KTC-1000,KTC-1100,KTC-4100,and KTC-4200

Add-on Memory Modules for the COMPAQ DeskPro 386/20, 386/25, 386/20e, 286e and 386s

Kingston
TECHNOLOGY CORPORATION

KTC-1000, KTC-1100, KTC-4100 and KTC-4200

Add-on Memory Modules for the COMPAQ DESKPRO 386/20, 386/25, 386/20e, 286e and 386s

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January 1990 • REV B1

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KTC-1000, KTC-1100, KTC-4100 and KTC-4200

Add-on Memory Boards

1. General Description

The add-on memory modules, manufactured by Kingston Technology Corporation (KTC), are available in 1 megabyte (MB) or 4MB versions. These modules are completely compatible with ™COMPAQ's 32-bit memory bus, which takes advantage of the cache memory architecture of the 80386 CPU. The KTC memory modules plug directly onto COMPAQ's system memory board.

This installation guide explains how to install your new KTC memory module onto the system memory expansion board.

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1.1 Add-on Memory Module Versions

The KTC memory modules are available in four versions, depending on your DeskPro computer:

DeskPro 386/20, 386/25, 386/20e, 286e

KTC-1000	1MB version with 256K x 4 RAM chips (100ns).
KTC-4100	4MB version with 1MB x 1 RAM chips (100ns).

DeskPro 386s

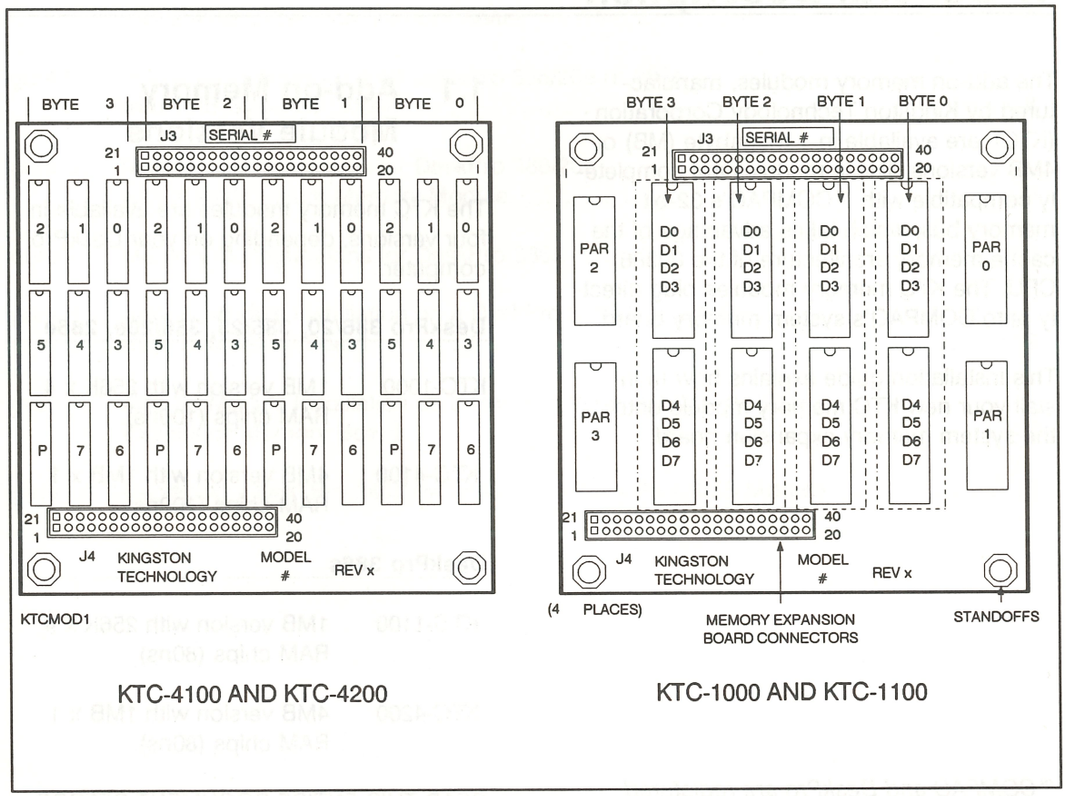
KTC-1100	1MB version with 256K x 4 RAM chips (80ns).
KTC-4200	4MB version with 1MB x 1 RAM chips (80ns).

READ THIS ENTIRE DOCUMENT BEFORE INSTALLING KTC MEMORY MODULES.

1.2 Major Components on the KTC Memory Modules

Figure 1 shows the major components of the KTC memory modules. Notice that the 4MB versions have the same memory layout and the 1MB versions have a different layout.

These components are described in detail on the following page.



KTC-4100 AND KTC-4200

KTC-1000 AND KTC-1100

Figure 1: Components on the KTC Memory Modules

Memory chips.

There are four banks of memory (Bytes 0 through Bytes 3). The chips for the DeskPro 386/20, 386/25, 386/20e and 286e are standard 100 nanosecond (ns) Dynamic RAM (DRAM) devices, which are soldered in place. The chips for the DeskPro 386s are 80ns RAM devices.

Both the 1MB and 4MB versions have the same memory arrangements. The 1MB version of the KTC board uses 256K x 4 DRAM chips, and the 4MB version uses 1MB x 1 DRAM chips. Each bank contains eight bits of memory and a parity bit (P).

Mounting Holes

The KTC memory modules contains standoffs that for mounting it to the system memory expansion board..

Memory Board Interface (J3 and J4)

These are the connectors that plug directly onto connectors labeled P301- P401, P302-P402, or P303-P403 on the system memory expansion board.

Model Number

This number defines which version (either 1MB or 4MB capacity) of KTC memory you have:

If you have a *DESKPRO 386/20, 386/25, 386/20e*, or *286e,* your KTC memory should be

KTC-1000 = 1MB version
KTC-4100 = 4MB version.

If you have a *DESKPRO 386s*, your KTC memory should be

KTC-1100 = 1MB version
KTC-4200 = 4MB version

2. Installation

This chapter explains how to install your KTC memory module onto your DeskPro system memory expansion board. Pay special attention to the charts that define where to install the new boards – labeled Memory Module A, Memory Module B, or Memory Module C.

Note

The DeskPro 386e and 386s expansion memory boards have only Module A and Module B locations.

2.1 Precautions

The memory boards are packaged in special anti-static envelopes that protect them from static electricity that could cause damage to the memory chips. Handle the memory boards carefully and keep them in the protective envelope until you are ready to install them.

Read the entire installation section before you remove the memory board from its protective envelope and install it on the system memory board.

2.2 Determining Memory Module Location

Before installing the KTC memory board you must know much system memory you have on your DeskPro system.

The system memory is contained either on the system motherboard (DeskPro 386/20e, 286e and 386s) or on the system memory expansion board (DeskPro 386/20 and 386/25). Kingston Technology's memory modules plug directly onto the memory expansion board. Therefore, you must install a memory expansion board into the DeskPro 386/20e, 286e, or 386s before you can plug in an add-on memory module.

If you already have add-on memory modules they may have to be relocated to other locations.

Study the following notes and figures describing your DeskPro system carefully before you begin installation.

READ ME FIRST

DeskPro 386/20 and DeskPro 386/25

Install your new memory modules directly onto the system memory expansion board. The system memory board can be either 1MB (Figure 3) or 4MB (Figure 4).

DeskPro 386/20e and 286e

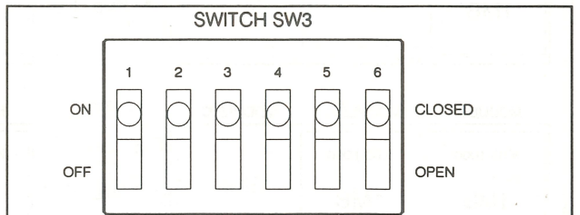
The DeskPro 386/20e and 286e contain 1MB of system memory on the motherboard. The system must have a memory expansion board in the first slot (the memory expansion slot) on the motherboard. The memory expansion board can be either 1MB or 4MB (Figure 5) for maximum 13MB system memory. Kingston Technology offers a 1MB expansion board (KTC-1000e) and a 4MB expansion board (KTC-4000e).

The DeskPro 386/20e 1MB system memory consists of a memory module that can be replaced with a 4MB (KTC-4100) module. With this 4MB memory module, the total memory can be expanded up to 16MB (Figure 6). Refer to Section 2.4 and your DeskPro 386/20e documentation to replace the system memory module.

DeskPro 386s

The DeskPro 386s contains a 1MB system memory on the system motherboard. You must install a memory expansion board into the first slot (memory expansion slot) on the motherboard. The memory expansion board can be either 1MB or 4MB (Figure 7) for maximum 13MB system memory. Kingston Technology offers a 1MB expansion board (KTC-1000s) and a 4MB expansion board (KTC-4000s).

The DeskPro 386s must know how much memory you install in its system. Set switch SW3 on the system board for your new memory configuration. These switches are defined in Figure 3.



-- SW 3 POSITION -- 3	4	5	6	MEMORY EXPASNION BOARD	MEMORY MODULE A	MEMORY MODULE B	TOTAL MEMORY
*ON	ON	ON	ON	-	-	-	1MB
ON	ON	ON	OFF	- 1MB	-	-	2MB
ON	ON	OFF	ON	1MB	1MB	-	3MB
ON	ON	OFF	OFF	1MB	1MB	1MB	4MB
OFF	ON	ON	OFF	4MB	-	-	5MB
ON	OFF	OFF	ON	1MB	4MB	-	6MB
ON	OFF	ON	ON	1MB	1MB	4MB	7MB
OFF	ON	OFF	ON	4MB	4MB	-	9MB
ON	OFF	OFF	OFF	1MB	4MB	4MB	10MB
OFF	ON	OFF	OFF	4MB	4MB	4MB	13MB

*STANDARD 1MB SYSTEM MEMORY KTCMOD7

REFER TO YOUR DESKPRO 386s DOCUMENTION FOR SW3 POSITIONS 1 AND 2 (BASE MEMORY LIMIT)

Figure 2: Memory Configuration Switch SW3 (DeskPro 386s Only)

Use the following chart for COMPAQ DeskPro 386/20 and 386/25 Systems with a 1MB Expansion Memory Board

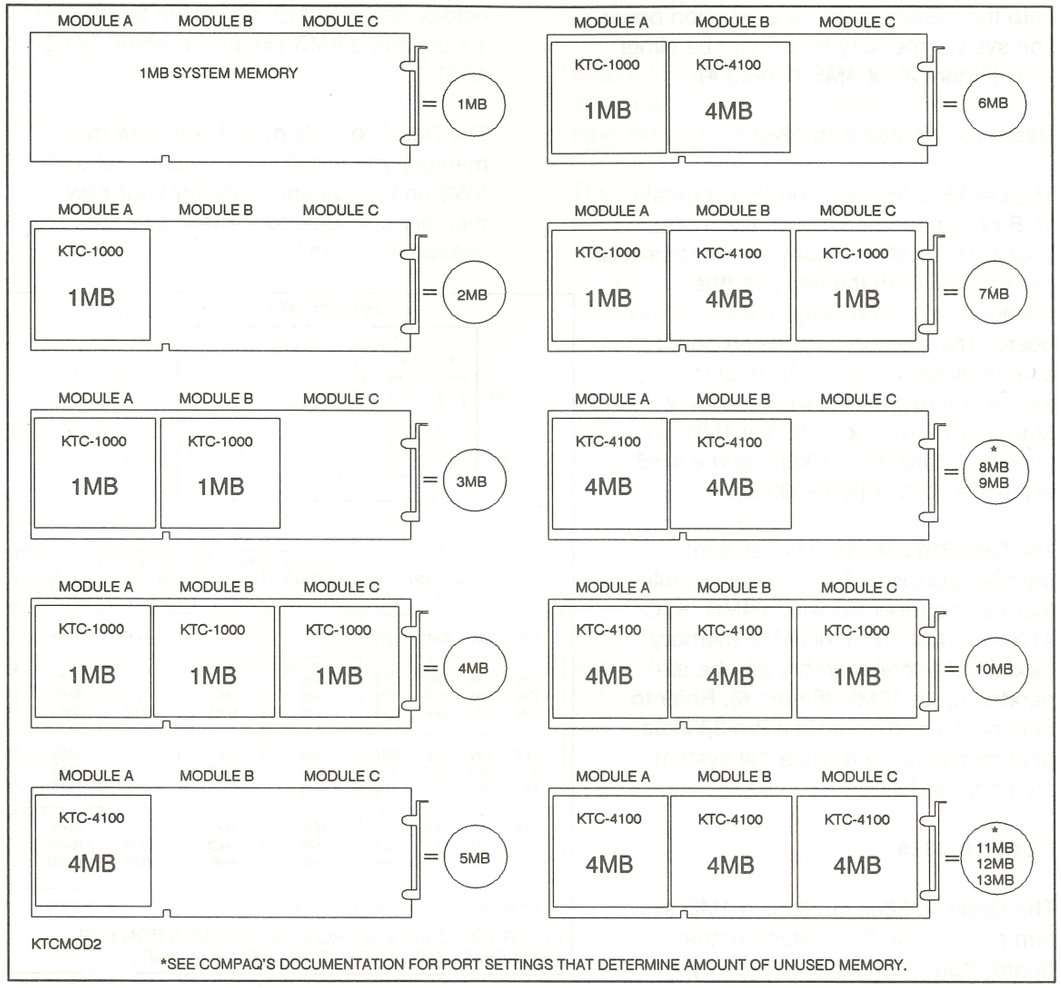


Figure 3: Memory Configurations for DeskPro 386/20 and 386/25 with 1MB Memory

Use the following chart for COMPAQ DeskPro 386/20 and 386/25 Systems with a 4MB Expansion Memory Board

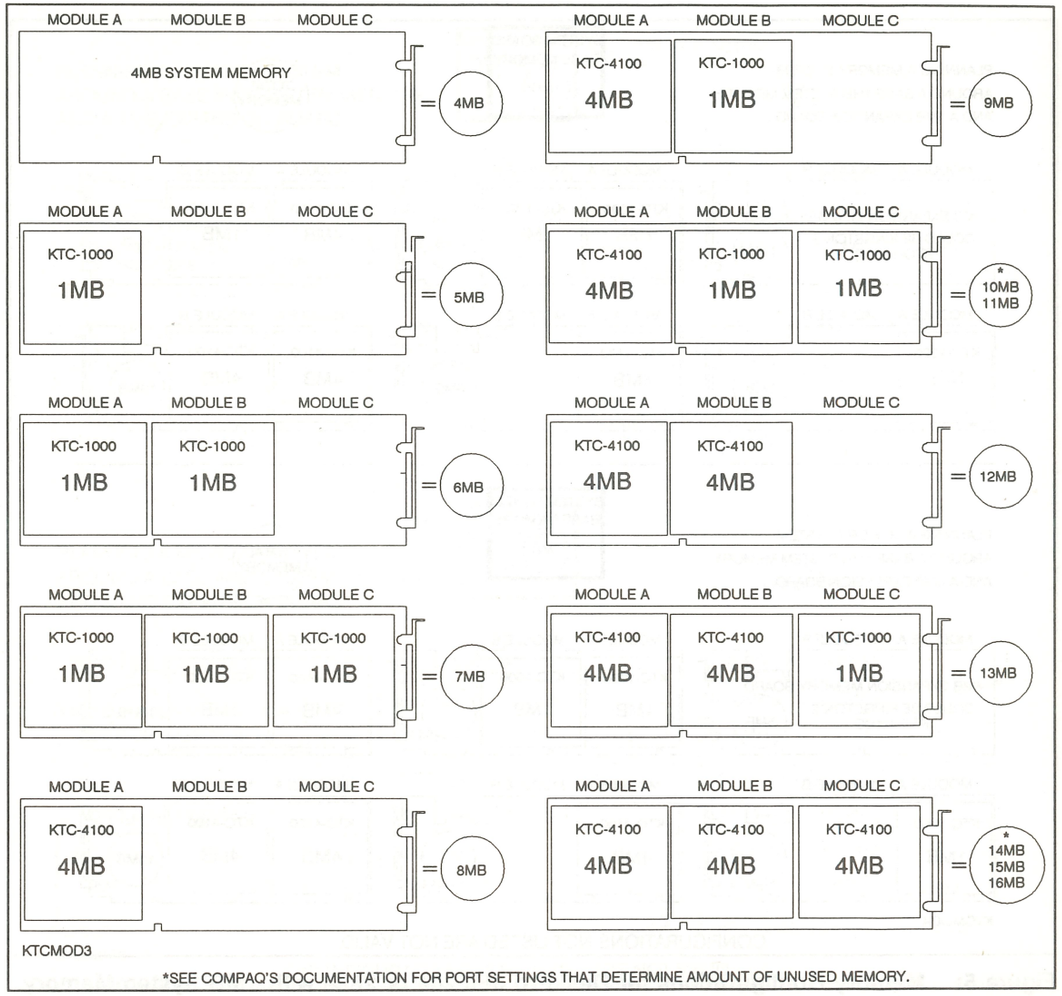


Figure 4: Memory Configurations for DeskPro 386/20 and 386/25 with a 4MB Expansion Memory Board

Use the following chart for COMPAQ DeskPro 386/20e and 286e Systems with 1MB System Memory Module

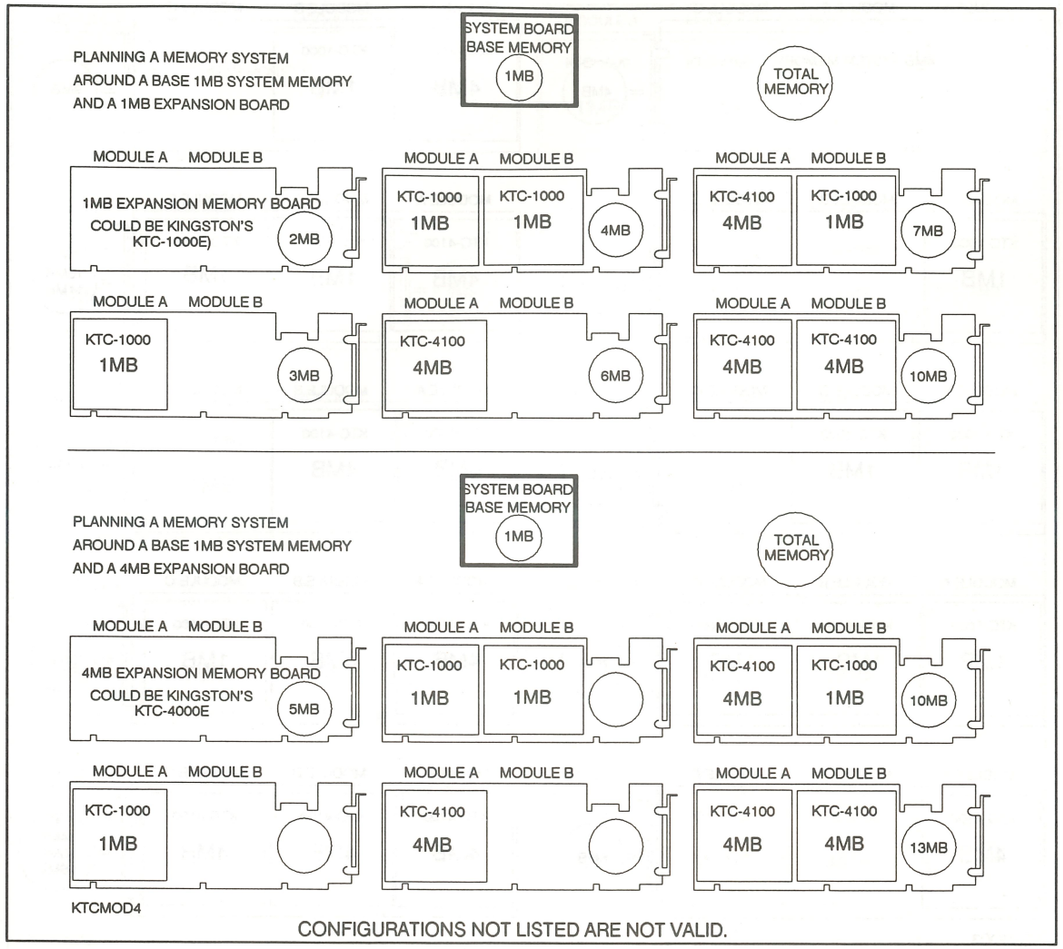


Figure 5: Memory Configurations for DeskPro 386/20e or 286e with 1MB SystemMemory

CHECK EXTENDED/EXPANDED MEMORY JUMPER SETTINGS IN DESKPRO 286e DOCUMENTATION

Use the following chart for COMPAQ DeskPro 386/20e System with 4MB System Memory Module

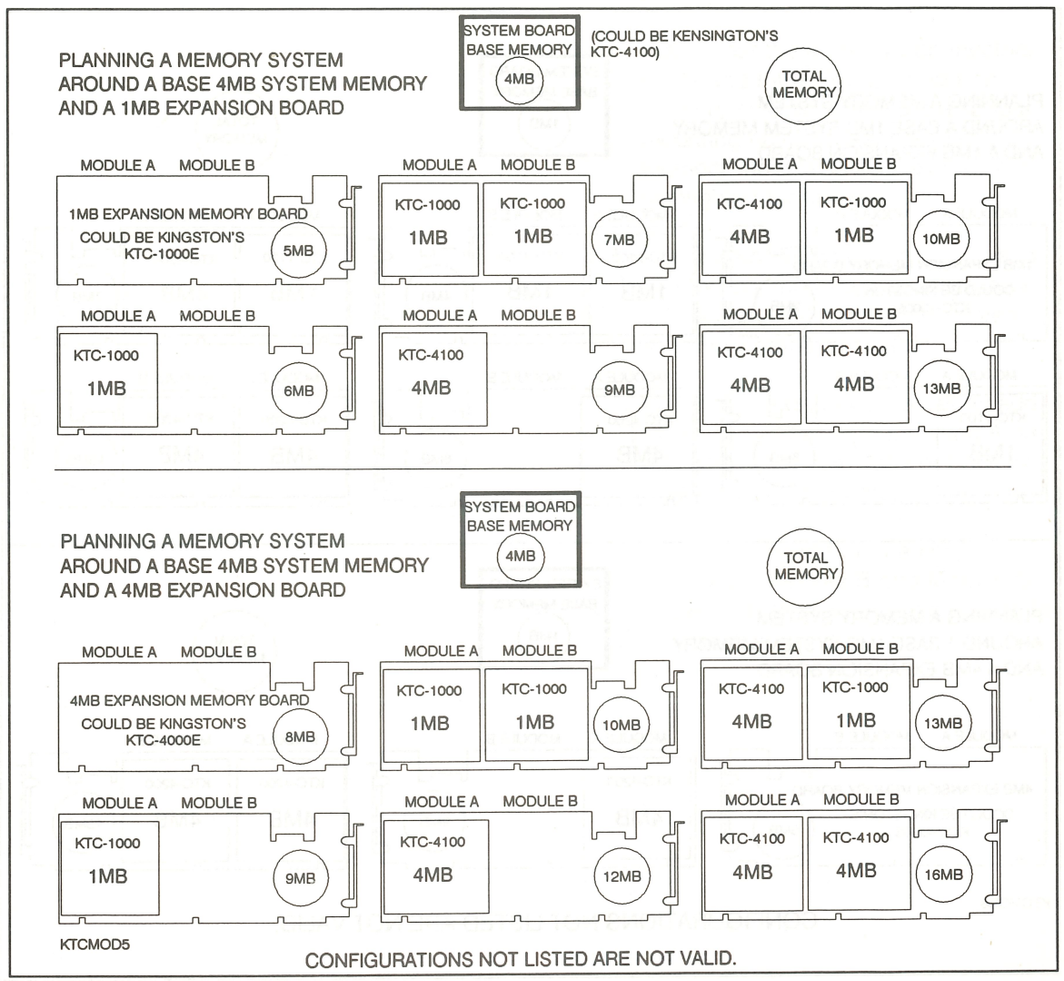


Figure 6: Memory Configurations for DeskPro 386/20e with a 4MB System Memory Module

Use the following chart for COMPAQ DeskPro 386s System with a 1MB System Memory Module

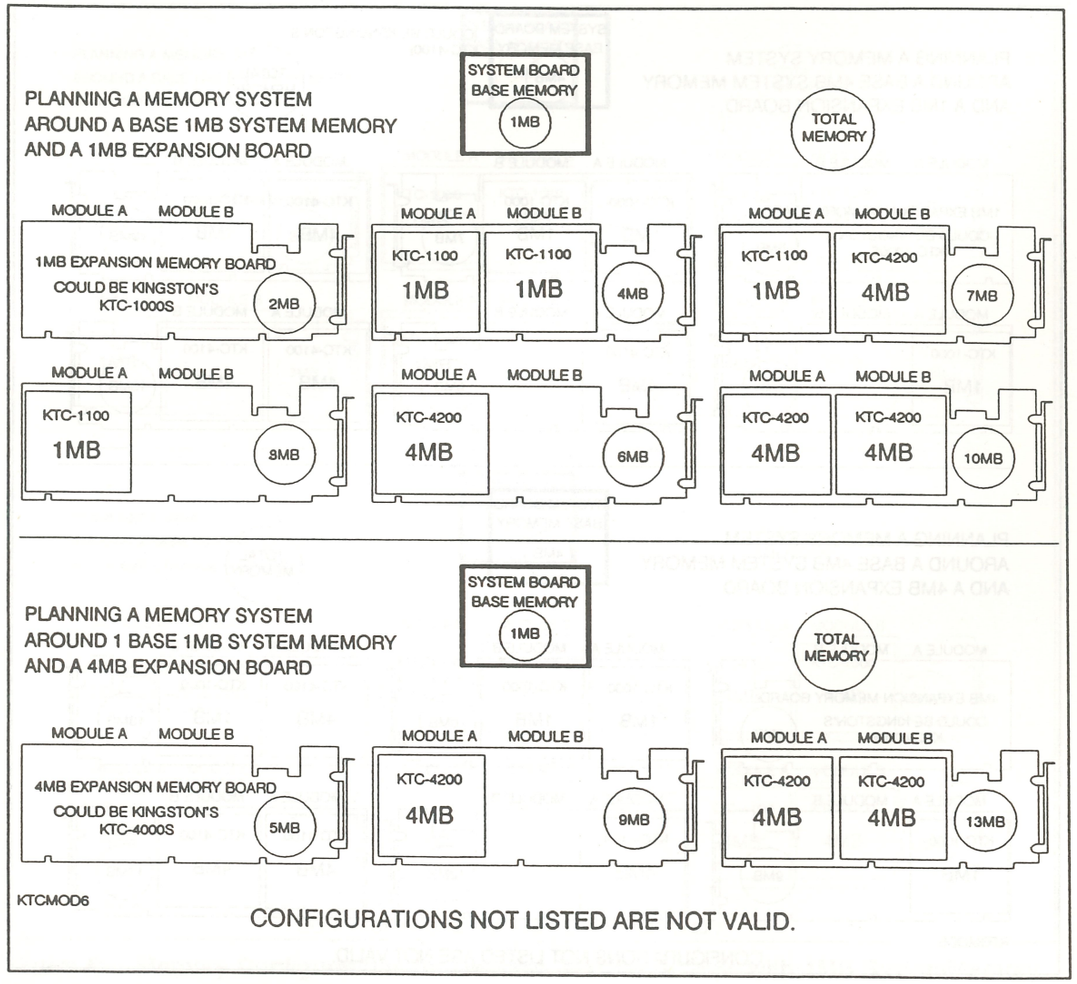


Figure 7: Memory Configurations for DeskPro 386s

2.3 Memory Module Installation

Once you know your memory configuration, you are ready to install your new memory modules onto the DeskPro system memory expansion board.

Figure 8 shows the system memory expansion board for the DeskPro 386/20 and 386/25 memory module locations (Module A, Module B, and Module C) that you plug your add-on memory module into.

Figure 9 shows the expansion memory board for the DeskPro 386/20e, DeskPro 286e, and DeskPro 386s memory module locations (Module A and Module B).

Procedures for installing add-on memory modules onto a 1MB or 4MB expansion memory board are the same. Use the following procedure to install new memory modules.

1. Remove the expansion memory board from the DeskPro memory slot. Refer to your COMPAQ documentation to remove the memory board.
2. If a memory module is already installed in one of the module location that conflicts with your new memory configuration, carefully remove it to reconfigure the expansion memory board.
3. Notice that there are two connectors (P30x and P40x) for each add-on memory module. There are also four mounting holes for each add-on memory module. These features are highlighted for Module A.
4. Figure 8 shows how to install an add-on memory module in Location A on a DeskPro 386/20 or 386/25 system memory expansion board.

Figure 9 shows how to install an add-on memory module in Location A on a DeskPro 386/20e, 286e or 386s expansion memory board.

Installation of add-on memory modules in Module B and Module C locations is the same as installation in Module A.

5. Notice that the add-on memory board includes threaded standoffs.

NOTE

If you are replacing the base 1MB memory module in a DeskPro 386/20e system with a 4MB module, remove the standoffs. Refer to Section 2.4.

6. Snap the add-on memory module into place by connecting J3 and J4 on the add-on memory module to P30x and P40x, respectively, on the system memory expansion board.

7. Insert the supplied #6 - 32 x 3/8" screws as shown in Figure 8 or 9.

8. Plug the system memory expansion board into the memory expansion slot.

9. Run the SETUP program on the diagnostic diskette that came with your DESKPRO 386.

10. You are now ready to use your new add-on memory board.

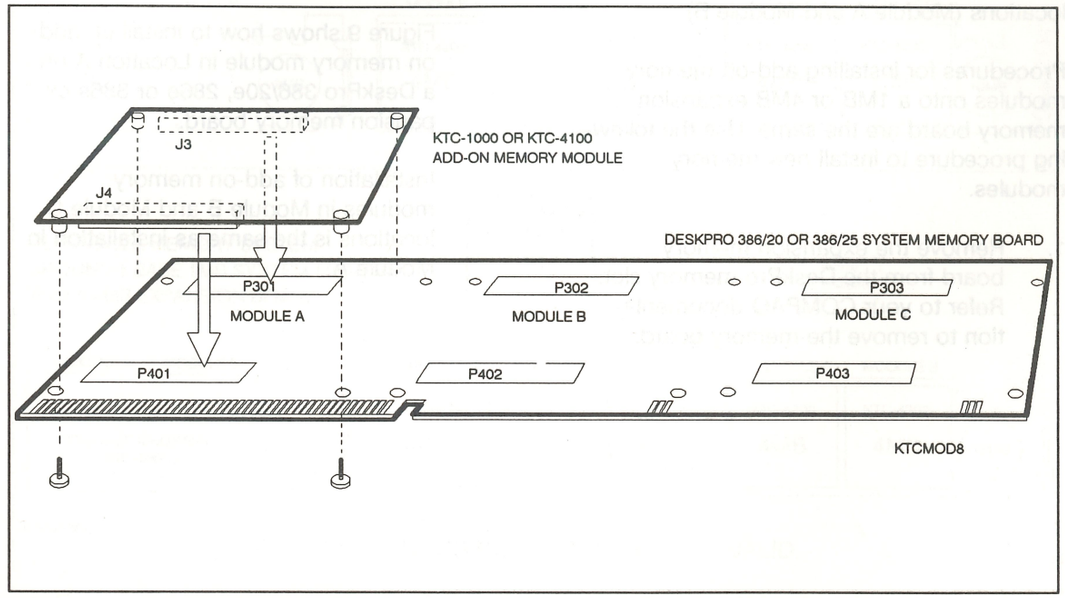


Figure 8: Add-on Module Installation on a DeskPro 386/20 or 386/25 System Memory Board

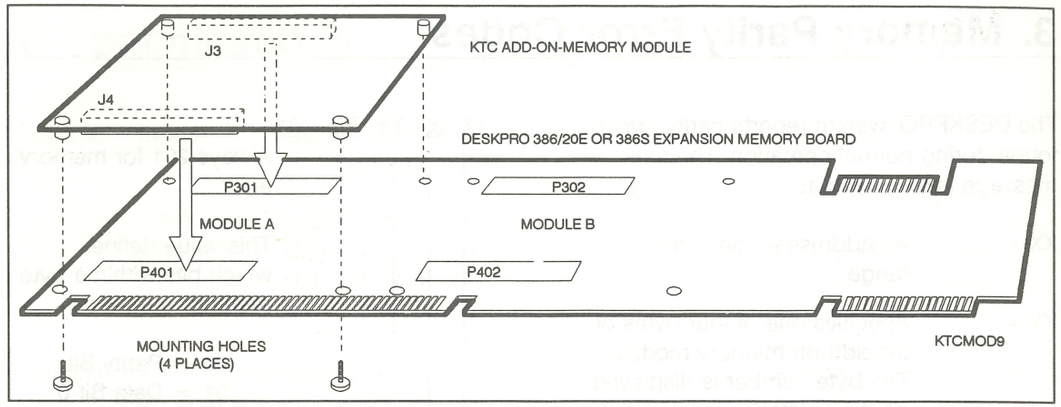


Figure 9: Add-on Module Installation on a DeskPro 286e, 386/20e or 386s Expansion Memory Board

2.4 Replacing a DeskPro 386/20e System Module

The DeskPro 386/20e contains a 1MB memory module on the motherboard. Use the following procedure to replace it with a 4MB KTC-4100 memory module.

1. To gain access to the memory module, the fixed disk drive in drive position C must be removed. Consult your Compaq documentation or representative to remove the drive.

2. Remove the 1MB base system module at the center-rear of the motherboard and save the screws.

3. Align the 4MB KTC-4100 memory module in the old 1MB module location and secure it to the motherboard with the two screws from the original 1MB module

4. Replace the fixed disk drive.

5. Run the SETUP program on the diagnostic diskette that came with your DeskPro 386/20e.

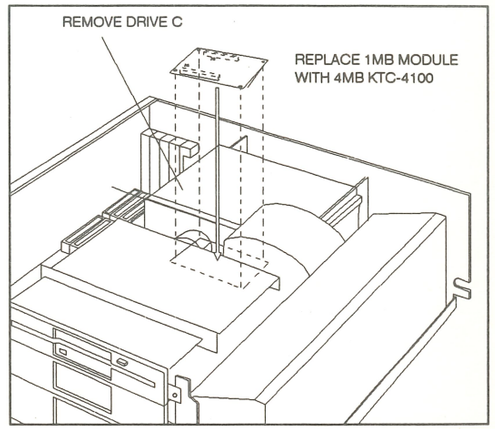


Figure 10: Replacing a DeskPro 386/20e System Module with a 4MB Module

3. Memory Parity Error Codes

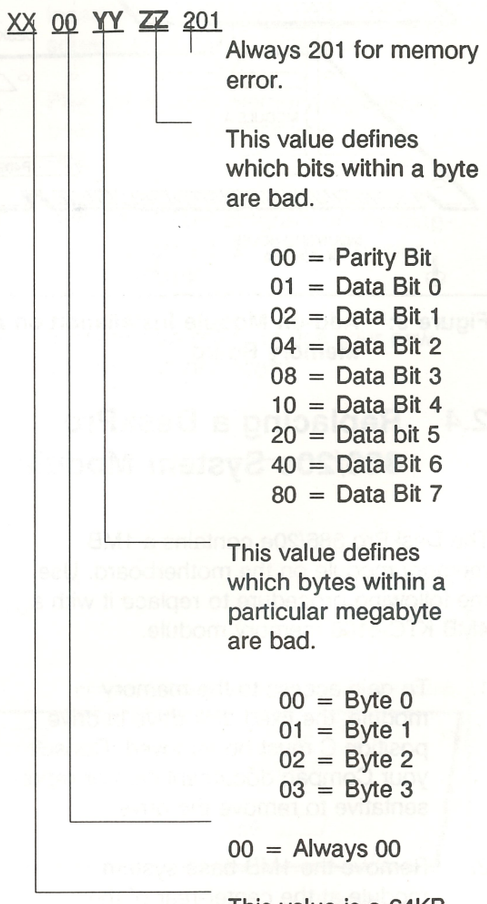
The DESKPRO system reports parity errors found during normal operation. The error message is displayed as:

XX = An address within some range.

YY = Specifies one of four bytes of the add-on memory module. The byte number is displayed on the system monitor. This number correlates with the KTC bytes labeled in Figure 1.

ZZ = Defines which bit within the YY byte is bad.

201 = Indicates a Memory Error.



4. Specifications

Versions:

Model	Capacity	Compaq Equivalent P/N
KTC-1000	1MB	113131-001
KTC-4100	4MB	113132-001
KTC-1100	1MB	113646-001
KTC-4200	4MB	112534-001

Compatibility: Completely pin-to-pin hardware compatible with Compaq's DeskPro 386/20, 386/25, 286/20e, 386/20e, and 386s system memory boards

Completely software compatible with operating systems and diagnostics designed for the Compaq systems.

Power Requirements: +5VDC
1.8 A (maximum)

DRAM:

Access Time: 100ns for KTC-1000 and KTC-4100
80ns for KTC-1100 and KTC-4200.

Memory Arrangement: 4 bytes, each with 32-bit of data and 4 bits of parity.

Replacement: Memory chips are soldered in place

Dimensions: 4.3" x 4.3"

Installation: Plugs directly onto the system memory board P30x and P40x connectors. Screws inserted through standoffs insulate the add-on board and secure the module in place.

Environment:

	Operating	Storage
Temperature:	0°C to 50°C	-55°C to 125°C
Humidity	20% to 80%	5% to 90%
Maximum Altitude	10,000 feet	30,000 feet

Notes

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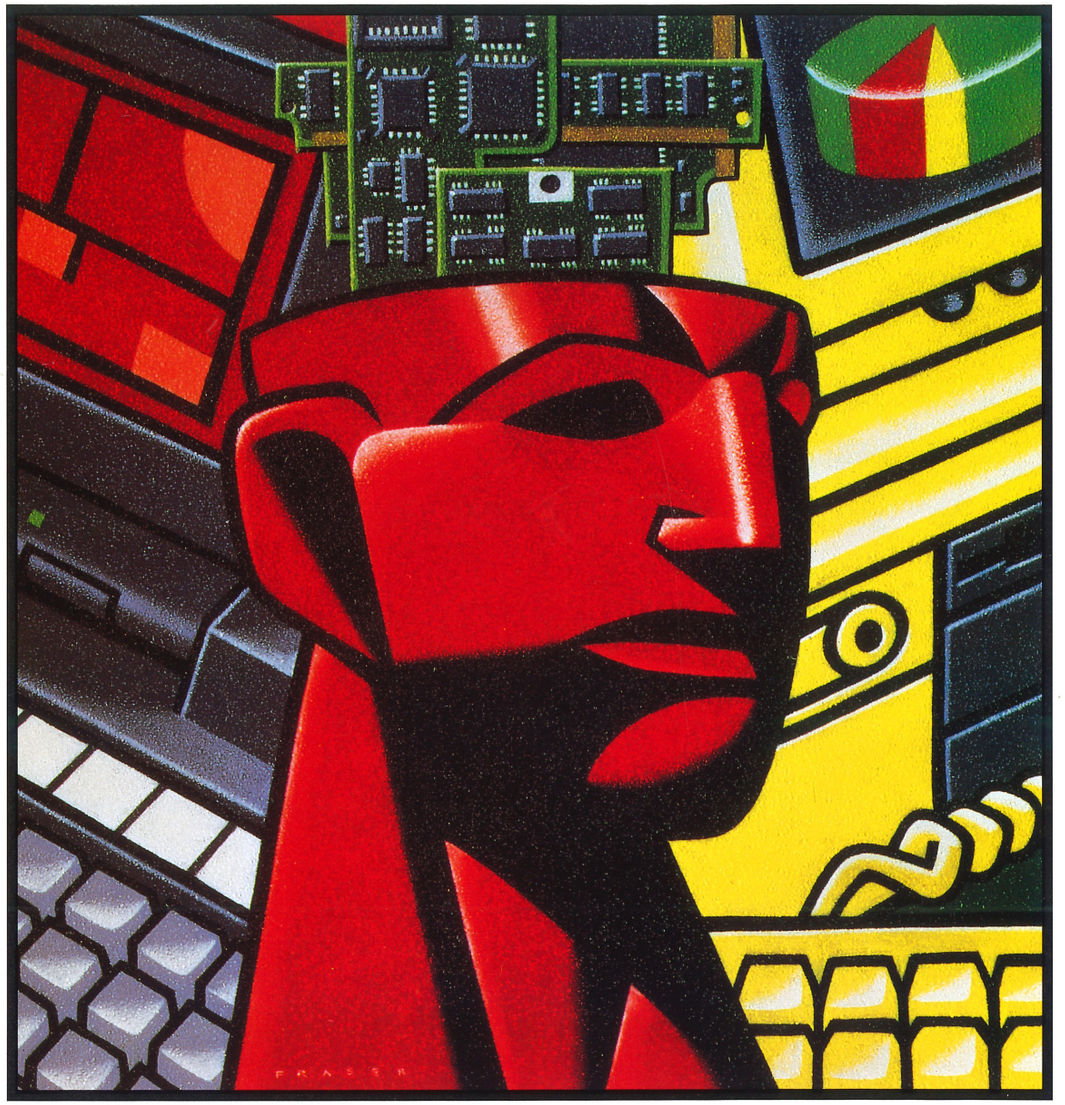

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