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1. INTRODUCTION

1.1. PREFACE

Welcome to use the **5AMMC** motherboard. The motherboard is a Pipeline 512 KB CACHE Pentium® Processor based PC/AT compatible system with ISA bus and PCI Local Bus, and has been designed to be the fastest PC / AT system. There are some new features allow you to operate the system with 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

❑ Pentium® Processor based PC / AT compatible mainboard with PCI / ISA / AGP Bus.

❑ 3 PCI Bus slots, 2 ISA Bus slots.

❑ Supports :
  - Pentium® Processor : 133/166/200 MHz; MMX (166 / 200 / 233)
  - AMD : K6-(166 / 200 / 233 / 266 / 300)
    K6-2(266 / 300 / 333 / 350 / 380 / 400)
  - Cyrix/IBM : 6x86MX (PR166 / PR200 / PR233 / PR266) ;
    MⅡ PR300 / PR333
  - IDT : C6-(200 / 225 / 266)

❑ Supports true 64 bits CACHE and DRAM access mode.

❑ Supports 321 Pins (Socket 7) ZIF white socket on board.

❑ Supports 512 KB Pipeline Burst Sync. 2nd Level Cache.

- CPU L1 / L2 Write-Back cache operation.

- Built-in **ATi RAGE IIC** graphics acceleration chip (4MB SGRAM) .

- Built-in PCI **ESS SOLO-1 ES1938S** audio chip.

- Supports external Modem Ring-On on COM A and COM B.

- Supports Wake-up on LAN (J2).

- Supports 8 - 512 MB DRAM memory on board.

- Supports 2x168 pin 64/72 Bit DIMM module.

- Supports 2-channel Enhanced PCI IDE ports for 4 IDE Devices.

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

- Supports Green function, Plug & Play function.

- Licensed AWARD BIOS, 2MB bit FLASH RAM for BIOS update.

- 24.38cmx20cm, Micro ATX Form factor.

- Supports USB port & PS/2 Mouse and K/B port.

1.3. PERFORMANCE LIST

The following list of performance data 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   Pentium$^{\circledR}$ Processor MMX-233 MHz, Cyrix 6x86MX-PR233, AMD K6-2 300
- DRAM   (64 × 2) MB SDRAM (LGS GM72V66841CT7J)
- CACHE SIZE   512 KB
- DISPLAY   Onboard ATi RAGE IIC AGP Card (4MB SGRAM)
- STORAGE   Onboard IDE (Seagate ST34520A)
- O.S.   Windows® NT 4.0
- DRIVER   Display Driver at 1024 x 768 x 256 colors x 75Hz.

         ALi Bus Master IDE Driver

Processor	Intel-MMX 233MHz (66x3.5)	AMD K6-2 300 (100x3)	Cyrix 6x86MX-PR233 (75x2.5)
Winbench98 CPU mark32	468	769	468
FPU Winmark	916	984	424
Business Disk	1890	2020	1850
Hi-End Disk	4110	4710	3980
Business Graphics	102	145	103
Hi-End Graphics	112	162	120
Winstone98 Business	21.9	29	21.7
Hi-End	23.4	29.9	22.3

1.4. BLOCK DIAGRAM
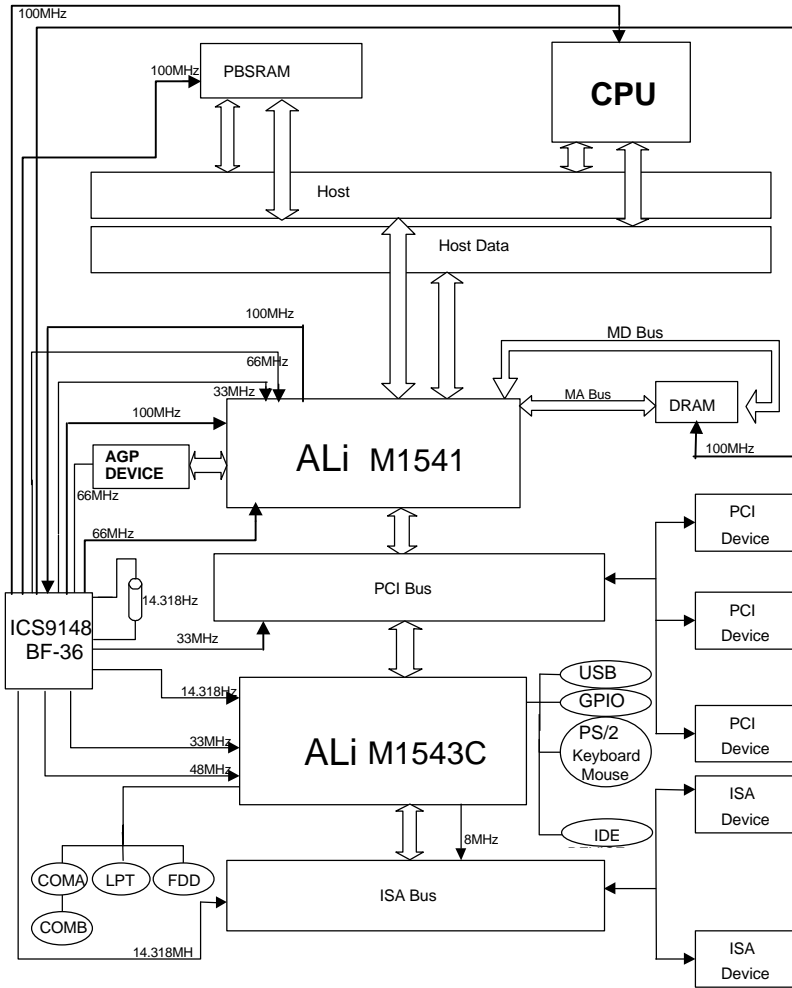
1.5. INTRODUCE THE PCI - BUS

Connecting devices to a CPU local bus can dramatically increase the speed of I/O-bound peripherals with only a slight increase in cost over traditional systems.

This price / Performance point has created a vast market potential for local bus products.

The main barrier to this market has been the lack of an accepted standard for local bus peripherals.

Many mainboard and chipset manufactures developed their own local bus implementations, but they are incompatible with each other.

The VL (Video Electronics Standards Association) local bus and PCI (Peripheral Component Interconnect) bus specification was created to end this confusion.

The PCI - bus standard, under development since Jun. 1992, which is designed to bring workstation-level performance to standard PC platform. The PCI - bus removes many of the bottlenecks that have hampered PC for several years.

On the PCI - bus, peripherals operate at the native speed of the computer system, thus enabling data transfer between peripherals and the system at maximum speed.

This performance is critical for bandwidth-constrained devices such as video, multimedia, mass storage, and networking adapters.

PCI - bus standard provides end-users with a low-cost, extendible and portable local bus design, which will allow system and peripherals from different manufactures to work together.

1.6. FEATURES

- ❑ 32 bits bus transfer mode.
- ❑ Bus Master or Slave access.
- ❑ Memory burst transfer to 132 MB/sec.
- ❑ 33 MHz operation speed.
- ❑ 10 device loading ability.
- ❑ CPU independent.

1.7. 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 further speed the transaction.

2. SPECIFICATION

2.1. HARDWARE

- CPU
  - Pentium$^{\circledR}$ Processor
    133 / 166 / 200 MHz ; MMX(166 / 200 / 233)
  - AMD
    K6 (166 / 200 / 233 / 266 / 300)
    K6-2 (266 / 300 / 333 / 350 / 380 / 400)
  - Cyrix / IBM
    6x86MX (PR166 / PR200 / PR233 / PR266)
    M₵ PR300 / PR333
  - IDT
    C6-(200 / 225 / 266)
  - 321 pins (socket 7) ZIF white socket on board.
  - 3.52V / 2.0V-3.5V Dual Power Ready.

- COPROCESSOR
  - Included in processor.

- SPEED
  - 66 / 75 / 83 / 95 / 100MHz system speed.
  - 66 MHz AGP-Bus speed.
  - 33 MHz PCI-Bus speed.
  - 8 MHz AT bus speed.

- DRAM MEMORY
  - 2 banks 168 pins DIMM module socket on board.
  - Use 16 / 32 / 64 / 128 / 256 MB DIMM module DRAM.
  - 8 ~ 512 MB DRAM size.
  - Supports 3.3V SDRAM / EDO type DRAM.
  - Supports ECC or Non-ECC type DRAM.

- CACHE MEMORY
  - 16 / 24 / 32 / 64KB L1cache included in CPU.
  - 512 KB 2nd Level cache on board.
  - Supports Write Back cache function for both CPU & on board cache.

- I/O BUS SLOTS
  - 3 xMaster / Slave PCI-BUS Slots.
  - 2 x16 bits ISA BUS Slots.

- IDE PORTS
  - 2-channel Enhanced IDE port on board.(Using IRQ14,15)
  - Supports Mode 3,4 IDE & ATAPI CD – ROM.

- I/O PORTS
  - Supports 2 x16550 COM ports. (Using IRQ4, 3)
  - Supports 1 x EPP/ECP LPT port. (Using IRQ7 or 5 and DMA3 or 1)
  - Supports 1 x 1.44/2.88 MB Floppy port. (Using DMA2 & IRQ6)
  - Supports PS/2 Mouse. (Using IRQ12)
- GREEN FUNCTION
  - Suspend mode support.
  - Green switch & Green LED support.
  - IDE & Display power down support.
  - Monitor all IRQ / DMA / Display / I/O events.
- BIOS
  - 2Mbit FLASH RAM.
  - Supports Plug & Play Function.
- SOUND
  - Onboard ESS SOLO-1 ES1938S PCI Sound.
- VGA
  - Onboard ATi RAGE IIC AGP Display Card (4MB SGRAM) .
- DIMENSION
  - Micro ATX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- 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™ 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.