HYPERAM 50/60

User's Manual

Memory boards for
IBM PS/2 Models 50 and 60

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INTRODUCTION

Introduction to Hyperam 50/60

Hyperam 50/60 is a memory board designed for the IBM PS/2 Model 50, 50z and Model 60 computers.

There are two versions of the Hyperam 50/60 board; the Hyperam 50/60 2 Megabyte board and the Hyperam 50/60 8 Megabyte board.

The 2 Megabyte board comes standard with 512 Kbytes of memory and can be populated up to 2 Megabytes using 256 kilobit memory chips.

The 8 Megabyte board comes standard with 2 Megabytes of memory and can be populated up to 8 Megabytes using 1 Megabit memory chips.

Both versions of Hyperam 50/60 can be used to provide:

extended memory - memory above the normal DOS address limit, used by OS/2, XENIX and other special operating systems.

expanded memory for use by Hypertec software and by third party software compatible with the Lotus/Intel/Microsoft Expanded Memory Specification (EMS) Version 3.2 and Version 4.0

Both versions of the board are supplied with an extensive suite of software including:

*menu driven install program which guides you through the installation process and sets up your hardware and software configuration.

*Ram disk and print spooling software.

Checklist

Your Hyperam 50/60 package should contain:

*Hyperam 50/60 full-size memory board

*Hyperam 50/60 User's Manual

*Hyperam 50/60 installation disk

If you do not have each of these items, contact your dealer before proceeding further.

You will also need the

*IBM PS/2 Model 50/60 Reference Diskette

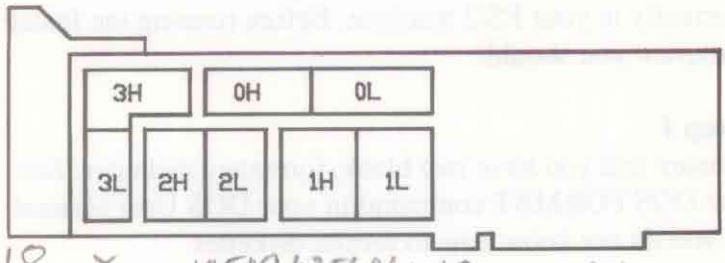
*IBM PS/2 Model 50 or 60 Quick Reference Guide

Installation procedure

The Hyperam 50/60 installation disk contains an installation program which guides you through the complete hardware and software installation procedures for the Hyperam 50/60 board.

The Hyperam 50/60 User's Manual is designed to supplement the Install program with reference chapters, diagrams and a Problems section.

Turn now to the next section headed ***Installation***.



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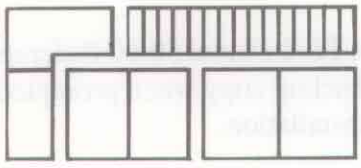

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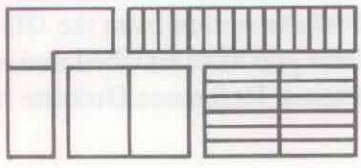

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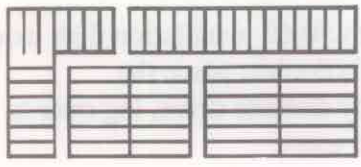

Eight banks filled

Figure 2.1 Board Layout

INSTALLATION

The Hyperam 50/60 installation disk contains all the instructions necessary for installing Hyperam 50/60 correctly in your PS/2 machine. Before running the Install program you should:

Step 1
Ensure that you have two blank, formatted diskettes. See the DOS FORMAT command in your DOS User Manual if you do not know how to format diskettes.

Step 2
Make a backup of your IBM PS/2 Model 50/60 Reference Diskette. You will use this backup copy when prompted during the Hyperam 50/60 installation.

To make a backup copy of the Reference Diskette choose the ***Backup the Reference Diskette*** option from the IBM PS/2 Reference Diskette. When you have finished making the backup copy, store the original Reference Diskette in a safe place.

Step 3
Make a copy of the Hyperam 50/60 installation disk using the DISKCOPY program. To do this, place the Installation disk in the floppy diskette drive, log over to the floppy diskette drive and enter:

diskcopy a: b:

When you have finished making the backup copy, store the original installation disk in a safe place.

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Step 4

Remove the Hyperam 50/60 board from its antistatic bag and place it in front of you with the gold edge connector towards you and the components facing up. Take a moment to study the board and compare it with Fig 2.1. In particular, take note of the size of memory chips used in your board and how many banks have been filled with memory chips. If you are unsure which size of memory chips you have (i.e. 1 Megabit or 256 kilobit), look for the number '1000' (1 Megabit) or '256' (256 kilobit) in the part number inscribed on the memory chips. Use Tables 2.2 and 2.3 to help you calculate the total amount of memory on your Hyperam 50/60 board.

Chips used	256 Kbit	256 Kbit	256 Kbit
Banks filled	0H, 0L	0-1H, 0-1L	0-3H, 0-3L
No.banks filled	2 banks	4 banks	8 banks
Total memory	512 Kb	1024 Kb	2048 Kb

Table 2.2 Hyperam 50/60 2 Mb Memory Configurations

Chips used	1 Megabit	1 Megabit	1 Megabit
Banks filled	0H, 0L	0-1H, 0-1L	0-3H, 0-3L
No.banks filled	2 banks	4 banks	8 banks
Total memory	2048 Kb	4096 Kb	8192 Kb

Table 2.3 Hyperam 50/60 8 Mb Memory Configurations

Step 5
Hardware configuration

Place the copy of the Hyperam 50/60 Installation disk in drive A of your machine, log over to drive A and enter:

install

Key to use
The following keys are available at all times in the install program:

<F5> takes you forward through the available choices for each configuration question.

<F6> takes you backwards through the available choices for each configuration question.

Up arrow and **down arrow** keys move you up and down the screen - make sure you don't have the NUM LOCK key on.

<Page up> moves you back one page.

<End> records your answers as you complete each screen - make sure you don't have the NUM LOCK key on.

<Esc> is used to exit from a screen without recording your answers.

You will be asked three questions:

(1) Type of memory chip installed. If you have a 2 Mb board, the answer is 256 Kbit; if you have an 8 Mb board, the answer is 1 Mbit.

(2) Number of banks installed. The answer is 2, 4 or 8. Look at Figure 2.1 and the tables above to help you determine the correct answer.

(3) EMS I/O address. This is the address used by the Expanded memory. If this is the only Expanded memory board in the machine, accept the default answer.

Once you have answered these three questions, press the **<End>** key. A small box containing the following question will appear:

Any more boards to install?

If you have only one board answer ***No*** and press **<End>**.

If you are installing more than one board, answer ***Yes*** and press **<End>**. You will then be prompted to answer questions 1, 2, and 3 for the second and subsequent boards.

Once you have answered these questions, press the **<End>** key.

A second menu box will now appear displaying the following

(1) The total memory available on the Hyperam50/60 board

(2) A question asking you how much memory you wish to allocate to extended memory. Enter the amount you require and press **<Enter>**.

(3) The amount of memory (if any) which is left for expanded memory.

(4) The address range for the "window" which will be used to access the expanded memory.

Your window may be either 64 Kb, 96 Kb or 128 Kb. The larger the window is, the more efficiently your LIM 4.0 EMS software will run. If you are able to use the largest window size (that is, if you do not have other boards in your machine which require the extra addressing space) we suggest you do so. Otherwise use as large a window as your machine configuration will allow.

Use Table 2.4 to check window sizes with available addressing range choices.

Address range	Window size
C000-DFFF	128 Kb
C000-CFFF	64 Kb
C800-D7FF	64 Kb
D000-DFFF	64 Kb
C000-D7FF	96 Kb
C400-DBFF	96 Kb
C800-DFFF	96 Kb

Table 2.4 Window address ranges

You may use **<F5>** and **<F6>** to toggle through the available choices. Press **<End>** when you have made your choice.

N.B. If you have allocated all memory on Hyperam 50/60 to extended memory the window address will not be required and will therefore be displayed as "N/A".

You will now be prompted to place your backup of the Reference diskette in drive A. Press **<Enter>**. Configuration details will now be copied to the Reference diskette. You will then be returned to the DOS prompt.

You are now ready to install the board. **Leaving the Reference Diskette in drive A**, switch the machine off and unplug all power cords, cables etc.

Step 6

Remove the cover from the system unit. If you do not know how to do this, consult the Quick Reference guide for your Model 50 or Model 60.

Step 7
Locate a vacant expansion slot in the system unit. These slots are numbered 1, 2 and 3 in the Model 50 and 1 to 8 in the Model 60. Remove the expansion slot cover from the vacant slot you have selected.

If you do not know how to remove the expansion slot cover, consult the Quick Reference guide for your machine.

Step 8
Carefully insert the Hyperam 50/60 board into your machine. (You may wish to refer to the diagrams in the ***Installing Options*** section of the IBM PS/2 Model 50 or Model 60 Quick Reference Guide to assist you in this.) Line up the Hyperam 50/60 with the expansion slot. Placing one hand at each end of the top of the board, push down evenly. You may meet some resistance so pressure is required.

Multiple boards
If you are installing two or more Hyperam 50/60 boards please now turn to the chapter headed ***Multiple boards*** for further instructions.

One board only
If you are installing only one Hyperam 50/60 board, continue to follow the steps set out below.

Step 9
Tighten the expansion slot screw which you loosened earlier. Replace the cover of your system unit, reconnect all plugs and cables.

Step 10
With the copy of the **Reference diskette still in drive A,** turn the machine back on.

Step 11
You will see a ***165*** error on the screen. Do not be concerned, the error will no longer appear when the Hyperam 50/60 installation is complete.

The IBM logo will now appear. Press the **<Enter>** key. An ***Adapter Configuration Error*** message will now appear. Again, this will disappear once the Hyperam 50/60 installation is complete.

At the bottom of the screen you will see the following message:

Automatically configure the system? (Y/N)

If you are installing only one Hyperam 50/60, answer **Y** to this question:

N.B. If you are installing two or more Hyperam 50/60 boards you should already have turned to the chapter headed ***Multiple boards****. Go there now before answering any further questions.*

A message will now appear on the screen telling you that the Automatic Configuration is being run. When it is complete, remove the Reference disk from drive A and press enter to restart the machine.

Step 12

If you are using the board to supply some extended memory, a ***164*** error will appear on the screen during reboot. If you encounter a 164 error press **<F1>** to continue.

If you have allocated all memory on the board to expanded memory, you will not see a 164 error.

In either case you must now insert your backup copy of the Hyperam 50/60 installation disk in drive A, log over to drive A and key in:

install2

A program which correctly adjusts the extended memory in your machine will now be run. When it has finished you will be asked to insert the Reference Disk. Insert your copy of the Reference disk when prompted and press **<Enter>**.

You will then be prompted to reinsert the Hyperam50/60 install disk. Insert the disk when prompted and press **<Enter>**.

The following question will now appear on the screen:

Do you want to install the EXPanded memory driver and/or other utilities?

You will only answer **Yes** to this question if you have allocated some or all of the memory on the Hyperam50/60 to expanded memory for use by EMS specification software and/or Hypertec print spooling and ram disk software.

Extended memory only users
If you have allocated *all* memory on the board to extended memory you will answer **No** to this question. Your installation is now complete.

Step 13
Expanded memory users
Expanded memory users must still perform some additional steps to complete the installation.

Having answered **Yes** to the expanded memory question, you will be presented with a menu with two choices.

Select the first option, ***Quick Install***, if you only want to install the memory manager for use by EMS applications. Select the second option, ***Advanced Install***, if you also want to use the Hypertec print spooling and/or ram disk utilities.

Answer each of the questions in turn.

The install program will now install the drivers you selected and automatically reboot your machine.

If you encounter any problems in rebooting consult the **Problems** section in this manual.

The install program will install a device driver called **POOL.SYS**. This device driver allows you to use both expanded memory and Hypertec utilities such as ram disk and print spooling. If you only want to use expanded memory, you may wish to edit your CONFIG.SYS file and replace POOL.SYS with **EMM.SYS**, which is supplied on your Hyperam distribution disk. This will save some system memory, as the EMM.SYS driver is smaller than POOL.SYS.

PROBLEMS

This section is concerned with fixing problems you may encounter from time to time.

The first and most important principle of problem solving is:

DON'T PANIC

Generally problems are caused by simple mixups that can be solved with a little thought. The best approach is simply to do whatever you were doing again, paying careful attention to the details. The second most important principle is:

Simplify the problem

If everything was working before you made a change, take the change out and check that everything still works.

Before you call Hypertec

At Hypertec we pride ourselves on our customer support. If you call us we will make every effort to respond quickly and fix your problem. However, there are some things you can do before calling us that may help you to solve your problem yourself or make it easier for us to solve it for you.

(1) Read this section carefully to see if your problem is described. Try the suggested fixes.

(2) Call your dealer. Your dealer is more likely to know the details of your particular installation and, therefore, what may have gone wrong.

(3) Call us, but before you do, please write down the following:

*How much memory is on your Hyperam 50/60.

*What memory chips you are using.

*The EMS addresses of the Hyperam 50/60 board(s).

*The contents of your CONFIG.SYS file. This is a file on your boot disk. You may find out what is in it by logging over to your boot disk (normally drive C:) and entering the following command at the DOS command line:

type config.sys

*Similarly, record the contents of your AUTOEXEC.BAT file, which is also on your boot disk.

*Details of any other third party products you have in your machine.

*The exact wording of any error messages associated with your problem.

Machine doesn't boot

By this we mean there is no display on the screen at all when you turn the power on.

(1) Check that the power cords are all plugged in to the right boxes and that they are turned on at the power point. There should be a little light on your system unit, indicating that it has power. There should also be a light on your monitor.

(2) Remove the cover from the system unit and check that all boards are firmly seated in their sockets. Replace the cover and try the power again.

(3) Remove the Hyperam 50/60 board from the machine and try the power again. If the machine now boots, contact your dealer. If the machine does not boot, contact your dealer.

165 Adapter Configuration error

This error message will appear during the Hyperam 50/60 installation procedure and should not be a cause for alarm. If it still appears after you have completed the installation (that is, followed *all* the steps in the installation chapter of this manual) it means you have probably moved one of the boards in your computer from the slot it was originally installed in. Remove the cover from the machine and check that each of the boards is in its correct slot.

164 Memory size error

This error will occur normally during the installation procedure if you have changed the amount of extended memory in the machine. The error should go away after you run the ***Install2*** program. If it does not, take the Hyperam 50/60 board out of the machine, insert the IBM Reference disk and reboot. Reply **Yes** to the question about automatic reconfiguration. If you have more than one Hyperam 50/50 board in the machine, read the chapter ***Multiple Boards***.

Check the amount of memory you actually have on the Hyperam 50/60 board (use tables 2.2 and 2.3 to help you), replace the cover and re-run the installation program, using the ***Installation*** chapter of this manual as a guide.

162 CMOS RAM Checksum error

This error indicates that the poweron self test routines found an error in the battery backed CMOS RAM that stores the machine configuration on the IBM motherboard. This error should not occur during a normal installation sequence. It may mean that the battery in the machine is flat.

Try inserting the Reference disk in drive A:, pressing **<F1>** to continue the boot sequence, then performing an Automatic Reconfiguration. If this does not fix the error, or it reoccurs, contact your dealer.

201 Memory error

If this error is associated with a ***164*** error during the installation sequence, ignore it and proceed with the installation. If not, the error means your machine's self test has detected faulty memory in your machine. Have your dealer check it out.

111 Parity check error

This error means there is faulty memory in your machine which has either escaped detection by the IBM self-test (which means the fault is probably intermittent) or is being used as expanded memory and is therefore not tested by the IBM self-test. Either way, you should have your dealer check it out.

107 Parity check error

This error means there is faulty memory in your machine. Have your dealer check it out.

Cannot find Hyperam

This error generally means that there is a conflict between the Hyperam EMS window address and other memory in the machine.

The conflict may, for example, be with a network adaptor card or possibly a hard disk controller ROM. If such a conflict occurs you must reconfigure one of the boards to an alternative address.

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INSTALLING MEMORY

If your Hyperam 50/60 board contains less than a full complement of memory, you may install more memory chips to increase its capacity.

If it is possible to do so, get your dealer to purchase the memory and install it for you. The memory chips used in the Hyperam 50/60 are expensive and may easily be damaged by incorrect handling or installation. If you cannot get your dealer to purchase and install the memory, follow the steps outlined below.

Step 1

You must identify the correct size of memory chips to use in your Hyperam 50/60 board. As explained in the ***Introduction*** section of this manual, Hyperam 50/60 is sold in 2 configurations, one using 256 Kbit memory chips (known as Hyperam 50/60 2 Megabyte) and the other using 1 Megabit memory chips (known as Hyperam 50/60 8 Megabyte).

If you do not already know which of the 2 types your Hyperam 50/60 board is, turn off the power to your computer, remove the Hyperam 50/60 board and look carefully at the number inscribed on the memory chips already installed. Look for the number '1000' (1 Megabit) or '256' (256 kilobit) on the chips.

1 Megabit chips indicate that the board is a Hyperam 50/60 8 Megabyte board, 256 Kbit chips indicate that the board is the 2 Megabyte version.

Step 2
Purchasing the memory chips

Use tables 4.1 and 4.2 below to calculate the amount of memory you need to purchase.

Chips used	256 Kbit	256 Kbit	256 Kbit
Total memory supplied	512 Kb	1024 Kb	2048
No. chips used	18	36	72
No. banks filled	2	4	8

Table 4.1 Memory requirements Hyperam 50/60 2 Mb

Chips used	1 Megabit	1 Megabit	1 Megabit
Total memory supplied	2048 Kb	4096 Kb	8192 Kb
No. chips used	18	36	72
No. banks filled	2	4	8

Table 4.2 Memory requirements Hyperam 50/60 8 Mb

N.B. You may only populate your Hyperam 50/60 to the sizes indicated in the above tables. That is, you must have either 2, 4 or 8 banks filled with memory.

Step 3
Installing the memory

Place the Hyperam 50/60 board in front of you with the gold edge connector towards you and the components facing upwards.

Compare your board with Fig 4.3. You should install the memory chips one bank at a time. *You must take care to install them in the order indicated in Fig 4.3.*

N.B. Memory chips are sensitive to static. Before handling the chips, ensure that you are not charged. The easiest way to do this is to touch something metal immediately before touching a chip. If conditions are such that you are getting perceptible shocks, do not attempt to handle the chips.

Step 4
Orienting the chips correctly

It is vital that you insert the chips in the right direction in each socket. Each chip will have a dot or notch marked on one side of one end. This dot or notch must be at the same end of the socket as the white triangles marked at the end of each socket on the Hyperam 50/60 board. See Fig. 4.4.

Some memory chips do not have a dot or notch marked on them. In these cases refer to the writing on the chip. With the writing flowing from left to right, the notched end is the left hand end of the chip.