HIGH PERFORMANCE
C55PIPATX 586 PCI System Board

OPERATIONS MANUAL

Rev. A01

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Chapter 1

System Board Overview

This chapter is intended to guide the user in the installation of C55PIPATX PCI system board.

1.1 C55PIPATX PCI System Board Introduction

The C55PIPATX PCI system board is a high-performance Pentium PCI base solution for high end computing system.

Processor:

- Intel Pentium (P54C/P55C) 75-200MHZ

- Intel Overdrive P54CT and future Overdrivers

- AMD 5K86

- Cyrix 6X86

CPU clock:

- A frequency synthesizer chip provides easy system clock selection (50/55/60/66MHz).

Chip set:

- Intel Triton 82430HX (II) Chipset.

- SMC 37C669 ISA FDD, super I/O.

- CMD PCI0646 PCI Master IDE controller.

Memory:

- C55PIPATX PCI system board can be installed with memory of 8 to 384 megabytes using 72 pin single-side / double-side dynamic RAM

memory modules (Fast page mode FP, Extended data output EDO).

- Error checking and correcting (ECC), using 36-bits parity DRAM module can detect and correct 1 bit memory errors.

- Recommended SIMM access time is 70ns or faster.

Cache:

- Provides the option of 0KB upgradeable to 256KB or 512KB, on-board 256KB upgradeable to 512KB, upgrades are made through a synchronous SIMM cache module.

- Support an optional extended memory space cacheability limit of on board Max. 384 Mbytes. [Please refer to 1.5-1 page (1-11)]

I/O slots:

- Three 32 bit PCI slots with bus master.

- Three 16 bit ISA slots.

- One shared ISA and PCI (slave) slot.

IDE:

- Two resident 40 pin IDE connectors(primary and secondary).

- Fully compatible with the enhanced IDE and ATAPI specifications.

- Both primary and secondary IDE support PIO mode 3,4,5 and DMA mode 1,2.

Floppy:

- Supports 360KB, 1.2MB, 1.44MB and 2.88MB formats.

Communication ports:

- Two on-board 16550 compatible serial ports.

- One on-board IrDA compliant infrared interface up to 112.5Kbps.

- One on-board bi-directional parallel port with ECP and EPP support

- Two USB (Universal Serial Bus) channels port.

BIOS:

- Upgradable Flash AMI plug and play WinBIOS.

- Supports Enhanced IDE feature.

- Supports power soft-off feature.

- Supports BIOS APM interface.

- Supports IDE CD-ROM boot-up capability.

Green PC feature:

- Supports standby, suspend mode(CPU clock stopped internally, and display screen blanked).

Form factor:

- Standard ATX size (305mm x 244mm), 4 layers.

Miscellaneous:

- On board PS/2 mouse and keybaord connector.

- External standard AT keyboard connector (optional).

- Force the system into suspend mode directly by a front panel button (if avialable)

- The Power saving LED indicator tells the user if the system is running in power saving or normal mode (if available)

- Operating temperature:0 to 45 degree C;.

1.2 Block Diagram of C55PIPATX PCI System Board
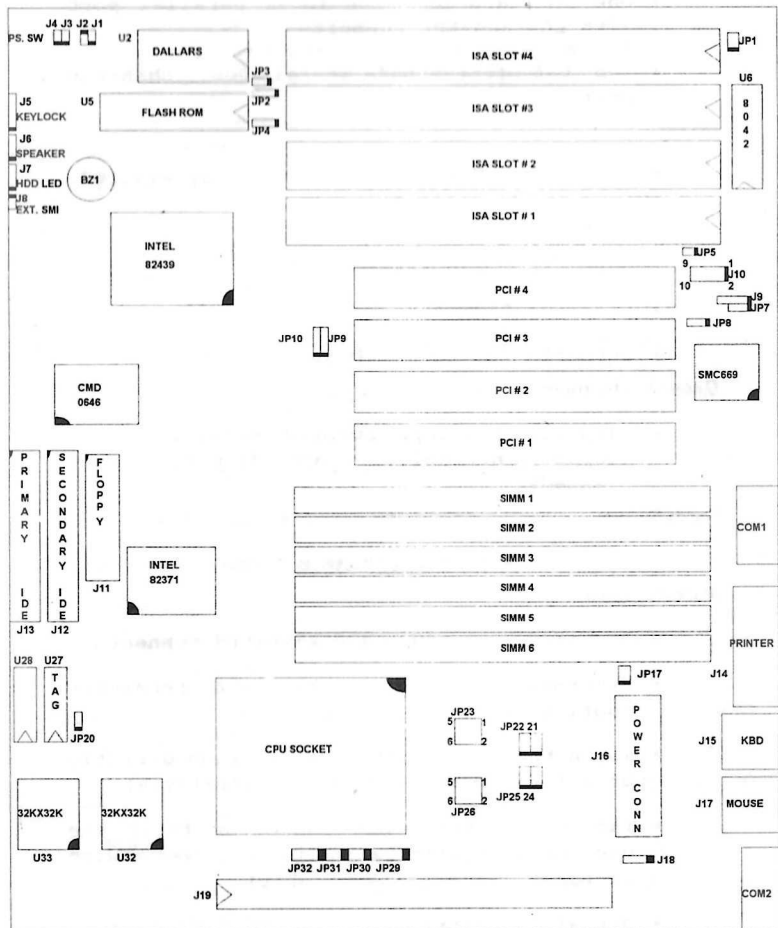
Note: PCI slot 4 can not be installed with master card (eg. SCSI, network card).

1.3 Jumper Locations and Functions

1.3-1 Jumper Setting Description

The table below lists the functions and jumper settings for the C55PIPATX PCI system board:

Jumper setting of CPU type:

Intel Pentiium AMD5K86	Internal (CPU)	External (SYS.Bus)	JP10	JP9	Multiple			JP32	JP31
P-75	75MHZ	50MHZ	2-3	2-3	1.5	X	EXT	O	O
P-90	90MHZ	60MHZ	2-3	1-2	1.5	X	EXT	O	O
P-100	100MHZ	66MHZ	1-2	2-3	1.5	X	EXT	O	O
P-120	120MHZ	60MHZ	2-3	1-2	2	X	EXT	2-3	O
P-133	133MHZ	66MHZ	1-2	2-3	2	X	EXT	2-3	O
P-150	150MHZ	60MHZ	2-3	1-2	2.5	X	EXT	2-3	S
P-166	166MHZ	66MHZ	1-2	2-3	2.5	X	EXT	2-3	S
P-180	180MHZ	60MHZ	2-3	1-2	3	X	EXT	O	S
P-200	200MHZ	66MHZ	1-2	2-3	3	X	EXT	O	S

Cyrix 6x86	Internal (CPU)	External (SYS.Bus)	JP10	JP9	Multiple			JP32	JP31
P-120+	100MHZ	50MHZ	2-3	2-3	2	X	EXT	2-3	O
P-133+	110MHZ	55MHZ	1-2	1-2	2	X	EXT	2-3	O
P-150+	120MHZ	60MHZ	2-3	1-2	2	X	EXT	2-3	O
P-166+	133MHZ	66MHZ	1-2	2-3	2	X	EXT	2-3	O

Function		Jumper Setting
BIOS	Flash ROM (+ 12V)	JP2 short 1-2
	Flash ROM (+ 5V) (default)	JP2 short 2-3
On-board SM C669	Enable(default)	JP8 short 1-2
	Disable	JP8 short 2-3
PS/2 Mouse IRQ	IRQ12 enable(default)	JP1 short
	IRQ12 disable	JP1 open
CMOS RAM	Clear CMOS RAM	JP3 short (momentarily)
	Normal(default)	JP3 open
Pipeline Burst Cache	On board 256K(default)	JP29 short 1-2
	Upgrade to 512K	JP29 short 2-3
Monitor type	CGA	JP5 short
	Mono, VGA (default)	JP5 open
Factory default		JP26 short 1-2,3-4,5-6
		JP23 Open
		JP30 open
		JP20 short 2-3
		JP4 short 1-2
		JP7 short 2-3
		JP17 short
On board voltage regulator O/P	VR 3.3-3.465 (default)	JP24 short
	VRE 3.45-3.6	JP25 short
	2.8V (default)	JP21 short
	2.5V	JP22 short

Following is the suggested selection table for different CPU type:

	JP21	JP22	JP23	JP24	JP25	JP26
Intel P54C	S	O	O	S	O	S
Intel P55C	S	O	S	S	O	O
AMD 5K86	S	O	O	O	S	S
Cyrix 6x86	S	O	O	S	O	S

1.3-2 Connectors and switches

The table below lists the connectors and switches of C55PIPATX PCI system board:

Connectors	Function
J15	Keyboard connector
J16	Power connector
J14	Printer port connector
COM2	Serial port B connector (COM2)
COM1	Serial port A connector (COM1)
J4	Power Switch
J11	Floppy connector
J13	Primary (PCI) IDE connecotor
J12	Secondary (PCI) IDE connector
J7	HDD LED connector
J3	Turbo LED connector
J1	Power saving LED connector
J6	Speaker connector
J2	Hardware reset connector
J5	Keylock and Power LED connector
J17	PS/2 mouse connector
J9	IRDA connector
J10	USB connector
J8	Ext. SMI switch connector
J19	Cache module socket
J18	CPU Fan power connector
J20	External AT KB connector (optional)

I/O connector PIN assigment

J18 CPU Fan power connector

Pin	Signal name
1	Ground
2	+12V
3	Ground

J2 Reset connector
1. Ground
2. Reset

J6 Speaker connector
1. SPK_DATA
2. NC
3. Ground
4. +5V

J8 EXT. SMI connector
1. Ground
2. EXT_SMI

J5 Keylock and power connector
1. +5V
2. NC
3. Ground
4. Keylock
5. Ground

J20 External AT KB connector (optional)
1. KBCLK
2. KBDATA
3. NC
4. Ground
5. +5V

J3 Turbo LED connector
1. TB_LED
2. Ground

J1 Power saving LED connector
1. Power_saving_DRV
2. +5V

J7 HDD LED connector
1. +5V
2. HDD_LED_DRV
3. HDD_LED_DRV
4. +5V

J4 Power switch connector
1. PS_SW
2. Ground

J9 IRDA connector
1. IRTX
2. Ground
3. IRRX
4. Reserved
5. +5V

J10 USB connector
1. +5V
2. +5V
3. USBO-
4. USB1-
5. USBO+
6. USB1+
7. Ground
8. Ground
9. NC
10. NC

1.4 Before Installing the C55PIPATX PCI system board

Before you install the system board, make sure all
the jumpers and switches are set in the proper posi-
tions for your system. This includes those for dis-
play, memory configuration, speed select, cache
size, and BIOS type.

1.5   Installing the system board in the Chassis

Before you get started, make sure all power sources to the system have been turned off. You will need a Phillips screw driver for installation. The chassis ground should be connected to at least one of the metal plated mounting holes with metal screws. The other mounting holes can be connected to the chassis through plastic stand-offs. Be sure that the system board is mounted firmly inside the chassis.

You will need to connect the following standard devices to the system board:

- Power supply to J16

- Speaker to J6

- Keylock to J5

- Power switch to J4

Note:
The C55PIPATX PCI system supports remote power on/off via J4 connector as well as the system can turn off the system power via the shutdown icon in windows 95 start menu, The system BIOS will turn the system power off when it receives the APM command from the OS. For example windows 95 will issue this APM command when the user selects shutdown the computer option, the APM must be enabled in the system BIOS and OS in order for the soft-off feature to work correctly.

If your system chassis has a RESET BUTTON, TURBO LIGHT, the following connectors are also available:

- Reset button to J2.

- Turbo light LED to J3.

NOTE: *If a case-mounted control feature does not function after you start up the system, this indicates the connector orientation is wrong. In this case, turn off the system, disconnect all power sources, open the case and turn the connector around the other way. After reassembling everything, the dysfunctioning features should work.*

1.5-1   Installation of Cache Memory

The motherboard may have 0KB, 256KB, or 512KB on-board cache. If you have 256K cache on-board, a "COAST" cache module can be used to upgrade to 512KB. If there is no on-board cache, you may install a SIMM cache module of either 256KB or 512KB. The BIOS will automatically detect the amount of cache memory installed.
The table below lists the possible cache memory size configuration.

Cache memory configuration	Size	JP29 Settig
On board 256K Cache	256K	1-2
On board 256K+ Upgrade 256K PB cache module	512K	2-3
256K PB Cache module	256K	None
512K PB Cache module	512K	None

The assignment of cache memory is as follows:
Data SRAM: U32,U33
Tag RAM : U27
Extended Tag RAM: U28 (optional)

Note: *The memory cacheability for the secondary cache is either 64MB or 512MB of main memory, depending on wherther extended tag RAM (U28) is installed.*

1.6 DRAM Size Configuration

The C55PIPATX PCI system board supports six 72-pin SIMMs of 4MB, 8MB, 16MB, 32MB, or 64MB to from a memory size between 8MB to 384MB, the DRAM can be either 60ns or 70ns FP (Fast Page Mode) or EDO (extended data output), To support parity check or ECC you must uese 36-bit parity-type DRAM module.
The table below shows some of the available memory configuration:

Bnak0	Bank1	Bank2	0	0 & 1	0,1&2
4MB*2	(4MB*2)	(4MB*2)	8MB	16MB	24MB
4MB*2	(8MB*2)	(8MB*2)	8MB	24MB	40MB
4MB*2	(16MB*2)	(16MB*2)	8MB	40MB	72MB
4MB*2	(32MB*2)	(32MB*2)	8MB	72MB	136MB
4MB*2	(64MB*2)	(64MB*2)	8MB	136MB	264MB

8MB*2	(4MB*2)	(4MB*2)	16MB	24MB	32MB
8MB*2	(8MB*2)	(8MB*2)	16MB	32MB	48MB
8MB*2	(16MB*2)	(16MB*2)	16MB	48MB	80MB
8MB*2	(32MB*2)	(32MB*2)	16MB	80MB	144MB
8MB*2	(64MB*2)	(64MB*2)	16MB	144MB	272MB

16MB*2	(4MB*2)	(4MB*2)	32MB	40MB	48MB
16MB*2	(8MB*2)	(8MB*2)	32MB	48MB	64MB
16MB*2	(16MB*2)	(16MB*2)	32MB	64MB	96MB
16MB*2	(32MB*2)	(32MB*2)	32MB	96MB	160MB
16MB*2	(64MB*2)	(64MB*2)	32MB	160MB	288MB

32MB*2	(4MB*2)	(4MB*2)	64MB	72MB	80MB
32MB*2	(8MB*2)	(8MB*2)	64MB	80MB	96MB
32MB*2	(16MB*2)	(16MB*2)	64MB	96MB	128MB
32MB*2	(32MB*2)	(32MB*2)	64MB	128MB	192MB
32MB*2	(64MB*2)	(64MB*2)	64MB	192MB	320MB

64MB*2	(4MB*2)	(4MB*2)	128MB	136MB	144MB
64MB*2	(8MB*2)	(8MB*2)	128MB	144MB	160MB
64MB*2	(16MB*2)	(16MB*2)	128MB	160MB	192MB
64MB*2	(32MB*2)	(32MB*2)	128MB	192MB	256MB
64MB*2	(64MB*2)	(64MB*2)	128MB	256MB	384MB

Note:

1. The memory inserted on each bank (SIMM1 & SIMM2 as bank0, SIMM3 & SIMM 4 as bank 1, SIMM 5 & SIMM 6 as bank 2) should be of the same type and in pair. Memory of mixed type on the same bank is not allowed.

1.7 Non-Default Configurations

If you want to change the default settings, please refer to section 1.3 on Jumper Locations and Functions.

All other jumpers, unless otherwise specified, should not be changed or removed.

1.8 Peripheral Add-on card Installation

The C55PIPATX PCI system board supports PCI and ISA expansion slots, the user can install the corresponding Add-on cards into any of these slots but make sure interrupts or DMA channels of these cards do not conflict with each other.

1.8-1 Assign IRQs for peripheral Add-on cards

There are 16 IRQs available per the standard design, some of them are already in use by part of the system board such as, keyboard, mouse and on-board multi/IO. Generally an IRQ must be assigned to one use only.

Both ISA and PCI add-on cards may need to use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, and the remaining can be used by cards installed on the PCI bus. Currently there are two types of ISA card. One is standrd ISA

card (also referred as "Legacy" ISA card) which re-
quires jumper setting manually, and care should be
taken to avoid conflicts. Another is pnp (play and
play) ISA card, IRQs are assigned automatically by
the system BIOS. All PCI cards should be with PNP
feature, the BIOS automatically assigns an IRQ to a
PCI slot that has a card in.

1.8-2   Assign DMA channels for ISA Add-on card

Some ISA cards, both legacy and PNP may also need to
use a DMA (direct memory access) channel, DMA assign-
ment for the system board is similar to IRQs assign-
ment described above.