

2000MX/SP Installation Manual

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Revision C

Copyright 1995

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Important FCC Information

This peripheral device generates and uses radio frequency energy, and if it is not installed and used properly, that is, in accordance with this manual, it may cause interference to radio and television reception. It has been designed to comply with the limits for a Class-A computing device in accordance with the specifications in subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area may cause interference and is up to you, at your own expense, to take whatever measures may be required to correct the interference. You can test to see whether this equipment does cause interference with radio or television reception by turning the computer off and on while the receivers are on to see whether interference stops when the drive is off. If the drive is causing interference, try to correct the problem by one or more of the following measures:

- Be sure you're using shielded interconnect cables.
- Reorient the receiving antenna.
- Relocate the drive with respect to the receiver.
- Move the receiver away from the computer, or vice versa.
- Plug the computer into a different outlet so that the computer and receiver are on different circuits.

If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may also find a booklet prepared by the Federal Communications Commission helpful. It is entitled *How to Identify and Resolve Radio-TV Interference Problems*. Request Stock No. 004-000-00345-4, from the U.S. Government Printing Office, Washington, D.C., 20402.

Printing History

New revision levels of the manual indicate a new rewrite of the manual. If the Revision level of the manual does not change from one printing to the next, this indicates that the newer printing is a maintenance upgrade, i.e. typographic errors, page references, etc.

If you have upgraded your 2000MX/SP to a later version, you should contact Bering Customer Service to determine the proper revision of the *2000MX/SP Installation Manual* required for your 2000MX/SP MAC (Multiple Access Controller) Disk Interface.

Date = Date this manual was printed
Rev = Revision level of this manual

Date	Rev	Changes to manual
May 1995	A	First printing
Aug 1999	B	Corrected switch settings, added 2000SP
May 2000	C	Corrected W4/W5 jumper settings

Warranty Statement

Bering products sold in the U.S.A. and Canada carry a standard one year warranty against defects in materials and workmanship.* During the warranty period, Bering will, at its option, repair or replace equipment which proves to be defective.

All repairs will be performed at the factory. Any other arrangement, such as on-site service, will be at your expense. Before any product is returned for repair, a Return Materials Authorization number (RMA#) must first be obtained from a Customer Service representative.

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2000MX/SP MAC Disk Interface

Introduction

The Bering 2000MX/SP MAC (Multiple Access Controller) Disk Interface is an interface which emulates the HP 13037 MAC board. Plugging the 2000MX/SP into your HP 1000 or 2100 computer allows the Bering 2000MD SCSI disk subsystems to be used with your RTE-IVB or RTE-VI operating system. The Bering 2000MD series of disk subsystems provide HP 7906M emulation. This provides direct replacement of older HP disk drive subsystems without modification of existing programs.

This manual provides detailed installation and operation instructions for the 2000MX/SP MAC Disk Interface. Anyone using this manual should be familiar with the HP 1000 and HP 2100 series computer hardware and programming.

The 2000MX/SP MAC Disk Interface is designed to replace older HP 1000 and 2100 series disk drive subsystems while maintaining HP program code compatibility.

The 2000MX/SP subsystem is composed of a Printed Circuit Board (PCB) designed to plug into the HP 1000 backplane and an interface cable to be plugged into a Bering 2000MD series disk subsystem.

The 2000MX/SP contains a microprocessor used in the HP 1000 I/O backplane. The Input, Output, and control signals from the HP 1000 backplane are monitored by the microprocessor. Based on the state of the HP 1000 I/O, the microprocessor may execute various functions depending upon the specific emulation requirements. The commands from the backplane may be converted into SCSI commands by the microprocessor and sent to an external SCSI disk drive over the SCSI bus. Data to and from the HP 1000 backplane is transferred under DMA into buffers on the PCB for processing. Data to and from the SCSI bus is also transferred under DMA.

Unpacking

Carefully unpack your interface kit near the location where you want to set it up, noting the packing method as you go. Save the packing materials — they'll come in handy if you ever want to transport the unit.

Besides this manual, the carton contains:

- The 2000MX/SP MAC Disk Interface PCB
- A SCSI interface cable

If any item is missing, please call your dealer or call Bering Customer Service at (408)364-6500.

Storage and Shipping

The 2000MX/SP MAC Disk Interface PCB uses static sensitive CMOS devices. Caution must be used when handling and shipping the PCB to prevent damage from static discharges. Shipment of the PCB must be done in approved static control bag and containers. Assure a minimum of 2 inch (5 cm) packing around the PCB when packaging for shipment. If possible, retain and reuse the original shipping material.

Installation

This section provides information for setup and installation of the 2000MX/SP MAC Disk Interface subsystem. This information includes jumper and switch settings, PCB installation, and interface cable connection. The installation of the SCSI disk drive is dependent upon the specific drive used and is covered in the manual supplied with your Bering 2000MD disk subsystem.

Switch and Jumper Settings

The following table shows the jumper settings required for proper operation of the 2000MX/SP PCB when used with the Bering 2000MD disk drive subsystem.

Jumper Settings			
Jumper	Setting	Jumper	Setting
W1	on	W7	on
W2	on	W8	off
W3	on	W9	off
W4	2-3	W10	off
W5	2-3	W11	on
W6	off	W12	off

Jumpers W4 and W5 should be jumpered across the pins toward the backplane connector.

Switch block U57 should have all of the switches set to the on position.

PCB Installation

The Bering 2000MX/SP MAC Disk Interface must be installed in the HP 1000 computer before the Bering 2000MD/SD disk subsystem can be connected.

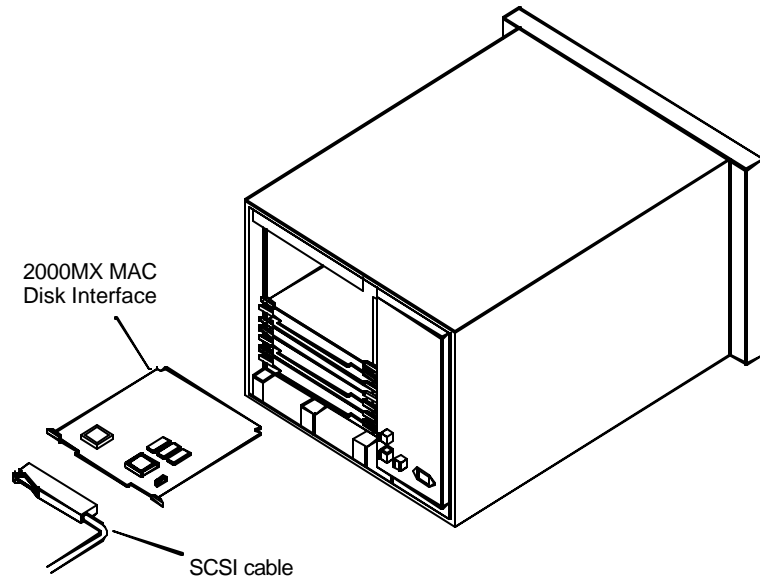
The Bering 2000MX/SP MAC Disk Interface emulates the HP 13037 MAC Interface.

1. Power off the HP 1000 computer.
2. Determine the specific I/O slot in the HP 1000 backplane into which the PCB is to be installed.

If you are replacing an HP 13037 MAC Interface, the 2000MX/SP should be installed in the slot where the HP 13037 Interface PCB is removed from.

3. Remove the existing HP 13037 MAC Interface PCB and controller if it is installed in the system and it is being replaced.
4. Orient the 2000MX/SP PCB so the components face the same direction as the components on all other PCBs and slide the 2000MX/SP MAC Disk Interface into the slot and push until it is fully seated in the slot.

Note: To avoid regeneration of the operating system, the HP 13037 MAC board must first be removed and the Bering MAC Disk Interface should be inserted in the same slot.



Installing the 2000MX/SP MAC Disk Interface

5. Plug the SCSI interface cable to the edge connector on the 2000MX/SP MAC Disk Interface as shown in the illustration. The cable end of the connector should be oriented away from the LEDs on the PCB.

The RTE operating system may need to be regenerated at this time. If the 2000MX MAC Interface was installed in a different slot than the HP 13037 MAC, or if no 13037 MAC was previously installed a regeneration is required. Refer to the RTE Manager's Manual for information. No regeneration is required if the 2000MX was installed in the same slot where the HP 13037 MAC board was removed from.

**LED
Indications**

The LEDs on the 2000MX/SP PCB indicate certain activity and error codes. If the LEDs are on solid, and error condition exists; if they are flashing this indicates normal bus I/O activity. This table shows the LED indications you may see during operation. The indication column shows the LED as shown from left to right as seen from the rear of the computer. One is on and zero is off.

Indication	Meaning
0001	On-line, Idle
0010	Drive config
0100	Reset
0101	Write
0110	Drive not formatted
0111	Write error
1000	Power on
1001	Read
1010	Ring config
1011	Read error
1100	SCSI self-test
1111	Buffer self-test

Specifications

This section summarizes the specifications for the 2000MX/SP MAC Disk Interface.

Dimensions	Width	7.75 197	in. mm
	Height	8.69 220	in. mm
Current Requirements	4.5 Vdc	1.8	Amp
	-2.0 Vdc	0.08	Amp
	12.0 Vdc	0.01	Amp
	-12.0 Vdc	0.01	Amp
Processor	Type	NEC V40	
	Oscillator Frequency	20	Mhz
	RAM	512	Kbyte Max
	ROM	512	Kbyte Max
SCSI Interface	Conforms to SCSI-I standards		
	SCSI Controller	NCR 53C90A	
Backplane Interface	Input/Output Buffer	4	Words