

HP 12998A	16K byte
HP 13187A	32K byte
HP 13187B	32K byte
HP 12747A	128K byte

Standard Performance Memory Module

installation manual



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INTRODUCTION

This manual provides installation instructions for HP Standard Performance Memory Modules, which are compatible with HP 2102B and 2102C memory controllers in HP 21MX M-Series and E-Series computers. Standard Performance Memory may be installed in the computer mainframe or in an HP 12990 Memory Extender. When one or more modules are field installed, it may be necessary to order a new memory system cable. Standard Performance Memory Modules described in this manual are:

HP 12998A	16K bytes	(8K words)
HP 13187A	32K bytes	(16K words)
HP 13187B	32K bytes	(16K words)
HP 12747A	128K bytes	(64K words)

Also of use may be the *Reference Manual* and *Installation and Service Manual* for the appropriate computer or memory extender.

MODULE NUMBER ASSIGNMENT

Before installing Standard Performance Memory Modules, assign each module a unique position in memory as shown in figure 1. Each 32K byte memory module is equivalent to two consecutive 16K byte memory modules and each 128K byte memory module is equivalent to eight consecutive 16K byte memory modules. Note that a 32K byte memory module must be assigned such that it originates on a 32K byte boundary in memory. A 128K byte module must be assigned such that it originates on a 128K byte boundary in memory. Module numbers must be assigned contiguously starting with module 0; there may be no "missing" modules. Configure memory module jumpers to correspond to the assigned module numbers. (Refer to figures 2, 3, 4 and 5 for HP 12747A, 13187B, 13187A, and 12998A memory modules, respectively.)

INSTALLATION IN COMPUTER OR EXTENDER

Refer to figure 6 and install memory module(s) in the computer mainframe or in the memory extender as follows:

- Switch off the computer or extender ac power and battery supplies.
- Lower the front panel to the access position.
- Remove memory PCA retainer from memory PCA cage.

- Install memory module(s), with component side up in computer or memory extender memory slots.

Note: If an HP 12990 Memory Extender is being used, it is recommended that the eight memory extender slots be filled before adding memory to the computer mainframe.

- Connect memory cable assembly between memory controller PCA connector J1 and all memory module J1 connectors.
- If desired, a sharp knife or scissors may be used to remove the unused connector(s) from the cable assembly.
- Reinstall memory PCA retainer and front panel.

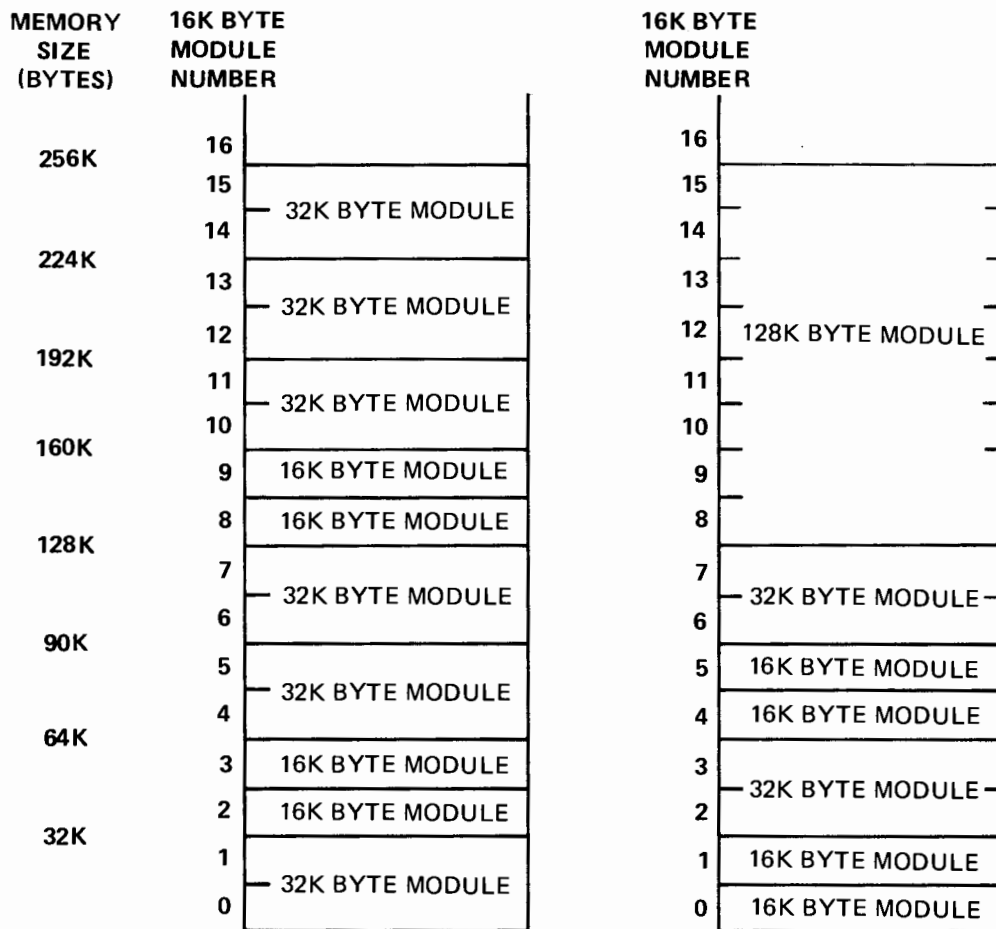
CHECKOUT

After installing the Standard Performance Memory Module(s), verify proper operation by performing the following diagnostic checks:

DIAGNOSTIC*	MANUAL PART NO.	ABSOLUTE BINARY PROGRAM NUMBER
Semiconductor Memory	24395-90001	24395-16001
Memory Protect/ Parity Error	12892-90005	12892-16001

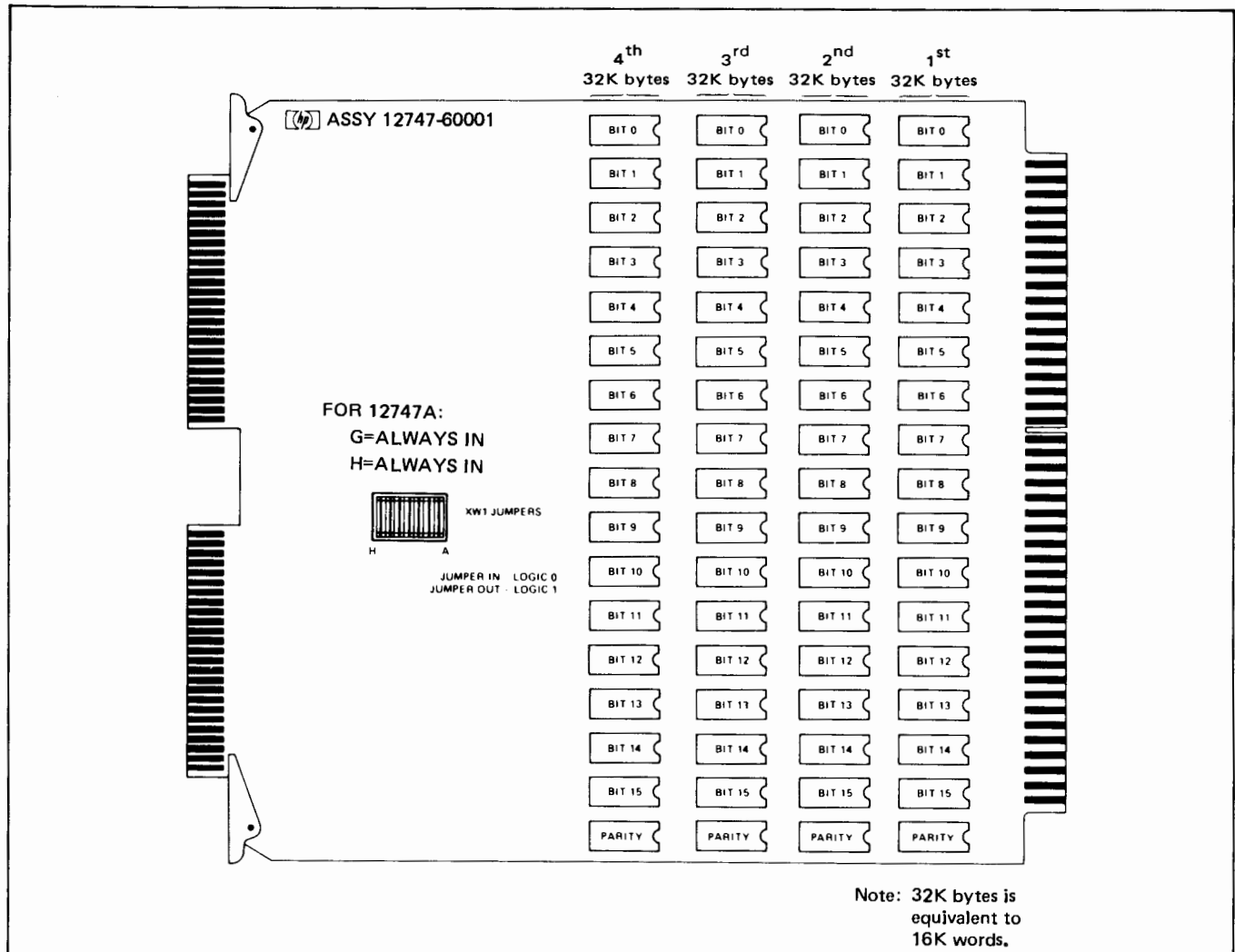
If the diagnostic test is completed without an error halt, memory is operating correctly. If the diagnostic test indicates an error halt, notify your nearest Hewlett-Packard Sales and Service Office. A list of HP Sales and Service Offices is given in the appropriate computer *Reference Manual* and *Installation and Service Manual*.

*The absolute binary code for this diagnostic is contained on one or more media (e.g., paper tape, mini-cartridge tape, discs, and magnetic tape). The binaries also exist on single as well as multiple files. For the current date code(s) associated with these media, refer to appendix A in the *Diagnostic Configurator Reference Manual*, part no. 02100-90157 dated January 1977 or later.



Note: 32K byte Modules must be assigned such that they originate on 32K byte boundaries in memory. 128K byte Modules must be assigned such that they originate on 128K byte boundaries in memory.

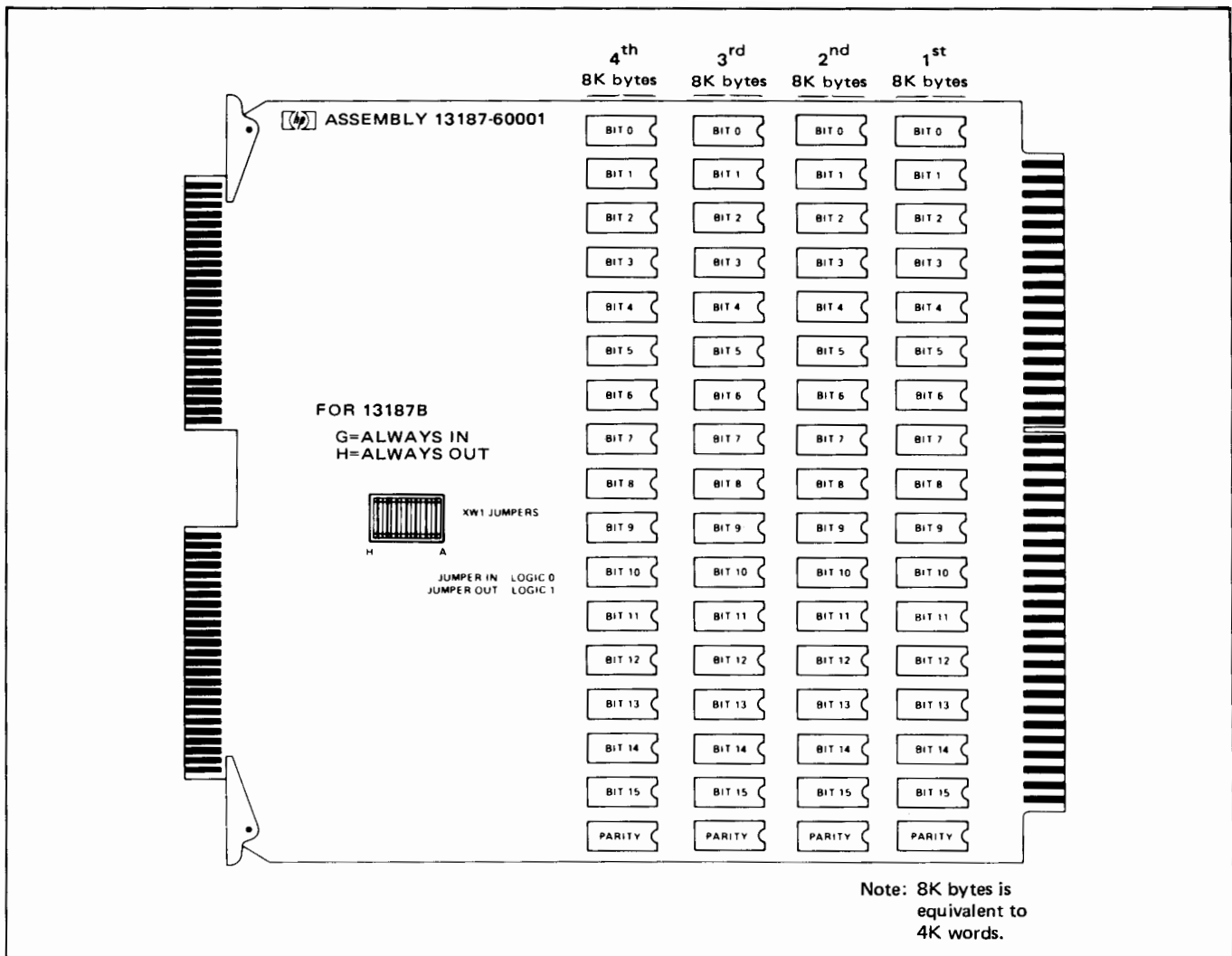
Figure 1. Typical Memory Module Assignments using 16K Byte, 32K Byte, and 128K Byte Memory Modules



8K MEMORY MODULE NO.	XW1 JUMPERS							
	H	G	F (2 ⁵)	E (2 ⁴)	D (2 ³)	C (2 ²)	B (2 ¹)	A (2 ⁰)
0-7	ALWAYS IN	ALWAYS IN	IN	IN	IN	IN	DON'T CARE	DON'T CARE
8-15			IN	IN	IN	OUT		
16-23			IN	IN	OUT	IN		
24-31			IN	IN	OUT	OUT		
32-37			IN	OUT	IN	IN		
40-47			IN	OUT	IN	OUT		
48-53			IN	OUT	OUT	IN		
54-61			IN	OUT	OUT	OUT		
62-69			OUT	IN	IN	IN		
70-77			OUT	IN	IN	OUT		
78-85			OUT	IN	OUT	IN		
86-93			OUT	IN	OUT	OUT		
94-101			OUT	OUT	IN	IN		
102-109			OUT	OUT	IN	OUT		
110-117			OUT	OUT	OUT	IN		
118-125			OUT	OUT	OUT	OUT		

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Figure 2. 12747A 128K Byte Memory Module Jumper Configuration



16K BYTE MEMORY MODULE NO.	XW1 JUMPERS							
	H	G	F (2 ⁵)	E (2 ⁴)	D (2 ³)	C (2 ²)	B (2 ¹)	A (2 ⁰)
0,1	ALWAYS OUT	ALWAYS IN	IN	IN	IN	IN	IN	IN
2,3			IN	IN	IN	IN	IN	OUT
4,5			IN	IN	IN	IN	OUT	IN
6,7			IN	IN	IN	IN	OUT	OUT
8,9			IN	IN	IN	OUT	IN	IN
10,11			IN	IN	IN	OUT	IN	OUT
12,13			IN	IN	IN	OUT	OUT	IN
14,15			IN	IN	IN	OUT	OUT	OUT
16,17			IN	IN	OUT	IN	IN	IN
18,19			IN	IN	OUT	IN	IN	OUT
20,21			IN	IN	OUT	IN	OUT	IN
22,23			IN	IN	OUT	IN	OUT	OUT
24,25			IN	IN	OUT	OUT	IN	IN
26,27			IN	IN	OUT	OUT	IN	OUT
28,29			IN	IN	OUT	OUT	OUT	IN
30,31			IN	IN	OUT	OUT	OUT	OUT
32,33			IN	OUT	IN	IN	IN	IN

2102-2A

Figure 3. 13187B 32K Byte Memory Module Jumper Configuration

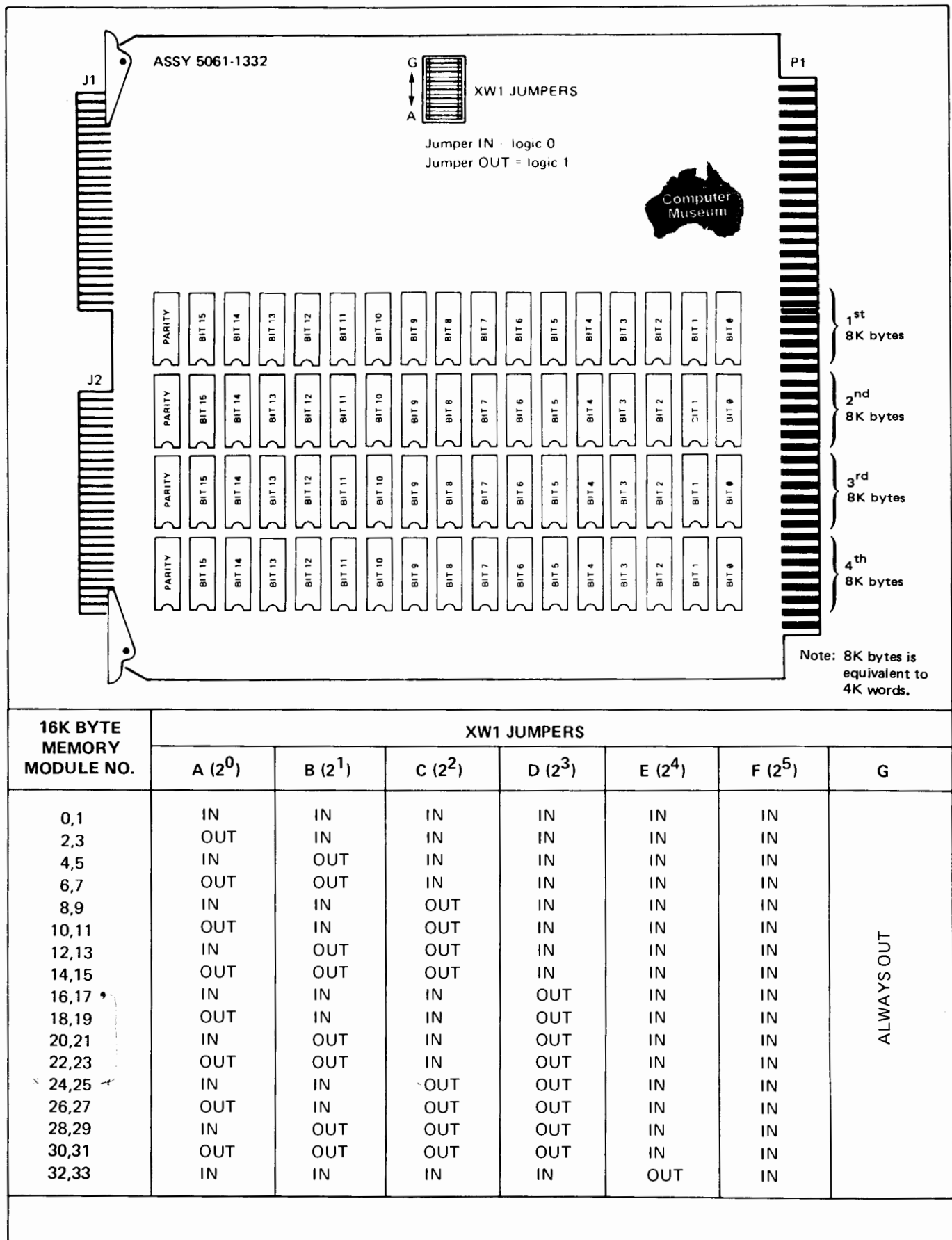


Figure 4. 13187A 32K Byte Memory Module Jumper Configuration

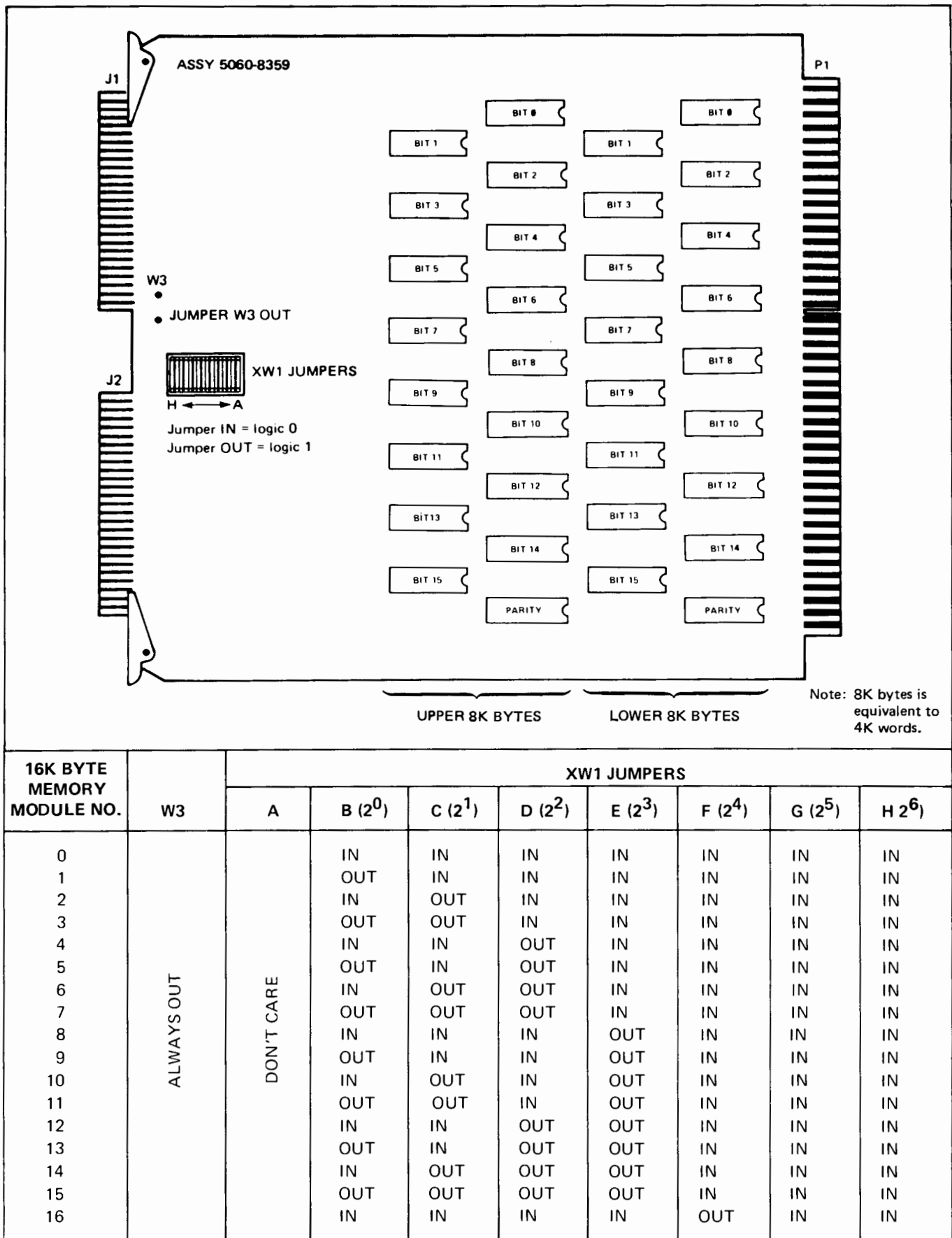


Figure 5. 12998A 16K Byte Memory Module Jumper Configuration

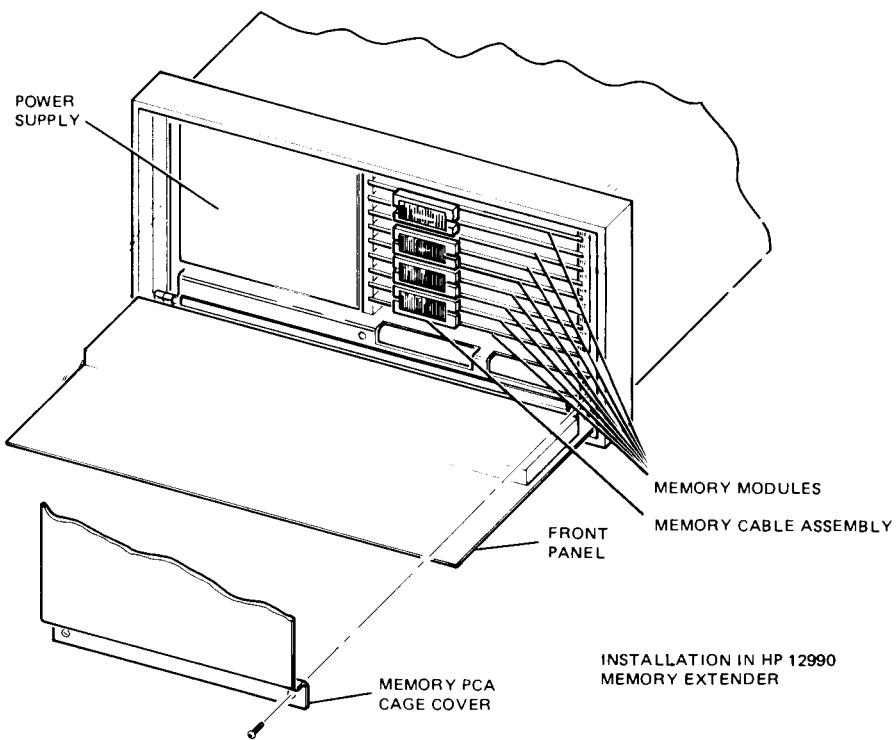
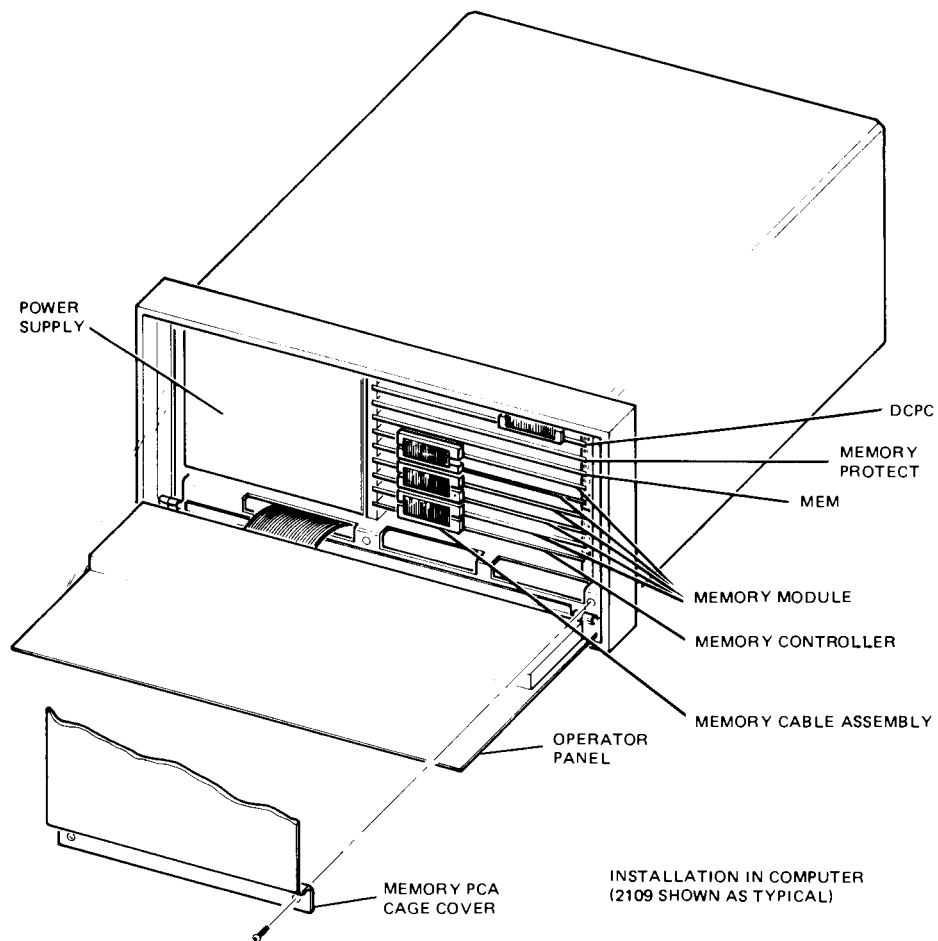


Figure 6. Installation Details

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