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4. BIOS CONFIGURATION

1. INTRODUCTION

1.1. PREFACE

Welcome to use the **6LA7** motherboard. It is a Celeron™ Socket 370 Processor based PC / AT compatible system with AGP / PCI / ISA Bus, and has been designed to be the fastest PC / AT system. There are some new features allow you to operate the system with just the performance you want.

This manual also explains how to install the motherboard for operation, and how to set up your CMOS CONFIGURATION with BIOS SETUP program.

1.2. KEY FEATURES

- ❏ Intel Celeron™ Socket 370 Processor based PC / AT compatible mainboard.

- ❏ Socket 370 Pins ZIF white socket on board.

- ❏ Supports Celeron™ Socket 370 processor running at 366-566 MHz.

- ❏ Intel 440LX chipset, Supports AGP / SDRAM / Ultra DMA/33 IDE / Keyboard and PS/2 Mouse Power On / ACPI features.

- ❏ Supports 3xDIMMs using 3.3V EDO or SDRAM DIMM module.

- ❏ Supports EDO 16MB ~ 768 MB, SDRAM 16MB~384MB memory on board.

- ❏ Supports ECC or Non-ECC type DRAM module.

- ❏ 1xAGP slot, 4xPCI Bus slots, 2xISA Bus slots.

- ❏ Supports 2 channels Ultra DMA/33 IDE ports for 4 IDE Devices.

- ❏ Supports 2xCOM (16550), 1xLPT (EPP / ECP), 1x1.44MB Floppy port.

- ❏ Supports USB port & PS/2 Mouse/ Keyboard port.

- ❏ Licensed AMI BIOS, 2M bits FLASH RAM.

- ❏ 23 cm x 22 cm Baby AT SIZE form factor, 4 layers PCB.

1.3. PERFORMANCE LIST

The following performance data list is the testing results of some popular benchmark testing programs.

These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

- CPU   Intel® Celeron™ 366MHz Socket 370 processor
- DRAM   (128x 1) MB SDRAM (LGS GM72V66841CT7J)
- CACHE SIZE   128 KB included in CPU
- DISPLAY   GA-630 VOODOO BANSHEE (16MB SGRAM)
- STORAGE   Onboard IDE (Seagate ST34520A)
- O.S.   Windows NT™4.0 SPK4
- DRIVER   Display Driver at 1024 x 768 x 64 colors x 75Hz.

                          TRIONES Bus Master IDE Driver 3.70

Processor	Intel® Celeron™ 366MHz Socket 370 366MHz (66x5.5)
Winbench99	
CPU mark32	707
FPU Winmark	1970
Business Disk	4180
Hi-End Disk	10200
Business Graphics	175
Hi-End Graphics	330
Winstone99	
Business	26.7
Hi-End	24.1

1.4. BLOCK DIAGRAM
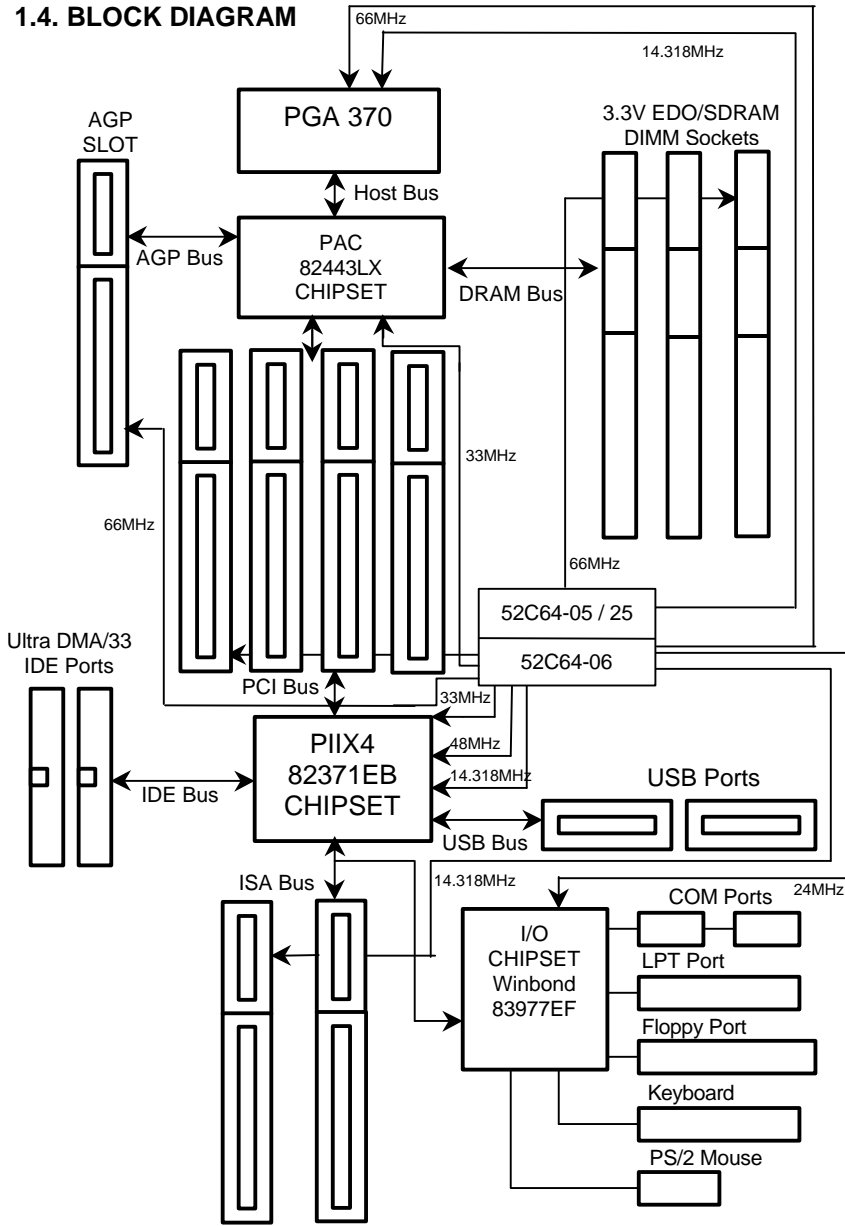
1.5. INTRODUCE THE INTEL^â Celeron™ Socket 370 Processor
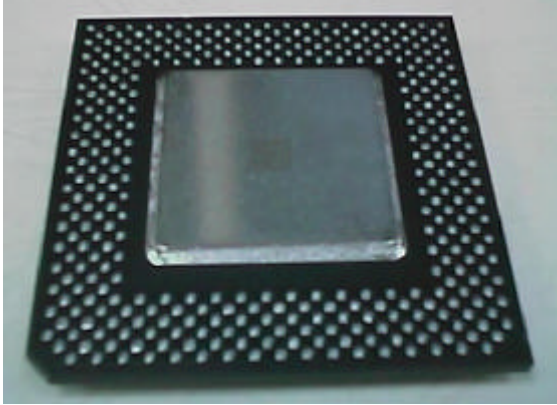
Figure 1: INTEL® Celeron™ Socket370 Processor

1.6 What is AGP?

The Accelerated Graphics Port (AGP) is a new port on the Host-To-PCI bridge device that supports an AGP port. The main purpose of the AGP port is to provide fast access to system memory.

The AGP port can be used either as fast PCI port (32-bits at 66MHz vs. 32-bits at 33MHz) or as an AGP port which supports 2x data-rate, a read queue, and side band addressing. When the 2x-data rate is used the port can transmit data at 533MB/sec (66.6*2*4). The read-queue can be used to pipeline reads – removing the effects of the reads-latency. Side band addressing can be used to transmit the data address on a separate line in order to speed up the transaction.

2. SPECIFICATION

2.1. HARDWARE

- CPU
  - − Celeron™ Socket 370 processor 366– 566 MHz.
  - − 66MHz Socket 370 on board.

- SPEED
  - − 66 MHz system speed.
  - − 66 MHz AGP bus speed. (2X mode 133MHz)
  - − 33 MHz PCI-Bus speed.
  - − 8 MHz AT bus speed.

- DRAM MEMORY
  - − 3 banks 168 pins DIMM module sockets on board.
  - − Use 16 / 32 / 64 / 128 / 256 MB DIMM module DRAM.
  - − Supports EDO 16MB ~ 768 MB, SDRAM 16MB~384MB.
  - − Supports 3.3V SDRAM / EDO type DRAM.
  - − Supports ECC or Non-ECC type DRAM.

- CACHE MEMORY
  - − 32 KB 1st cache memory included in CPU.
  - − 128KB L2 cache memory included in CPU.
  - − Supports DIB speed mode for L2 Cache.

- I/O BUS SLOTS
  - − 4 33MHz Master / Slave PCI-BUS.
  - − 2 8MHz 16 bits ISA BUS.
  - − 1 66MHz / 133MHz AGP bus.

- IDE PORTS
  - − 2 Ultra DMA/33 Bus Master IDE channels on board.(Using IRQ14,15)
  - − Supports Mode 3,4 IDE & ATAPI CD – ROM.

- I/O PORTS
  - − Supports 2 16550 COM ports.
  - − Supports 1 EPP/ECP LPT port.
  - − Supports 1 1.44/2.88 MB Floppy port.
  - − Supports 2 USB ports.
  - − Supports PS/2 Mouse & Keyboard.

- GREEN FUNCTION
  - − Suspend mode support.
  - − Green switch & ACPI LED support.
  - − IDE & Display power down support.
  - − Monitors all IRQ / DMA / Display / I/O events.
- BIOS
  - − 2M bits FLASH RAM.
  - − Supports Plug & Play, DMI Function.
- DIMENSION
  - − Baby AT Form Factor, 4 layers PCB.

2.2. SOFTWARE

- DRIVER
  - − Bus Master IDE Driver.
  - − Suspend to HD utility.
  - − SIV.
  - − Intel PATCH95.
- BIOS
  - − Licensed AMI BIOS.
  - − AT CMOS Setup, BIOS / Chipset Setup, Green Setup, Hard Disk Utility included.
- O.S.
  - − Operation with MS-DOS®, Windows®95, Windows®98, WINDOWS™ NT, OS/2, NOVELL and SCO UNIX.

2.3. ENVIRONMENT

- Ambient Temp.
  - − 0°C to +50°C (Operating).
- Relative Hum.
  - − 0 to +85% (Operating).
- Altitude
  - − 0 to 10,000 feet (Operating).
- Vibration
  - − 0 to 1,000 Hz.
- Electricity
  - − 4.9 V to 5.2 V. (Max. 20A current at 5V.)

3. HARDWARE INSTALLATION

3.1. UNPACKING

The mainboard package should contain the following:

• The **6LA7** main board.

• USER'S MANUAL for main board.

• Cable set for IDE, Floppy & I/O devices.

• CD for main board Utility. (Bus Master IDE Driver, Suspend to HDD, SIV, Patch 95)

The main board contains sensitive electric components, which can be easily damaged by static electricity, so the main board should be left in its original packing until it is installed.

Unpacking and installation should be done on a grounded anti-static mat. The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the main board carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the main board carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage. Press down on all of the socket IC's to make sure that they are properly seated. Do this only on with the board placed on a firm flat surface.

✸**DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.**

3.2. MAINBOARD LAYOUT

◄Figure 3.1►
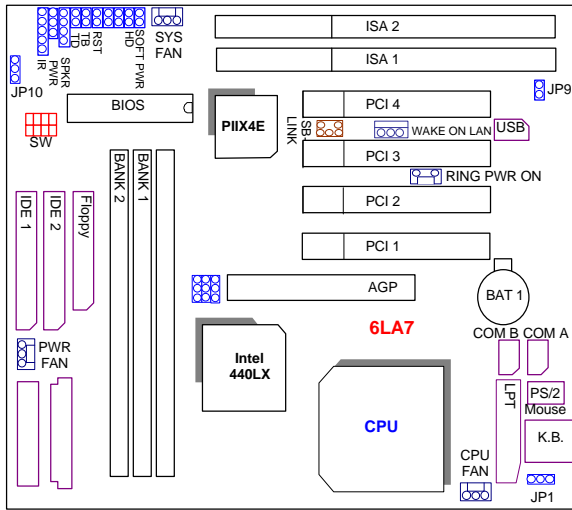
3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS

♦ I/O Ports Connector	
USB	USB port.
IDE1	For Primary IDE port.
IDE2	For Secondary IDE port.
KB	For AT Keyboard port.
PS/2	For PS/2 Mouse port.
FLOPPY	For Floppy port.
COMB	For Serial port2 (COM B){Support Modem Ring On}.
COMA	For Serial port1 (COM A){Support Modem Ring On}.
LPT	For LPT port.
ATX Power	For ATX Power Connector.
Power	For Power Connector.

♦ Socket 370
For Celeron™ Processor Socket 370 installed

♦ IR : INFRARED Connector (IR) -- Function Option	
Pin No.	Function
1	IR Data Output
2	GND
3	IR Data Input
4	Signal
5	POWER (+)

♦ PWR : POWER ON LED (PW-LED)	
Pin No.	Function
1	LED POWER (+)
2	LED POWER (−)
3	LED POWER (−)

♦ SPK : SPEAKER Connector	
Pin No.	Function
1	VCC
2	NC.
3	NC.
4	Signal

♦ TD : Turbo LED Connector	
Pin No.	Function
1	LED POWER (+)
2	LED POWER (−)

♦ TB : Turbo Switch Connector	
Pin No.	Function
1	SIGNAL
2	GND

♦ RST : RESET Switch	
Pin No.	Function
Open	Normal Operation
Short	Reset Hardware System

♦ GD : Green LED Connector	
Pin No.	Function
1	GREEN LED (+)
2	GREEN LED (−)

♦ GN : GN-SW

Pin No.	Function
Open	Normal Operation
Short	Entering Green Mode

♦ HD : Hard Disk active LED (HD-LED)

Pin No.	Function
1	LED POWER (+)
2	LED POWER (−)

♦ Soft PWR : Soft Power Switch

Pin No.	Function
1	CTRL-Signal
2	GND

♦ CPU FAN : CPU cooling FAN Power Connector

Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ Power FAN: Power FAN Connector

Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ System FAN: System FAN Connector

Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ RING PWR ON

Pin No.	Function
1	Signal
2	GND

♦ JP1 : Keyboard Power On Selection	
Pin No.	Function
1-2	Enabled Keyboard power on.
2-3	Disabled Keyboard power on(Default).

♦ JP10 : CLEAR CMOS	
Pin No.	Function
1-2	Normal Operation (Default)
2-3	CLEAR CMOS

♦ Wake on Lan	
Pin No.	Function
1	+5V SB
2	GND
3	Signal

♦ SB-LINK : For PCI Audio / Sound Card use only	
Pin No.	Function
1	Signal
2	GND
3	NC
4	Signal
5	GND
6	Signal

3.4. DRAM INSTALLATION

The main board can be installed with 16 / 32 / 64 / 128 / 256 MB 168 pins DIMM module DRAM, and the DRAM speed must be 50 or 60 ns for EDO & 67MHz for SDRAM when system bus speed is set to 66MHz. The DRAM memory system on main board consists of bank 0,1 and bank 2 .

Since 168 pins DIMM module is 64 bits width, therefore 1 piece of DIMM module may match a 64 bits system. The total memory size is EDO 16MB ~ 768 MB, SDRAM 16MB~384MB. The DRAM installation position refer to Figure 3.1, and notice the Pin 1 of DIMM module must match with the Pin 1 of DIMM socket. Insert the DRAM DIMM module into the DIMM socket at Vertical angle. If there is a wrong direction of Pin 1, the DRAM DIMM module could not be inserted into socket completely.

3.5. CPU SPEED SETUP

The system bus speed can be set to 66MHz form the jumper (**JP4,JP5,JP6**). The user can change the DIP SWITCH **(SW)** selection to set up the CPU speed for different processors. The CPU speed must match with the frequency RATIO and Front Side Bus (FSB) speed. It will cause system hanging up if the frequency RATIO and FSB Speed do not match with the CPU.

CPU FREQ. RATIO	DIP SWITCH (SW)			
	SW1	SW2	SW3	SW4
X 3	ON	OFF	ON	ON
X 3.5	OFF	OFF	ON	ON
X 4	ON	ON	OFF	ON
X 4.5	OFF	ON	OFF	ON
X 5	ON	OFF	OFF	ON
X 5.5	OFF	OFF	OFF	ON
X 6	ON	ON	ON	OFF
X 6.5	OFF	ON	ON	OFF
X 7	ON	OFF	ON	OFF
X 7.5	OFF	OFF	ON	OFF
X 8	ON	ON	OFF	OFF
X 8.5	OFF	ON	OFF	OFF

♣※**JP4, JP5, JP6** (Select the system speed¡ 66 / 75 / 83 MHz)

MAIN CLOCK	JP6	JP5	JP4
66MHz	1-2	1-2	1-2
75MHz	1-2	2-3	1-2
83MHz	2-3	1-2	2-3

♣※**We don' t recommend you to setup your system speed to 75or 83MHz because these frequencies are not the standard specifications for CPU, Chipset and most of the peripherals. Whether your system can run under 75 or 83MHz properly will depend on your hardware configurations: CPU, SDRAM, Cards, etc.**

☀**The CPU is a sensitive electric component and it can be easily damaged by static electricity, so users must keep it away from metal surface when the CPU is installed onto main board.**

3.6. CMOS RTC & ISA CFG CMOS SRAM

There're RTC & CMOS SRAM on board; they have a power supply from external battery to keep the DATA inviolate & effective. The RTC is a REAL-TIME CLOCK device, which provides the DATE & TIME to system. The CMOS SRAM is used for keeping the information of system configuration, so the system can automatically boot OS every time. Since the lifetime of internal battery is 5 years, the user can change a new Battery to replace old one after it cannot work.

☀ Danger of explosion if battery is incorrectly replaced.

☀ Replace only with the same or equivalent type recommended by the manufacturer.

☀ Dispose of used batteries according to the manufacturer' s instructions.

3.7. SPEAKER CONNECTOR INSTALLATION

There is a speaker in AT system for sound purpose. The 4 - Pins connector **SPKR** is used to connect speaker.

3.8. HARDWARE RESET SWITCH CONNECTOR INSTALLATION

The RESET switch on panel provides users with HARDWARE RESET function. The system will do a cold start after the RESET switch is pushed and released by user. The RESET switch is a 2 PIN connector and should be installed to **RST** on main board.

3.9. POWER LED CONNECTOR INSTALLATION

System has power LED lamp on the panel of case. The power LED will light on off or flash to indicate which step on the system. The connector should be connected to **PWR** of main board in a correct direction.

3.10. IDE & ATAPI DEVICE INSTALLATION

There are two-Enhanced PCI IDE ports (**IDE1, IDE2**) on board, which following ATAPI standard SPEC. Any one IDE port can connected to two ATAPI devices (IDE Hard Disk, CD-ROM & Tape Driver), so total four ATAPI devices can exist in a system. The **HD** is the active LED port for ATAPI devices.

3.11. PERIPHERAL DEVICE INSTALLATION

After the I/O device installation and jumpers setup, the mainboard can be mounted into the case and fixed by screw. To complete the mainboard installation, the peripheral device could be installed now. The basic system needs a display interface card. If the PCI - Bus device is to be installed in the system, any one of four PCI - Bus slots can be used.

3.12. KEYBOARD & PS/2 MOUSE INSTALLATION

The main board supports PS/2 Mouse . The BIOS will auto detect whether the PS/2 Mouse is installed or not & assign IRQ12 for PS/2 Mouse port if it is installed. After installing the peripheral device, the user should check everything again, and prepare to power-on the system.