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1. INTRODUCTION

1.1. PREFACE

Welcome to use the **6LX7/6LX7A** 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.
- ❑ Built-in PCI **ESS SOLO-1 ES1938S** audio chip (Optional).
- ❑ 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 external Modem Ring-On on COMA & COMB and internal Modem Ring-On.
- ❑ Supports EDO 16MB ~ 768 MB, SDRAM 16MB~384MB memory on board.
- ❑ Supports Wake-up on LAN .
- ❑ 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 1x Line in, 1x Line Out, 1x Micro in, 2x CD Line in, 1x GAME Port 1 x TEL. (Optional).

- ❑ Supports 2xCOM (16550), 1xLPT (EPP / ECP), 1x1.44MB Floppy port.
- ❑ Supports USB port & PS/2 Mouse/ Keyboard port.
- ❑ Licensed AWARD BIOS, 2M bits FLASH RAM.
- ❑ 30.5cm x 19 cm ATX SIZE form factor, 4 layers PCB.

1.3. PERFORMANCE LIST

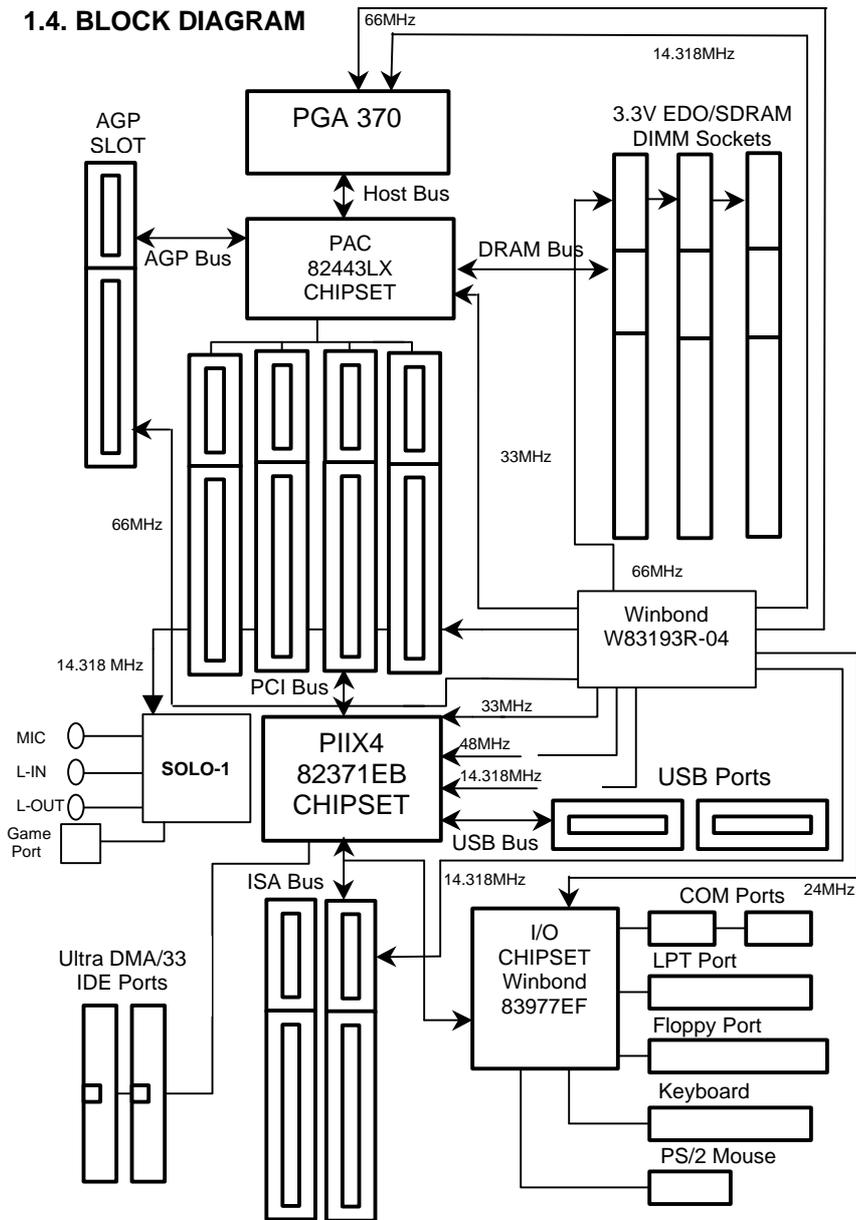
The following performance data list is the testing results of some popular benchmark testing programs.

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

- CPU Intel® Celeron™ 366MHz Socket 370 processor
- DRAM (128x 1) MB SDRAM (LGS 72V66841CT7J)
- CACHE SIZE 128 KB included in CPU
- DISPLAY GA-630 AGP Display Card (16MB SGRAM)
- STORAGE Onboard IDE (Seagate ST34520A 7200RPM)
- O.S. Windows NT™ 4.0 (SP4)
- DRIVER Display Driver at 1024 x 768 x 64k colors x 75Hz.
TRIONES Bus Master IDE Driver 3.70

Processor	Intel® Celeron™ (Socket 370) 366MHz (66x5.5)
Winbench99	
CPU mark32	705
Business Disk	4330
Hi-End Disk	10600
Business Graphics	173
Hi-End Graphics	331
Winstone99	
Business	26.8
Hi-End	24.3

1.4. BLOCK DIAGRAM



1.5. INTRODUCE THE INTEL® Celeron™ Socket 370 Processor



Figure 1: INTEL® Celeron™ Socket370 Processor



Figure 2:Heatsink / FAN & Heat sink support for Celeron™ Socket370 Processor



Figure 3:Boxed Celeron™ Socket370 Processor
& Heat sink support

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 ($66.6 \times 2 \times 4$). 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 370 366 – 566 MHz.
 - 370 pins 66MHz socket on board.
- SPEED
 - 66MHz 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 EDO / SDRAM.
 - Supports ECC or Non-ECC type DRAM.
- CACHE MEMORY
 - 32 KB L1 cache memory included in CPU.
 - 128 KB 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 onboard. (Using IRQ14,15)
 - Support 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 & PS/2 Keyboard.

- Audio Ports (Optional)
 - 1x Line in
 - 1x Line out
 - 1x Micro in
 - 1x Game Port
 - 2x CD Line in
 - 1x TEL
- GREEN FUNCTION
 - Suspend mode support.
 - Green switch & Green LED support.
 - IDE & Display power down support.
 - Monitor all IRQ / DMA / Display / I/O events.
- BIOS
 - 2M bits FLASH RAM.
 - Supports Plug & Play, DMI Function.
- DIMENSION
 - ATX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- DRIVER
 - Intel Bus Master IDE Driver.(UUCD)
- BIOS
 - Licensed AWARD 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 main board package should contain the following:

- The **6LX7/6LX7A** main board.
- The Retention Mechanism & Attach Mount
- USER' S MANUAL for main board.
- Cable set for IDE, Floppy devices.
- Diskettes or CDs for mainboard Utility.

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.

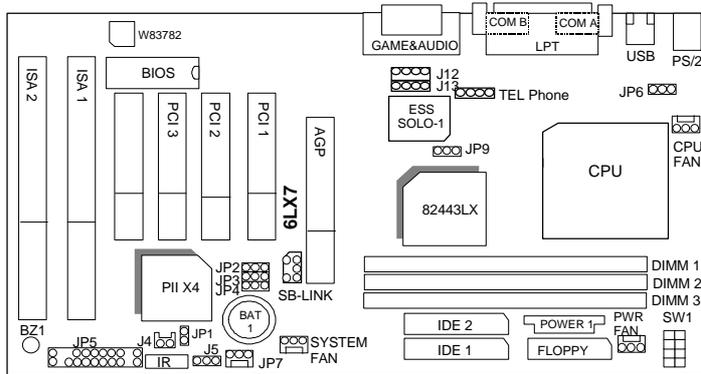
Unpacking and installation should be done on a grounded anti-static mat. The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

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.
IDE 1	For Primary IDE port.
IDE 2	For Secondary IDE port.
PS/2	For PS/2 Keyboard and Mouse port.
Floppy	For Floppy port.
COM B	For Serial port2 (COM B).
COM A	For Serial port1 (COM A).
GAME & Audio	For GAME & MIC LINE-IN, LINE-OUT Port(Optional).
Power 1	For ATX Power Connector.
LPT	For LPT port.

◆ Socket 370	
For Celeron™ Socket 370 Processor installed	

◆ J1 : CPU cooling FAN Power Connector	
Pin No.	Function
1	GND.
2	+12V.
3	Signal.

◆ JP6 : Keyboard Power On Selection	
Pin No.	Function
1-2	Enable Keyboard power on.
2-3	Disable Keyboard power on.

◆ JP7 : Wake on LAN Connector	
Pin No.	Function
1	+5VSB.
2	GND.
3	CTRL-Signal.

◆ J4 : Internal Modem Ring On	
Pin No.	Function
1	Signal.
2	GND.

◆ IR: INFRARED Connector	
Pin No.	Function
1	IR DATA OUTPUT.
2	GND.
3	IR DATA INPUT.
4	NC.
5	POWER (i).

◆ J2 : Power FAN Connector	
Pin No.	Function
1	GND.
2	+12V.
3	Signal.

◆ J3 : SYSTEM FAN Connector	
Pin No.	Function
1	GND.
2	+12V.
3	Signal.

◆ JP1 : CASE Open (Optional)	
Pin No.	Function
1	Signal.
2	GND.

◆ J5 : Clear CMOS	
Pin No.	Function
1-2 Short	Clear CMOS .
2-3 Short	Normal.

◆ JP9 : Onboard Sound Function Connector (Optional)	
Pin No.	Function
1-2 Short	Enabled Onboard Sound Function.
2-3 Short	Disabled Onboard Sound Function.

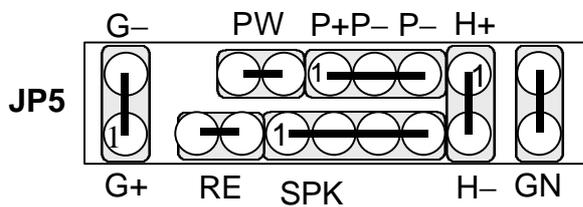
◆ JP10 : TEL:The Connector is for Modem with internal Voice connector	
Pin No.	Function
1	Signal
2	GND
3	GND
4	Signal

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

◆ J12 :CD Audio Line-in Connector(Optional)	
Pin No	Function
1	Right
2	GND
3	GND
4	Left

◆ J13 :CD Audio Line-in Connector(Optional)	
Pin No	Function
1	GND
2	Right
3	GND
4	Left

JP5 : 2*11PIN Jumper



PW : Soft Power Connector



On – Off : For POWER ON or Suspend IN / OUT.
 On 4 sec : For POWER OFF before VGA Enable or CMOS setup select "delay 4sec." For POWER OFF mode.

RE : Reset Switch



Open: Normal Operation
 Short: For Hardware Reset System

P+P- P-: Power LED



PIN 1: anode (+)
 PIN 2: cathode (-)
 PIN 3: cathode (-)

SPK: Speaker Connector



PIN 1: VCC
PIN 2: NC
PIN 3: NC
PIN 4: Data

HD: IDE Hard Disk Active LED



PIN 1: LED anode (+)
PIN 2: LED cathode (-)

GN: Green Switch



Open: Normal operation
Short: Entering Green Mode

GD: Green Function Active LED



PIN 1: LED anode (+)
PIN 2: LED cathode (-)

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 67~100 MHz for SDRAM when system bus speed is set to 66MHz. The DRAM memory system on main board consists of bank 0, 1& 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 16 MB ~ 384MB SDRAM, EDO DRAM size is 16MB ~ 768MB. 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 selectable between 66.6MHz. The user can select the system bus speed (JP2,JP3,JP4) and change the DIP SWITCH (SW) selection to set up the CPU speed for 366 - 566MHz processor.

⚠ **The CPU speed must match with the frequency RATIO. It will cause system hanging up if the frequency RATIO is higher than CPU's.**

FREQ. RATIO	DIP SWITCH (SW)			
	SW1	SW2	SW3	SW4
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
X 9	ON	OFF	OFF	OFF
X 9.5	OFF	OFF	OFF	OFF

⚠ **JP2, JP3, JP4** (Select the system speed; 66.6 / 75 / 83 MHz)

MAIN CLOCK	JP2	JP3	JP4
66MHz	2-3	2-3	2-3
75MHz	2-3	1-2	2-3
83MHz	1-2	2-3	1-2

♦ Note: It's strongly recommended that set the system speed according to your hardware configuration: CPU, SDRAM, Cards, etc.

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 **SPK** 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 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 main board can be mounted into the case and fixed by screw. To complete the main board 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.