will accept a short 32-bit PCI expansion card.

AGP Graphics Slot

The motherboard includes one x4 AGP 2.0 graphics expansion slot (**AGP 1**) that supports only 1.5V AGP cards. Into this is plugged a short riser card. The riser card will accept a short single slot-width AGP graphics expansion card.

Jumpers

The processor board used in the PE3M PC is largely free of selection jumpers. Most settings are controlled from the BIOS, and stored in the CMOS memory.

Only two jumpers are significant. One jumper block is used on the board, to clear the CMOS memory. This would become necessary if the BIOS settings, which are held in the CMOS memory, became corrupted. The second selects the front side bus (FSB) speed to match the CPU and the memory.

CMOS Clear

To clear the CMOS memory, first switch off the PC power, then locate the 3-pin header labelled '**JP4**' on the processor board between the IDE2 connector and the battery. Remove the link shorting pins 1 and 2, and place it on pins 2 and 3 for about five seconds. Remove the link and replace it in its original position. The CMOS has now been cleared and the BIOS will be reset to the default settings.

Please remember that the board will not function correctly if the CMOS clear link is left in the "Clear" position.

Having no link fitted is an invalid option.

Set FSB Speed

This will have been set to suit the CPU fitted to the motherboard. If the CPU is changed, check the position of the jumper on the 3-pin header labelled '**JP3**'. This is located between the CPU and the edge of the board adjacent to the power supply unit.

Three possible options exist:

For Automatic Selection of the FSB speed, link pins 1 and 2.

For CPUs with 100 (400) MHz FSB, set the jumper to link pins 2 and 3.

For CPUs with 133 (533) MHz FSB do not fit the jumper.

Automatic Selection (link 1-2) is the default option.

UPGRADING THE SYSTEM HARDWARE

Warning

Before attempting any upgrade to the PE3M computer, please read the section "**Precautions**".

For your personal safety it is important that you ensure that the unit is switched off, and the AC supply is disconnected. Remember that the unit incorporates an ATX-type of power supply unit. Switching the power off using the front panel switch does not isolate the AC supply, and under these conditions the +5V DC standby power is still connected to the motherboard.

For the safety of the equipment, it is important that you observe electrostatic discharge precautions. Do not remove items from anti-static bags until necessary.

When making any internal changes to the computer, it is imperative that the internal cables follow the original routes and additional cables are installed as described. Failure to observe this requirement could restrict the airflow through the unit and cause overheating problems.

Upgrade Options

The user may upgrade the unit by adding more memory to the unit, or by adding a PCI or an AGP expansion card.

The addition of removable-media drives (CD or DVD) is normally a build option, because it requires the appropriate upgrade kit, and requires a measure of disassembly. It should not be undertaken without the correct items.

Upgrading the CPU is possible but requires disassembly of the unit.

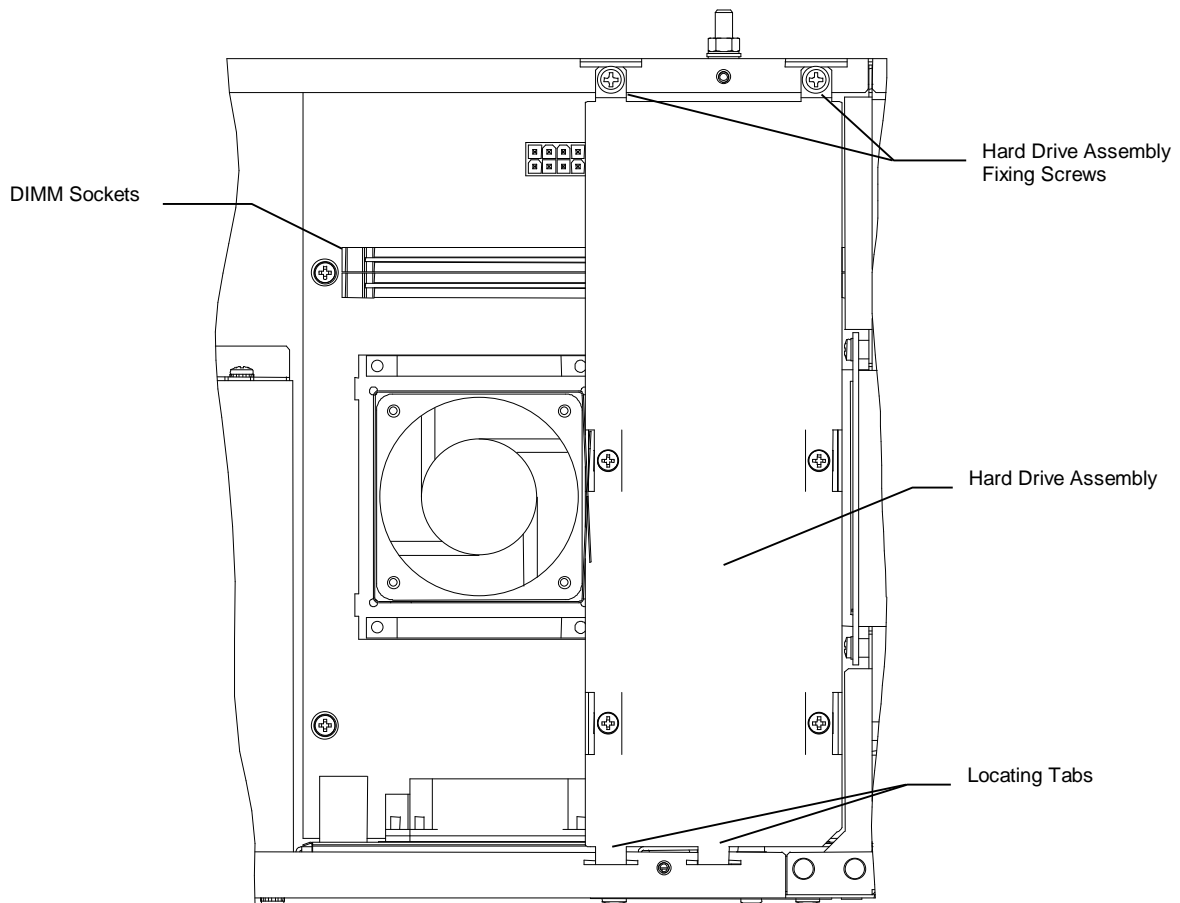
Unauthorised upgrades may invalidate the warranty.

Adding Memory

The PE3M motherboard incorporates two 184-pin DIMM sockets for memory. Each can accommodate a module of 128, 256, 512MB or 1GB of PC1600 or PC2100 compliant 2.5V DDR SDRAM. This provides for up to 2GB of system memory. Note that whilst the memory modules need not be the same size, they should be of the same speed (either PC1600 or PC2100). Generally the memory speed should match the Front Side Bus speed of the processor. If in doubt, fit PC2100 memory.

Installing additional memory involves removing the top cover and the hard drive assembly, plugging the memory modules into the sockets, and finally reassembling the unit.

Remove the screws on the top surface of the cover and then lift the cover off.



Remove the hard drive assembly as follows:

Remove two screws from the rear top face of the chassis.

Lift the rear end of the hard drive bracket a little, and slide the bracket towards the rear to disengage the two tabs at the front end.

Lift the drive assembly and disconnect the hard drive power lead connector.

Remove the hard drive UDMA ribbon cable from the Primary IDE connector (IDE1, blue) on the motherboard.

Disconnect the CD/DVD ribbon cable from the Secondary IDE connector (IDE2) on the motherboard.

The two DIMM sockets are then accessible.

Plug in the memory making sure that it is fully seated and that the end clips are located into the notches in the memory circuit boards.

Re-install the CD/DVD ribbon connector to connector IDE2.

Refit the hard drive UDMA cable to the motherboard connector IDE1.

Refit the hard drive power cable connector.

Refit the hard drive assembly.

Replace the top cover.

When the unit is powered up, the memory will be automatically detected and reported.

Adding an Expansion Card

Selection

The PE3M chassis can accommodate one short 32-bit PCI expansion card and one short single-width, 1.5V AGP graphics card. There is insufficient space to accommodate a double-width AGP card.

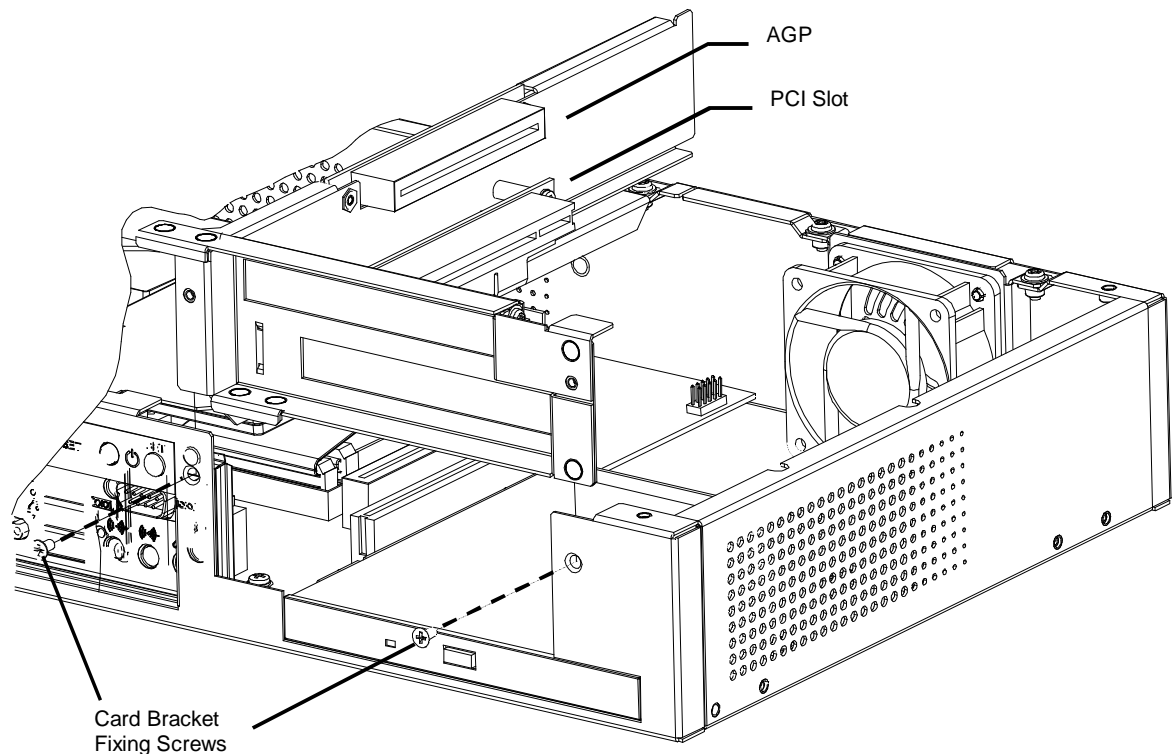
The maximum length of the PCI and AGP cards that can be accommodated by the chassis is 190 mm, measured from the rear edge of the PCB to the front face of the connector bracket.

It is important that in selecting cards to suit particular applications that the cards not only meet the user requirements, but are also compliant with the regulatory requirements of the territory in which it is to be used. For example, for the European market cards must be compliant with the EMC Directive and the Safety requirements.

Installation

To install an expansion card, remove the screws on the top cover and lift the cover off.

Refer to the following diagram:



Remove the two M3 countersunk-head screws on the front face of the chassis (in line with the upper [AGP] card bracket).

Lift the AGP/PCI Riser card sub-chassis vertically out of the chassis to disengage the riser cards from the motherboard sockets. It is important that the sub-chassis is removed evenly, disengaging the rear locating slot, and the front section.

Lift the sub-chassis clear of the main chassis.

Remove the screw(s) and the expansion card blanking plate(s).

Fit the expansion card(s) and firmly screw the card bracket(s) into place.

Ensure that the CD/DVD IDE cable will not foul the PCI card.

Replace the AGP/PCI Riser card sub-chassis. Take care lining up the two riser cards into their sockets, and apply pressure evenly to fully seat the cards in the motherboard. This may require a little practise if both expansion cards are fitted.

Secure the sub-chassis using the countersunk-head M3 fixing screws removed earlier.

Replace the top cover.

Follow the instructions provided with the expansion board(s) to install any software drivers and application software. Note that the installation may vary depending upon the operating system in use.

Adding a CD-ROM or DVD Drive

The chassis will accommodate a single removable media drive. This may be a CD-ROM drive or a DVD-ROM drive.

The CD or DVD drive must be a slim-line unit of the type commonly fitted in laptop computers. It is important when selecting a drive, that it is compliant with the regulatory requirements of the territory in which it is to be used. For example, for the European market the unit must be compliant with the EMC Directive and the Safety requirements.

Cables for this option are supplied with the drive.

The procedures for installing the CD and the DVD drives are the same, and require a CD/DVD fixing kit. Note that fixing screws must not be longer than those defined in this procedure, otherwise damage to the drive will result.

Procedure

This procedure assumes that the system is not fitted with a removable media drive.

First remove the screws on the top cover and lift the cover off.

The AGP and PCI expansion card section must be removed to give access to the drive bay. Refer to the diagram in the previous section:

Remove the two M3 countersunk-head screws on the front face of the chassis (in line with the upper [AGP] card bracket).

Lift the AGP/PCI Riser card sub-chassis, complete with any expansion cards, vertically out of the chassis to disengage the riser cards from the motherboard sockets. It is important that the sub-chassis is removed evenly, disengaging the rear locating slot, and the front section.

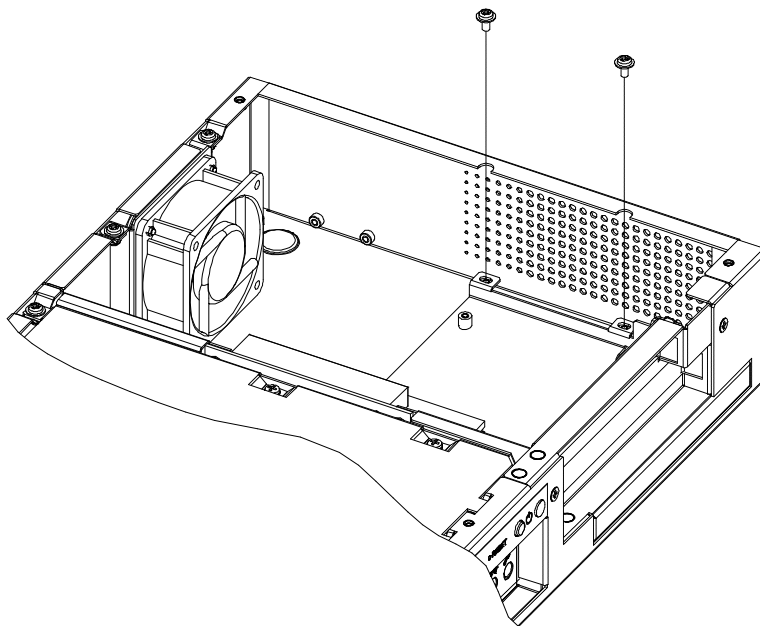
Lift the sub-chassis clear of the main chassis.

Remove the two M3 x 6mm screws holding the Removable-Drive Baseplate (see diagram) and slide it towards the rear of the chassis to disengage the clip mountings.

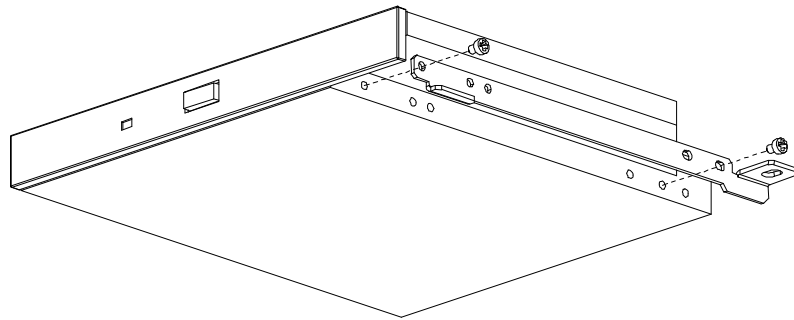
Lift the baseplate out of the chassis.

Remove the drive bay blanking plate from the baseplate (two screws). This will not be required again unless the drive is to be removed at some point in the future.

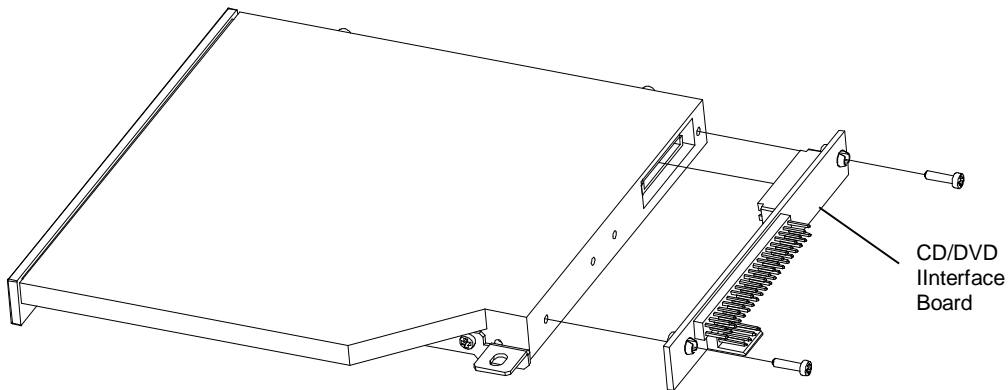
Place the Removable-Drive Baseplate to one side.



Using two M2 x 3mm cap-head screws, fix the CD/DVD Mounting Bracket to the cut away side of the drive (see diagram).

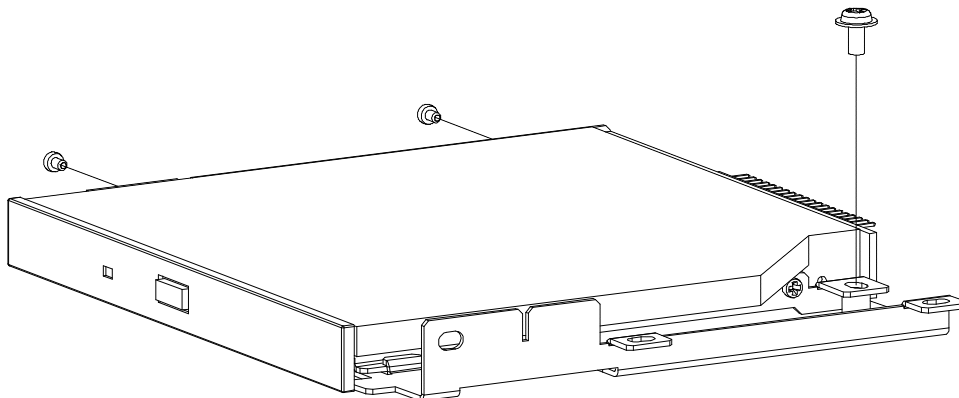


Fit the CD/DVD Interface PCB to the drive connector and secure it using two M2 x 6mm screws through the plastic bushes into the drive body (see diagram).



Fit the drive and PCB assembly to the Removable-Drive Baseplate, so that the tab on the CD/DVD Mounting Bracket engages with that on the Baseplate.

Assemble the drive to the Baseplate using two M2 x 3mm and one M3 x 6mm cap-head screws.



Re-install the Drive Baseplate into the chassis taking care not to trap any of the wiring, and secure using the two M3 x 6mm screws removed earlier. Check that the drive door is clear of the chassis and tighten the screws.

Connect the free 3½" drive connector from the power supply unit to the 4-pin connector on the CD/DVD Interface PCB.

Connect the 40-way secondary IDE ribbon cable to the 40-pin connector on the CD/DVD Interface PCB. Note the pin 1 identifiers. Connect the other end to the Secondary IDE connector on the motherboard. Take care with the routing of the ribbon cable. It is important that it does not restrict the airflow across the heatsink on the motherboard.

Ensure that the CD/DVD IDE cable will not foul the PCI card.

Replace the AGP/PCI Riser card sub-chassis. Take care lining up the two riser cards into their sockets, and apply pressure evenly to fully seat the cards in the motherboard. This may require a little practise if both expansion cards are fitted.

Secure the sub-chassis using the countersunk-head M3 fixing screws removed earlier.

Replace the top cover.

Power up the unit. As the unit boots up, the BIOS will detect the new drive.

If any software is required, now is the point at which to load it. Follow the instructions supplied with the software.

Upgrading the CPU

The CPU fan and heatsink must be removed to gain access to the CPU. While it is not necessary to remove the HDD assembly as indicated in the section on Upgrading Memory, it may be easier to gain access to all the screws retaining the CPU Fansink.

Removal Procedure

Switch off the AC supply to the unit. Unplug the AC input connector from the power supply unit.

Remove the top cover.

Remove the hard disk drive assembly if required.

Disconnect the CPU heatsink fan connector from the motherboard.

Remove the plastic air-guide from the CPU heatsink fan.

The heatsink is secured to the motherboard by the four outer screws and nylon spacers at the corners of the heatsink.

Remove the four screws and withdraw the fan & heatsink assembly.

Ease the lever on the CPU socket away from the socket and lift it to release the CPU pins.

Lift the CPU from the socket.

Replacement Procedure

Replacement is essentially the reverse of the removal procedure, with the following notable points.

When fitting the CPU to the socket, care must be taken to align and avoid bending the pins.

Once the CPU is fitted to the socket, the top of the CPU and the heatsink should be wiped clean. Apply a very thin smear of heatsink compound to the top surface of the CPU and spread it over the whole of the contact area. It is important that the minimum amount of compound is used, and it is spread as thinly as possible.

Loosely fit the heatsink & fan assembly to the motherboard using the nylon locking nuts. Using the play in the heatsink, slide the heatsink on the top of the CPU to spread the heatsink as evenly as possible. Then centralising the heatsink, tighten the fixings. The heatsink must be in firm contact with the CPU, but not so tight that the motherboard is distorted.

The remainder of the refitting procedure is the reverse of the removal procedure.

Before finally fitting the top cover, apply the AC supply, switch the unit on and confirm that the fans are rotating correctly.

Switch off and replace the top cover.

MAINTENANCE

On a regular basis the inside of the PE3M unit should be cleaned out to prevent dust build up which could eventually clog the fans and prevent efficient operation. Generally the enclosure design and the wiring layout will ensure that the cooling is stable. However, bear in mind that any modifications to the installation may cause a restriction of the air vents.

After a period of several years, it may be necessary to replace the battery on the processor board, if it cannot maintain the CMOS memory whilst the AC power is disconnected.

Replacing the Processor Battery

The processor board includes a small 3V lithium battery (type CR-2032) to retain the BIOS settings in the CMOS memory. Before attempting to replace the battery, please read the precautions detailed in the introductory section. Remember that even discharged batteries can present a real personnel hazard if mistreated.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instruction.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

The battery is located on the motherboard adjacent to the AGP (brown) socket, underneath the hard disk drive mounting plate.

Remove the hard drive assembly as follows:

Remove two screws from the rear top face of the chassis.

Lift the rear end of the hard drive bracket a little, and slide the bracket towards the rear to disengage the two tabs at the front end.

Lift the drive assembly and disconnect the hard drive power lead connector.

Remove the hard drive UDMA ribbon cable from the Primary IDE connector (IDE1, blue) on the motherboard.

Lift the hard drive assembly clear.

Disconnect the CD/DVD ribbon cable from the Secondary IDE connector on the motherboard (IDE2).

The battery is mounted vertically in the holder held in place by the clip in the top.

Do NOT under any circumstances try to remove the battery with metallic tools (pliers, tweezers etc.). They will short out the battery with possible disastrous results.

To remove the battery, push the top of the retaining clip away from the AGP connector to force it away from the battery, then lift the battery clear of the holder.

Replace the battery by one of the same type, ensuring that it is fitted with the positive terminal facing the CPU, and that the clip is fully engaged. When the battery has been replaced, the BIOS settings will revert to their default settings. Reset them as necessary to suit your application.

Fuses

There are no user-serviceable or replaceable fuses within the unit.

AMENDMENT HISTORY

Issue Level	Issue Date	Author	Amendment Details
1.0	25/04/2003	EGW	First Release
1.1	31/10/03	TMK	Updated info on AGP Support
1.3	17/11/04	TMK	updated CPU removal and maintenance of fans

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