April 1997

Digital Equipment Corporation makes no representations that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

Possession, use, or copying of the software described in this publication is authorized only pursuant to a valid written license from Digital or an authorized sublicensor.

© Digital Equipment Corporation 1997. All rights reserved.

The following are trademarks of Digital Equipment Corporation: DEC Laser, DIGITAL, OpenVMS, PATHWORKS, VAX DOCUMENT, and the DIGITAL logo.

The following are third-party trademarks:
Adobe and PostScript are registered trademarks of Adobe Systems, Incorporated.
Helvetica and Times are registered trademarks of Linotype Co.
Microsoft and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation.
Table of Contents

The 433a Upgrade

Overview .................................................................................................................................................. 1–1
Kit Components ......................................................................................................................................... 1–1
Upgrade Procedures .................................................................................................................................. 1–2
Installation ............................................................................................................................................... 1–2

Figures

Figure 1-1 Unlocking and Removing the System Cover ................................................................. 1–3
Figure 1-2 Removing the MLB ............................................................................................................. 1–4
Figure 1-3 Installing the Memory ........................................................................................................ 1–5
Figure 1-4 Installing the New MLB ..................................................................................................... 1–6
Figure 1-5 Moving the Power Cable .................................................................................................... 1–7
Figure 1-6 Replacing the Speed Button .............................................................................................. 1–8
Figure 1-7 Replacing the Cover ............................................................................................................ 1–9

Tables

Table 1-1 SN-PBXBA-CA Kit List ......................................................................................................... 1–1
Welcome
This manual describes the upgrade of your DIGITAL Personal Workstation Model 180i, 200i, or 200i(2) to a DIGITAL Personal Workstation Model 433a by replacing the Main Logic Board (MLB).

Audience
If you are converting your DIGITAL Personal Workstation Model 180i, 200i, or 200i(2) to a DIGITAL Personal Workstation Model 433a, the information included here is helpful to you.

Organization of the Information
This guide contains information on upgrading DIGITAL Personal Workstation Models 180i, 200i, or 200i(2) to a DIGITAL Personal Workstation Model 433a. The following topics (see the Table of Contents for a detailed listing) are covered:

- Overview lists the contents of the kit and provides an overview of the upgrade procedures.
- Installation provides step by step instructions for removing the current MLB and installing the new one.
Conventions

This guide uses the following conventions:

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>c:\windows</code></td>
<td>Monospaced text indicates file names, path names, directories, or screen text. Each operating system has its own specific syntax.</td>
</tr>
<tr>
<td>[Enter]</td>
<td>Square brackets surrounding text represent a key on the keyboard.</td>
</tr>
<tr>
<td>[Ctrl]+[R]</td>
<td>A plus sign indicates that you press both the keys shown at the same time.</td>
</tr>
<tr>
<td>![pointing hand]</td>
<td>A pointing hand indicates a reference to additional information.</td>
</tr>
</tbody>
</table>

Abbreviations

This guide uses the following abbreviations:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD</td>
<td>Compact disc.</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Compact disc read-only memory.</td>
</tr>
<tr>
<td>CPU</td>
<td>Central processing unit.</td>
</tr>
<tr>
<td>DIMM</td>
<td>Dual inline memory module.</td>
</tr>
<tr>
<td>DMA</td>
<td>Direct memory access.</td>
</tr>
<tr>
<td>DRAM</td>
<td>Dynamic random access memory.</td>
</tr>
<tr>
<td>DROM</td>
<td>Diagnostic read only memory.</td>
</tr>
<tr>
<td>EIDE</td>
<td>Enhanced integrated drive electronics.</td>
</tr>
<tr>
<td>FDC</td>
<td>Floppy disk controller.</td>
</tr>
<tr>
<td>flashROM</td>
<td>Electrically erasable, rewriteable, nonvolatile memory.</td>
</tr>
<tr>
<td>GB</td>
<td>A GB suffix to a numerical value indicates size in gigabytes (for example, 1 GB). A gigabyte equals 1,073,741,824 bytes.</td>
</tr>
<tr>
<td>IRQ</td>
<td>Interrupt request.</td>
</tr>
<tr>
<td>ISA</td>
<td>Industry-standard architecture.</td>
</tr>
<tr>
<td>Kb</td>
<td>A Kb suffix to a numerical value indicates size in kilobits (for example, 512 Kb). A kilobit equals 1024 bits.</td>
</tr>
<tr>
<td>KB</td>
<td>A KB suffix to a numerical value indicates size in kilobytes (for example, 640 KB). A kilobyte equals 1024 bytes.</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>LED</td>
<td>Light-emitting diode.</td>
</tr>
<tr>
<td>MAU</td>
<td>Media adapter unit.</td>
</tr>
<tr>
<td>Mb</td>
<td>An Mb suffix to a numerical value indicates size in megabits (for example, 10 Mb). A megabit equals 1,048,576 bits.</td>
</tr>
<tr>
<td>MB</td>
<td>A MB suffix to a numerical value indicates size in megabytes (for example, 550 MB). A megabyte equals 1,048,576 bytes.</td>
</tr>
<tr>
<td>MHz</td>
<td>Megahertz.</td>
</tr>
<tr>
<td>MII</td>
<td>Media independent interface.</td>
</tr>
<tr>
<td>MLB</td>
<td>Main logic board.</td>
</tr>
<tr>
<td>ns</td>
<td>Nanoseconds.</td>
</tr>
<tr>
<td>NVRAM</td>
<td>Nonvolatile random access memory.</td>
</tr>
<tr>
<td>PCI</td>
<td>Peripheral component interconnect.</td>
</tr>
<tr>
<td>RISC</td>
<td>Reduced instruction set computing.</td>
</tr>
<tr>
<td>ROM</td>
<td>Read only memory.</td>
</tr>
<tr>
<td>SCSI</td>
<td>Small computer system interface.</td>
</tr>
<tr>
<td>SDRAM</td>
<td>Synchronous dynamic random access memory.</td>
</tr>
</tbody>
</table>
Special Notices

This guide uses four kinds of notices to emphasize specific information.

_______________________ WARNING __________________________

A WARNING indicates the presence of a hazard that can cause personal injury.

___________________________________________________________

________________________ CAUTION __________________________

A CAUTION indicates the presence of a hazard that can damage hardware or corrupt software.

___________________________________________________________

_________________________ NOTE____________________________

A NOTE gives general information, such as compatibility with other products or pointers to other information.

___________________________________________________________

__________________________ HINT ____________________________

A HINT includes suggestions to make your computing tasks easier.
Additional Information Resources

You may wish to consult the following information resources on your DIGITAL Personal Workstation which were included in your original DIGITAL Personal Workstation documentation kit:

- **Quick Setup Guide** (order number ER-B30WW-IM. A01) presents a graphical overview of the DIGITAL Personal Workstation system installation. (Note that not all DIGITAL Personal Workstation systems will be shipping with USB.)

- **DIGITAL Personal Workstation User Information** (order number EK-ALMIA-UI. A01) provides detailed user information for the installation, operation, and maintenance of your DIGITAL Personal Workstation.

For other product-related information, we suggest that you consult our Web site at http://www.workstation.digital.com/. Your distributor or DIGITAL representative also can provide you with information on products and services.

Feedback

Our readers' opinions about this guide or any other DIGITAL manual is important to us. If you have any comments, we'd appreciate your taking the time to send us electronic mail at reader_comments@eng.pko.dec.com.

Please reference order number EK-ALMIA-KU. A01 in your correspondence about this manual.
The 433a Upgrade

Overview

This manual describes the upgrade of your DIGITAL Personal Workstation Model 180i, 200i, or 200i(2) to a DIGITAL Personal Workstation Model 433a.

Kit Components

The kit for conversion of a DIGITAL Personal Workstation Model 180i, 200i, or 200i(2) to a DIGITAL Personal Workstation Model 433a is shown in Table 1-1. For further information, see the DIGITAL Systems and Options Catalog (SOC).

Table 1-1 SN-PBXBA-CA Kit List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-24767-01</td>
<td>Main Logic Board</td>
</tr>
<tr>
<td>74-51176-38</td>
<td>Speed button</td>
</tr>
<tr>
<td>20-47405-D2</td>
<td>SDRAM DIMMs (2)</td>
</tr>
<tr>
<td>QB-5L5AA-SA</td>
<td>Software floppy diskettes</td>
</tr>
<tr>
<td>EK-ALMIA-KU</td>
<td>Documentation (this manual)</td>
</tr>
<tr>
<td>12-36175-01</td>
<td>Wrist grounding strap</td>
</tr>
</tbody>
</table>
The 433a Upgrade

Upgrade Procedures

You will perform the following general steps to upgrade your system.

- Backup all applications and data.
- Shut down the system
- Remove the present Main Logic Board (MLB).
- Install the new cache memory
- Install the new MLB.
- Move the power connector on the riser card.
- Replace the speed button.
- Power on the system and reinstall Windows NT.

Installation

__________________________________________________________
CAUTION
__________________________________________________________

Do not touch any electronic component unless you are safely grounded. Wear
the grounded wrist strap provided, or touch an exposed metal part of the system
unit chassis. A static discharge from your fingers can result in permanent
damage to electronic components.

__________________________________________________________
To convert your DIGITAL Personal Workstation Model 180i, 200i, or 200i(2) to a
DIGITAL Personal Workstation Model 433a, follow these procedures:

1. Backup all applications and data.
2. Shut down your system and all peripheral devices.
3. Unplug the power cord.

__________________________________________________________
WARNING
__________________________________________________________

Allow at least 15 seconds for the power supply capacitors to discharge
safely.

__________________________________________________________
4. Remove the system lock, if necessary.
5. Locate and loosen the three thumb screws that fasten the system cover to the rear panel (see Figure 1-1). Place your thumbs on the upper corners of the system cover, pull back on the cover, and slide the cover back and away from the system enclosure. Then lift the cover up and away from the system.

Figure 1-1 Unlocking and Removing the System Cover
The 433a Upgrade

__________ CAUTION ___________

To avoid static discharge damage to sensitive components, wear the wrist grounding strap provided in your kit.

6. Remove the keyboard, mouse, and any other external cables attached to the MLB, and release the two MLB-retaining clips on top of the MLB. (See Figure 1-2.)

7. Hold onto either end of the MLB as you slide it up and out of the system chassis.

8. Carefully place the MLB onto a static-free, flat surface.

9. Carefully remove the new MLB from its ESD-protected bag and place it onto a static-free, flat surface.

10. Carefully remove the DIMM modules from their ESD-protected bag.

__________ NOTE ___________

There are three memory banks (J1/J2, J3/J4, and J5/J6) in the system; each bank consists of two DIMMs; it is suggested that you use bank J5/J6 for this upgrade.
11. To add memory modules (DIMMs), refer to Figure 1-3 as you perform the following steps:
   
a) Install the DIMM straight into the socket. Position the DIMM so that both the retaining clips at the socket ends engage. Pay close attention to the keying on the DIMM and the socket.
   
b) Repeat for the remaining module.

![Figure 1-3 Installing the Memory](image-url)
The 433a Upgrade

12. Hold onto either end of the new MLB as you slide it down into the system chassis. See Figure 1-4.
13. Carefully seat the new MLB onto the connectors inside the system chassis.
14. Lock the MLB-retaining clips over the MLB to secure it.
15. Reconnect the keyboard, mouse, and any other external cables you removed to the new MLB.

![Figure 1-4 Installing the New MLB](ML014014)

Figure 1-4 Installing the New MLB
14. Move the power connector on the riser card from the Intel connector 1 to the Alpha connector 2. See Figure 1-5.

![Diagram](ML014013)

**Figure 1-5 Moving the Power Cable**

15. To replace the speed button with the new 433a speed button, you must first remove the front bezel. Refer to Figure 1-6 and follow these steps:

   a) From the top of the workstation, looking down toward the bottom of the front of the chassis, view the two tabs from the front bezel that hold the bezel in place and secure it to the chassis. Find both tabs (one on the left and one on the right).

   b) Push both tabs toward the center of the workstation to release the top of the bezel.

   c) Gently pull the top of the bezel approximately 1 inch away from the top of the chassis.

   d) Gently, but firmly, pull up on the bezel to unhook the bottom bezel mounts.
e) From the inside of the bezel, compress the tabs on the speed button 1 and slide it through the bezel to the front.

f) To install the new speed button, reverse the procedure above.
16. Line up the flanges on the inside of the bottom-left portion of the cover so that they overlap the edge of the chassis body. (See Figure 1-7.)

17. Slide the cover forward to secure it into place. Fasten the system cover with the three thumbscrews provided.

17. Plug in the power cord.

18. Power on the system.


20. Place the old MLB in the ESD-protected bag which the new one came in and store it in case you wish to use it in the future.