P/N: 800-0397

Sun 1M Memory Board

User's Manual

Sun Microsystems Inc.

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Revision A

The Sun 1M Memory Board is a memory expansion board for the Sun 68000 processor board offering 1 MByte of RAM with byte parity on a single board. The Sun 1M Memory Board is form factor compatible with the IEEE 796 Bus (Intel Multibus). It interfaces with the Sun 68000 processor board via a private, high-speed memory bus on the P2 connector.

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1. System Architecture

1.1. Features

- memory expansion for Sun 68000 Board
- 1 Mbyte of dynamic RAM on one board
- no wait state operation with 10 MHz 68000 CPU
- byte parity error detection
- single board compatible with IEEE-796 Bus/Intel Multibus
- 5V only operation.

1.2. Overview

The Sun 1M Memory Board is a high-density memory expansion board for the Sun 68000 processor board, featuring up to 1 MByte of RAM per board with byte parity. In conjunction with the Sun 68000 Board, the Sun 1M Memory Board allows no-wait state operation of the 10 MHz 68000 CPU. Communicating with the Sun 68000 Board via a synchronous, private memory bus on the P2-connector, the Sun 1M Memory Board leaves the Multibus available for simultaneous input/output transfers. The Sun 1M memory board is not accessible from the Multibus; it interfaces exclusively with the Sun 68000 board over the P2 Bus and appears in every aspect like the processor board's on-board memory.

1.3. Specification Summary

Memory

```
up to 1 MByte of RAM
byte parity
memory can be populated in 128K banks
```

796-Bus Compatibility

```
no 796-Bus interface
```

Electrical Characteristics

```
+ 5V +- 5%.  7 Amp (max)
```

Physical Characteristics

```
Width: 12.00 in. (30.48 cm)
Height: 6.75 in. (17.15 cm)
Depth:  0.50 in. (1.27 cm)
Weight: 16 oz.   (447 g)
```

Environmental Characteristics

```
Operating Temperature: 0-55 C
```

2. Preparation for Use

2.1. Introduction

This chapter provides information on installing the Sun 1M Memory Board. Included are instructions for unpacking, inspection, switch and jumper setting, and interfacing the Sun 1M Memory Board with the Sun 68000 board.

2.2. Unpacking Instructions

Inspect the shipping carton immediately upon receipt for evidence of damage. If the shipping carton is severely damaged, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when the carton is opened and the contents are damaged, keep the content and carton for the agent's inspection.

It is suggested that salvageable shipping cartons and packing material be saved for future use in the event the product must be reshipped.

2.3. Installation Considerations

The board is designed for installation into a 796-Bus or Intel Multibus compatible backplane or cardcage.

POWER: The Sun 1M Memory Board requires a 5V power supply and draws a maximum current of 7 Amps.

COOLING: When installing the board in an enclosed environment or under restricted airflow conditions, ensure that the internal operating temperature does not exceed 130 degrees F or 55 degrees C.

CAUTION: To prevent possible equipment damage, do not install board in a cardcage while power is on. Also, to prevent damage due to static voltages, avoid exposing the board to plastic materials.

2.4. Repair Information

To return a Sun 1M Memory Expansion board for repair, obtain a return material authorization number (RMA) from the address below and send the board with the RMA number and a detailed description of the problem to the following address:

```
Sun Microsystems Inc
Att: Service Department
2550 Garcia Avenue
Mountain View, CA 94043
USA, 415-960-1300
```

2.5. P2-Bus

The Sun 1M Memory Board uses a private, high-speed memory bus for communication with the Sun 68000 Board. This local bus is implemented via the P2 connector of the Multibus using all 60 pins of the P2-connector.

To install a Sun 1M Memory Board in a Multibus cardcage, a P2 backplane bus must be provided to connect it to the Sun 68000 Board. In a configuration with several memory expansion boards, all boards must be connected with a P2 bus.

2.6. Switches and Jumpers

The Sun 1M Memory Board contains one DIP switch (location U506) which selects the base address of the board. Only one switch must be closed at one time.

BASE ADDRESS (HEX)	SWITCH NUMBER
0x000000	1
1x000000	2
2x000000	3
3x000000	4
4x000000	5
5x000000	6
6x000000	7
7x000000	8

In addition, two jumpers next to chip position U501 enable or disable the low-order 256K of the on-board memory. If both jumpers are installed, the low-order 256K memory is enabled, if the jumpers are not installed then the starting address of the Sun 1M memory expansion board is 256K bytes (0x40000 hex) above the base address selected by switch U506.

To configure the Sun 1M Memory Board for a Sun 68000 Board, you must select its starting address either at 256K or at 1M.

Thus the *first* memory expansion board should have switch 1 on U506 closed and switches 2 through 8 open, and there should be no jumpers on the jumper pins.

The *second* memory expansion board should have switch 2 on U506 closed and all other switches open, and both jumper pins should have shorting bars placed on them, aligned in the vertical plane of the board (that is, parallel to chip U501).