

Motherboard Layout

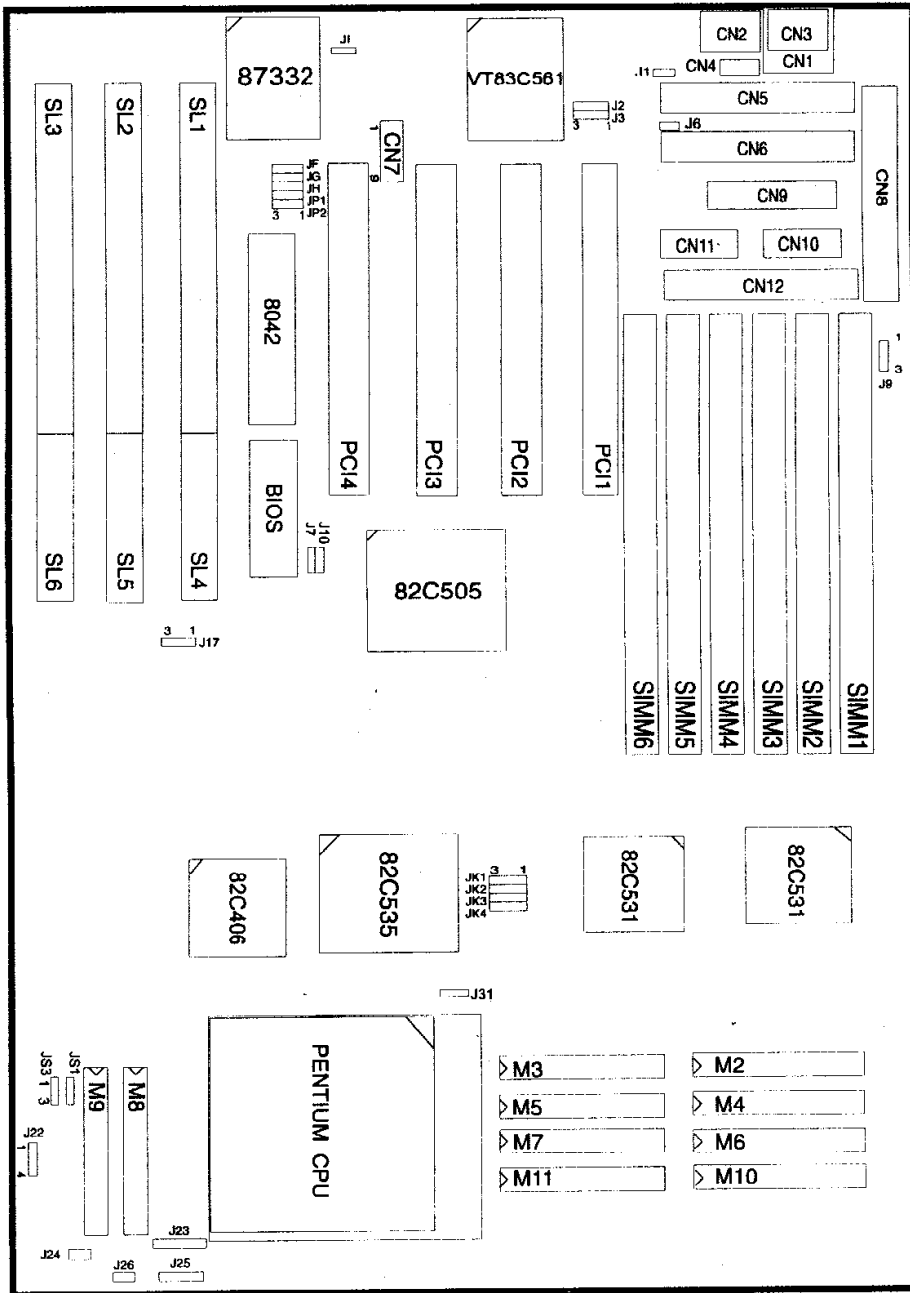


Figure 1-1. Motherboard Layout

Motherboard Settings

PA-1000 has several user-adjustable jumpers and connectors on the board that allow you to configure your system to suit your every need. This chapter contains information on the various jumper and connector settings on your mainboard.

Jumpers

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To “set” a jumper, a black cap containing metal contacts is placed over the jumper pin(s) according to the required configuration. A jumper is said to be “shorted” when the black cap has been placed on one or two of its pins, as shown in the figure below:



Figure 2-1. Jumper with Pins Shorted

→ **NOTE : Users are not encouraged to change the jumper settings not listed in this manual as they are considered factory defaults which may adversely affect system performance.**

JUMPER	INTERNAL KEYBOARD CONTROLLER	EXTERNAL KEYBOARD CONTROLLER
J17	1-2	2-3
RN6	empty	inserted
RN7	empty	inserted
RN8	inserted	empty

Table 2-1. Internal/External Keyboard Selection

JUMPER	PIN DEFINITION
J7	Password Clear Short Enabled Open Disabled <i>Control Panel</i>
J10	Display Type
J24	Hardware Reset Short No Reset (default) Open
J31	Internal Write Back/Through Cache 2-3 Write through 1-2 Write back (default)

Table 2-2. Jumper Definitions

JUMPER	PIN DEFINITION
J1	Open IR serial port Short COM1 port

Table 2-3. NS87332/87334 Jumper Setting (A)

JF	JG	Index Address	Data Address
1-2 (default)	2-3 (default)	26EH (default)	26FH (default)

Table 2-4. NS87332/87334 Jumper Setting (B)

JUMPER	DREQ1, DACK1	DREQ3, DACK3
JP1	2-3	1-2
JP2	2-3	1-2

Table 2-5. PC87332/334 ECP Mode DMA Channel Selection

Connectors

The connectors allow the mainboard to connect electronically with other parts of the system. Some connectors have two pins, others have four or five pins. Some malfunction problems encountered with your system may be caused by loose or improper connections. Ensure that all connections are in place and firmly attached.

CONNECTOR	PIN-OUTS	SIGNAL NAME
CN1 PS/2 Keyboard Connector	1 2,6 3 4 5	Keyboard data NC Ground VCC Keyboard clock
CN2 PS/2 Mouse Connector (Mini-Din Type)	1 2,6 3 4 5	Mouse data NC Ground +5V Mouse clock
CN3 Keyboard Connector	1 2 3 4 5	Keyboard clock NC Ground +5V Keyboard clock
CN4 PS/2 Mouse Connector (Jumper Type)	1 2 3 4 5	Mouse data NC Ground +5V Mouse clock
CN8 Power Connector	1 2, 10, 11, 12 3 4 5-8 9	Power go +5V +12V -12V Ground -5V
CN9 Parallel Port Connector	1 2-9 10 11 12 3 14 15 16 17 18-25	LPT strobe Data bit 0 - 7 LPT acknowledge LPT busy Paper end Selected status Auto line feed LPT error Initiate printer Select printer Ground

Table 2-6. Connector Pin Definitions (Continued)

CONNECTOR	PIN-OUTS	SIGNAL NAME	
CN5 Primary Local IDE Connector	1	Reset hard disk	
	2, 19, 22, 24, 26, 30, 40	Ground	
	4	HDD7	
	5	HDD8	
	6	HDD9	
	7	HDD5	
	8	HDD10	
	9	HDD4	
	10	HDD11	
	11	HDD3	
	12	HDD12	
	13	HDD2	
	14	HDD13	
	15	HDD1	
	16	HDD14	
	17	HDD0	
	18	HDD15	
	CN6 Secondary Local IDE Connector	20, 21, 28, 29, 34	NC
23		HDD I/O write	
25		HDD I/O read	
27		HDD RDY	
31		IRQ14	
32		IOCS16	
33		HDD A1	
35		HDD A0	
36		HDD A2	
37		HDD chip select 0	
38		HDD chip select 1	
39		HDD active	
CN6 Secondary Local IDE Connector		31	IRQ 15
		37	HDD chip select 2
		38	HDD chip select 3
			(The rest are the same as the pin assignments of CN5.)
CN10 Serial Port 1 Connector		1	Data carrier detect
		2	Receive data
	3	Transmit data	
	4	Data transmit ready	
	5	Signal ground	
	6	Ready to receive data	
	7	Request to send data	
	8	Clear to send	
	9	Ring indicator	

Table 2-6. Connector Pin Assignments (Continued)

CONNECTOR	PIN-OUTS	SIGNAL NAME
CN12 FDD Connector	2	Density select
	4, 6	NC
	8	Index detection
	10	Select motor A
	12	Select drive A
	4	Select drive B
	16	Select motor B
	18	Direction control
	20	Step pulse
	22	Write data
	24	Write enable
	26	Track 0
	28	Write protect
	30	Read data
	32	Head select
	34	Disk change
	1, 3, 5, 7, 9, 11 13, 15, 17, 19 21, 23, 25, 27, 33	Ground
	J1 Primary IDE HDD_LED Connector	1
2		LED +
J6 Secondary IDE HDD_LED Connector	1	LED -
	2	LED +
J9 CPU Fan Connector	1, 3	Ground
	2	+12V
J23 Power LED and Keylock Connector	1, 2	Power LED
	3, 5	Ground
	4	Keylock signal
J25 Speaker Connector	1	Speaker signal
	2	NC
	3	Ground
	4	VCC
J26 Turbo LED Connector	1	LED -
	2	LED +

Table 2-6. Connector Pin Assignments

PCI Card Slots

The PA-1000 motherboard provides four PCI card slots, marked PCI1, PCI2, PCI3 and PCI4, respectively. They can be used either as a master slot or slave slot. A master slot is an agent slot that initiates a bus transaction. A slave slot on the other hand is an agent slot that responds to a bus transaction initiated by a master slot.

For example, if you insert a SCSI card configured as a master device and using IRQ5 on PCI Slot 3, set the "Slot Using IRQ" item as "5" in the PCI Configuration BIOS Setup. Please refer to page 4-5 for details.

The following tables list the pin assignments on either side of a PCI slot.

→ **NOTE : Users are not encouraged to change the jumper settings on the motherboard without proper technical assistance.**

CONNECTOR	PIN-OUTS	SIGNAL NAME
PCI Slot Connector A	1, 3, 4, 9, 11, 14, 19, 21, 27, 33, 39, 40, 41, 45, 51, 58	NC
	2	+12V
	5, 8, 10, 16, 57, 59, 60	+5V
	6	-INTR_A
	7	-INTR_C
	12, 13, 18, 24, 30, 35, 37, 42, 48, 54	Ground
	15	-BPCIRST
	17	GNT1-
	20	A_D30
	22	A_D28
	23	A_D26
	25	A_D24
	26	A_D19
	28	A_D22
	29	A_D20
	31	A_D18
	32	A_D16
	34	FRAME-
	36	TRDY-
	38	STOP-
	43	PAR
	44	A_D15
	46	A_D13
	47	A_D11
	49	A_D9
	50	-C_BE0
	52	A_D6
	53	A_D4
55	A_D2	
56	A_D0	
57	+5V	

Table 2-7. PCI Slot Connector A Pin Assignments

CONNECTOR	PIN-OUTS	SIGNAL NAME
PCI Slot Connector B	1	-12V
	2, 4, 9, 10, 11, 14, 25, 31, 36, 41, 43, 52, 58	NC
	3, 12, 13, 15, 17, 22, 28, 34, 38, 46, 49, 55	Ground
	5, 6, 19, 57, 59, 60	+5V
	7	-INTR_B
	8	-INTR_D
	16	CLK1D
	18	REQ1-
	20	A_D31
	21	A_D29
	23	A_D27
	24	A_D25
	26	-C_BE3
	27	A_D23
	29	A_D21
	30	A_D19
	32	A_D17
	33	-C_BE2
	35	IRDY-
	37	DEVSEL-
	39	LOCK-
	40	PERR-
	42	SERR-
	44	-C_BE1
	45	A_D14
	47	A_D12
	48	A_D10
50	A_D8	
51	A_D7	
53	A_D5	
54	A_D3	
56	A_D1	

Table 2-8. PCI Slot Connector B Pin Assignments

System Memory

The PA-1000 can be equipped with the necessary memory for running all your applications. Memory comes in the form of DRAM (SIMMs) and cache SRAM. This chapter describes these two types of memory and gives instructions on how to install each type on the mainboard.

Memory Locations

The board layout below shows the locations of the DRAM memory banks and the cache SRAM:

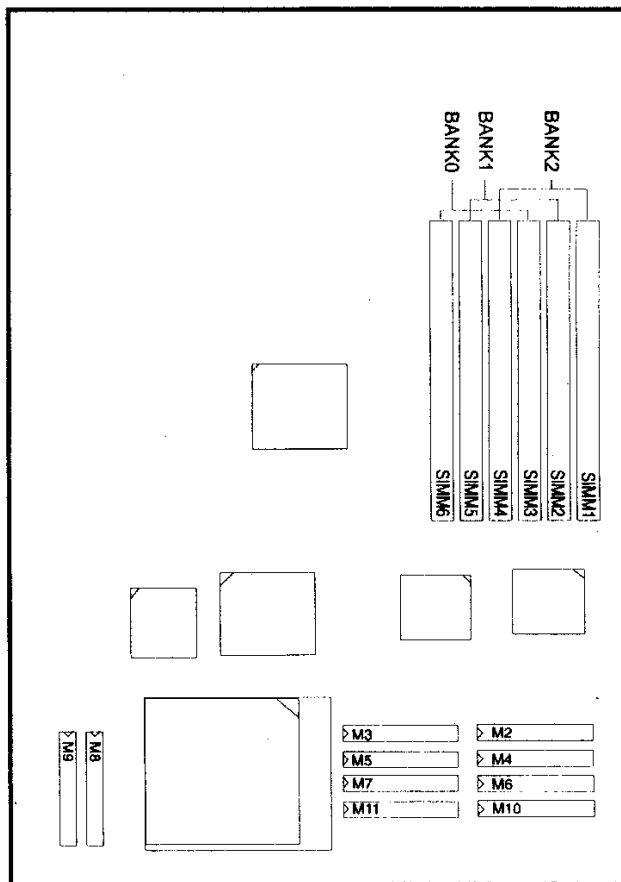


Figure 3-1. Memory Locations

Installing DRAM

SIMM Banks

The PA-1000 can accommodate onboard memory from 2 to 192MB using SIMMs (Single-In-Line Memory Modules). The mainboard has three memory banks — Bank 0, Bank 1, and Bank 2. Each bank has two SIMM sockets which can accept either a 1MB, 4MB, 16MB, or 32MB SIMM in each socket.

DRAM Configuration

Memory can be installed in a variety of configurations, as shown in the following table:

TOTAL MEMORY	BANK 0 (72-PIN x 2)	BANK 1 (72-PIN x 2)	BANK 2 (72-PIN x 2)
2MB	1MB & 1MB		
4MB	1MB & 1MB	1MB & 1MB	
6MB	1MB & 1MB	1MB & 1MB	1MB & 1MB
8MB	4MB & 4MB		
10MB	4MB & 4MB	1MB & 1MB	
12MB	4MB & 4MB	1MB & 1MB	1MB & 1MB
16MB	8MB & 8MB		
18MB	4MB & 4MB	4MB & 4MB	1MB & 1MB
24MB	4MB & 4MB	4MB & 4MB	4MB & 4MB
32MB	16MB & 16MB		
34MB	16MB & 16MB	1MB & 1MB	
36MB	16MB & 16MB	1MB & 1MB	1MB & 1MB
40MB	16MB & 16MB	4MB & 4MB	
42MB	16MB & 16MB	4MB & 4MB	1MB & 1MB
48MB	16MB & 16MB	4MB & 4MB	4MB & 4MB
64MB	16MB & 16MB	16MB & 16MB	
	32MB & 32MB		
66MB	16MB & 16MB	16MB & 16MB	1MB & 1MB
	32MB & 32MB	1MB & 1MB	
68MB	32MB & 32MB	1MB & 1MB	1MB & 1MB

Table 3-1. Memory Configuration (Continued)

TOTAL MEMORY	BANK 0 (72-PIN x 2)	BANK 1 (72-PIN x 2)	BANK 2 (72-PIN x 2)
72MB	16MB & 16MB 32MB & 32MB	16MB & 16MB 4MB & 4MB	4MB & 4MB
74MB	32MB & 32MB	4MB & 4MB	1MB & 1MB
80MB	32MB & 32MB	4MB & 4MB	4MB & 4MB
96MB	16MB & 16MB 32MB & 32MB	16MB & 16MB 16MB & 16MB	16MB & 16MB
98MB	32MB & 32MB	16MB & 16MB	1MB & 1MB
104MB	32MB & 32MB	16MB & 16MB	4MB & 4MB
128MB	32MB & 32MB	16MB & 16MB	16MB & 16MB
130MB	32MB & 32MB	32MB & 32MB	1MB & 1MB
136MB	32MB & 32MB	32MB & 32MB	4MB & 4MB
160MB	32MB & 32MB	32MB & 32MB	16MB & 16MB
192MB	32MB & 32MB	32MB & 32MB	32MB & 32MB

Table 3-1. Memory Configuration



NOTE : All memory banks use 72-pin memory modules.

Installation Instructions



NOTE : Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.

1. Locate the SIMM banks on the mainboard.
2. Insert the SIMM edge connector at a 90-degree angle onto the socket.

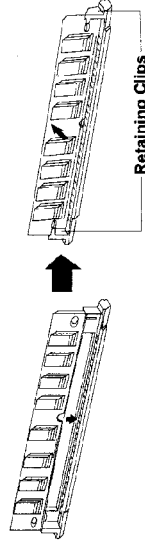


Figure 3-2. Installing SIMMs

- Carefully push the SIMM down and back into the socket until the retaining clips of the socket snap, holding the SIMM in place. The holes in the SIMM should match the pins on the socket's retaining clips.

To remove the SIMM(s), pull the retaining latch on both ends of the socket and reverse the procedure above.

Cache Memory

The PA-1000 supports direct-mapped cache systems with data size ranging from 256KB, 512KB, to 1MB. Both write-back and write-through schemes are supported with maximum flexibility in selecting the number of tag and alter bits. The minimum number of tag plus alter bits is eight to fit the standard x8 SRAMs. To allow a larger cacheable region, more than one x8 SRAMs are required for wider combined tag plus alter bits. The PA-1000 supports tag bits up to ten in addition to the alter bit for the write-back scheme.

↑ **NOTE : Be sure to use the correct chips for the amount of cache memory you want to add. You must install both the correct Cache and Tag SRAM. Alter RAM type is the same as Tag RAM.**

Installing Cache Memory

↑ **NOTE : Always observe static electricity precautions. See "Handling Precautions" at the beginning of this manual.**

If you do not have the confidence to make the installation, better consult a service technician for assistance.

- Locate the cache memory on the mainboard.
- Be guided by the Cache SRAM settings depending on your desired SRAM configuration.

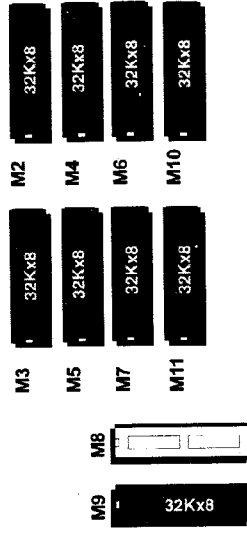
Correct orientation of the chip is necessary for the cache to operate properly. Normally, the chips have either a curved notch or a dot. This marker on the chip must be matched to the marker on the socket for correct alignment.

Install the chips individually as follows:

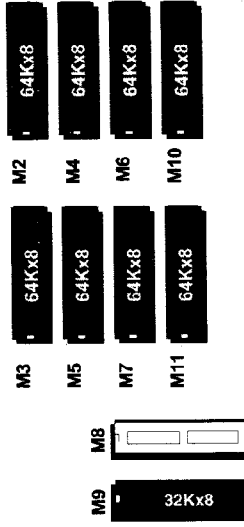
- Align the chip with the marker on the socket. Press the chip onto the socket, ensuring that the pins on the chip are aligned with the corresponding connections on the socket.
- Press the chip completely into the socket so that the pins are properly set.

Cache SRAM Specifications and Settings

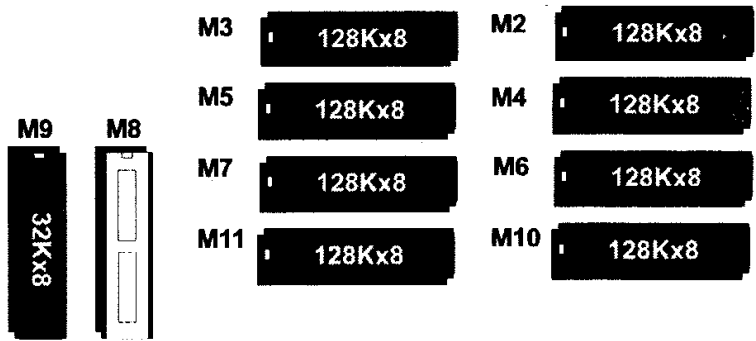
256K Cache SRAM



512K Cache SRAM



1M Cache SRAM



	256K	512K	1M
Data RAM	32K X 8	64K X 8	128K X 8
Tag RAM	32K X 8	32K X 8	32K X 8
JS1	1-2	2-3	2-3
JS3	1-2	1-2	2-3

Table 3-2. Cache Configuration Size