



MS-6302 Micro-ATX CA9 Mainboard Specification & User's Guide

1. Introduction

The MS-6302 Micro-ATX CA9 mainboard is a high-performance computer mainboard based on Intel® 820 chipset. The MS-6302 is designed for the Intel® Pentium™ III Coppermine processor for high-end business/personal desktop markets.

The Intel® 820 chipset is the first generation chipset for the Intel® Pentium® III processor. An integrated centralized memory arbiter allocates memory bandwidth to multiple system agents to optimize system memory utilization. A new chipset component interconnect, the hub interface, is designed into the Intel 820 chipset to provide an efficient communication channel between the memory controller hub and I/O controller hub.

The Intel 820 chipset contains three core components: the Memory Controller Hub (MCH), the I/O Controller Hub (ICH) and the Firmware Hub (FWH). The MCH integrates a 100MHz/133MHz CPU FSB, 266/300/356/400MHz RDRAM controller and high-speed hub interface for communication with the ICH. The ICH integrates an Ultra ATA/66(ICH) controller, USB host controller, LPC interface controller, FWH interface controller, PCI interface controller, AC'97 digital controller and a hub interface for communication with the MCH.

The Intel® 82802 Firmware Hub (FWH) component is part of the Intel® 820 chipset. The FWH is key to enabling future security and manageability infrastructure for the PC platform.

2. Mainboard Specification

CPU

- Socket 370 for Intel® Coppermine/256k 100/133MHz FSB processor.
- Support 667MHz or higher processor

Chipset

- Intel® 820 Camino chipset. (324 BGA)
 - Optimized for Pentium III processor
 - AGP 4x/2x universal slot
 - Support 100/133MHz FSB
- Intel® ICH chipset. (241 BGA)
 - AC'97 Controller Integrated
 - 2 full IDE channels, up to ATA66
 - Low pin count interface for SIO
- Intel® MTH chipset. (241 BGA)

Front Side Bus (FSB)

- 100/133MHz clocks are supported.

Main Memory

- Support two 168-pin DIMM sockets.
- Supports a maximum SDRAM memory size of 512MB or 1GB (32Mx4) registered DIMM only.

Slots

- One AGP (Accelerated Graphics Port) slot.
 - 2x/4x AGP specification.
- One CNR (Communication Network Riser) slot.
- Three 32-bit Master PCI Bus slots.
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE

- An IDE controller on the ICH chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA/66 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals

- On-Board Peripherals include:
 - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
 - 2 serial port (COMA + COMB)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 2 USB ports and 1 Front USB Header (optional)
 - 1 IrDA connector for SIR.



Audio

- Creative CT5880. (Optional)
 - 128 Voice WaveTable Synthesizer
 - Sound Library of over 4000 different sounds
 - Support SPDIF (AC3)
 - Support Microsoft Direct Sound, Direct Sound 3D, Direct Music, and A3DAPI.

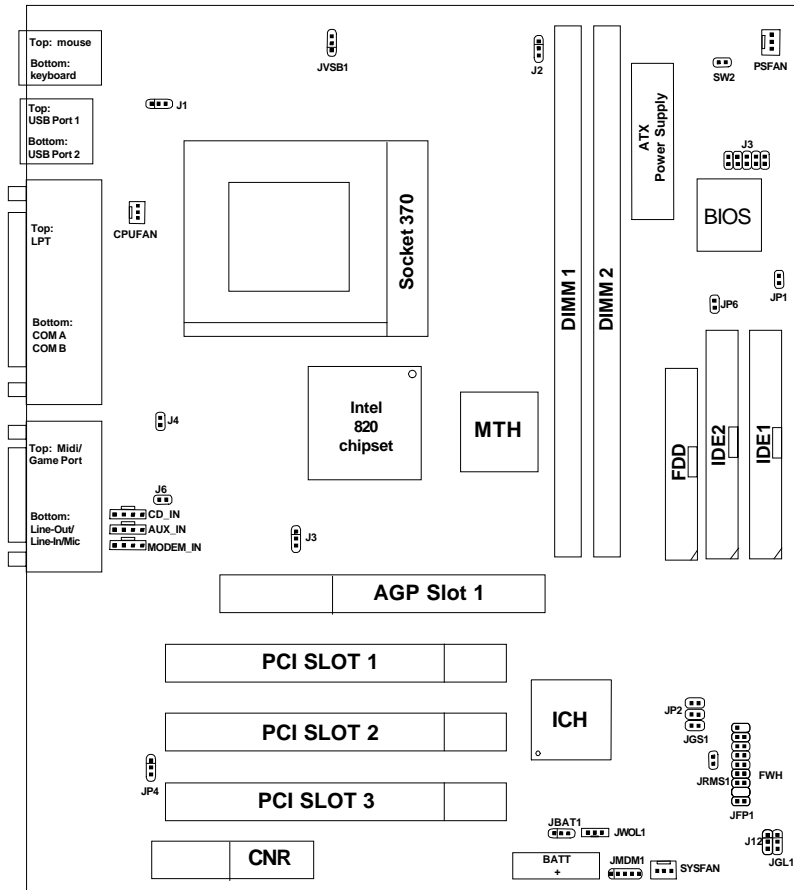
BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface(DMI) function which records your mainboard specifications.

Dimension

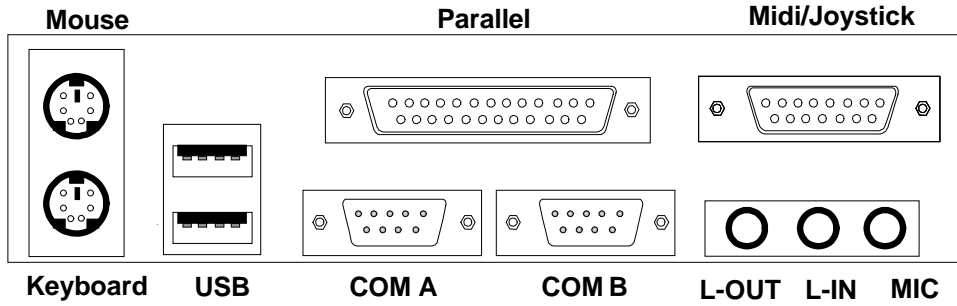
- Micro-ATX Form Fac-

3. Mainboard Layout



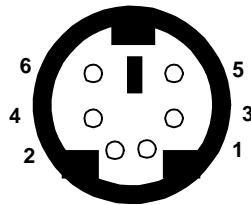
MS-6302 Micro-ATX CA9 Mainboard

4. Backpanel Layout



4.1 Connectors

4.1-1 Mouse Connector

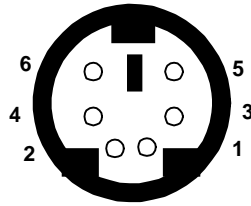


PS/2 Mouse (6-pin Female)

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

PS/2 Mouse Pin Definition

4.1-2 Keyboard Connector

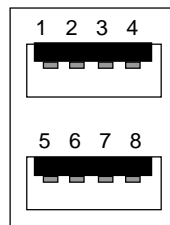


PS/2 Keyboard (6-pin Female)

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

PS/2 Keyboard Pin Definition

4.1-3 USB Connectors



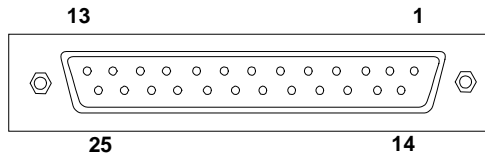
USB Ports

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	GND	Ground
4	+Data 0	Positive Data Channel 0
5	VCC	+5V
6	+Data 1	Positive Data Channel 1
7	-Data 1	Negative Data Channel 1
8	GND	Ground

USB Port Description



4.1-4 Parallel Port Connector

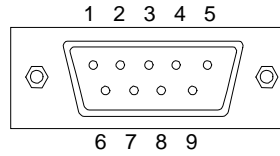


LPT 25-Pin Male Connectors

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground1



4.1-5 Serial Port Connectors

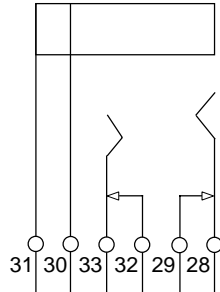


COM A / COMB 9-Pin male DIN connectors

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate



4.1-6 Speaker

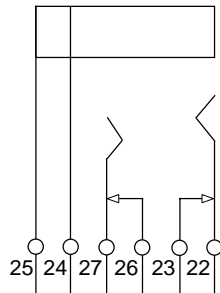


Standard Stereo Jack - Speaker Out

PIN	SIGNAL	DESCRIPTION
28	LINEOUTL	Line Out - Left
29	GND	Analog Ground
30	GND	Analog Ground
31	GND	Analog Ground
32	GND	Analog Ground
33	LINEOUTR	Line Out - Right

Speaker Jack

4.1-7 Line-In



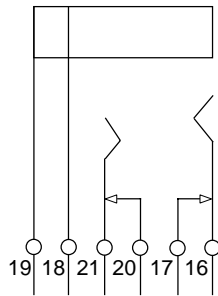
Standard Stereo Jack - Line In

PIN	SIGNAL	DESCRIPTION
22	LINEINL	Line In - Left
23	GND	Analog Ground
24	GND	Analog Ground
25	GND	Analog Ground
26	GND	Analog Ground
27	LINEINR	Line In - Right

Line In Jack



4.1-8 Microphone



Standard Stereo Jack - Mic

PIN	SIGNAL	DESCRIPTION
16	MIC_IN	Microphone Input
17	GND	Analog Ground
18	GND	Analog Ground
19	GND	Analog Ground
20	NC	No Connection
21	MICP3	Microphone Power

Microphone Jack

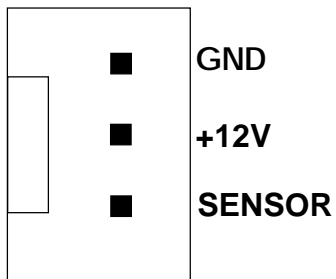


5. DIMM DRAM Addressing

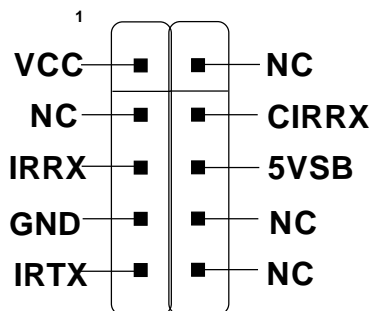
DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB



6. Fan Power Connector



7. IrDA Infrared Module Connector: J6





Appendix A

CPU Core Speed Derivation Procedure

The mainboard CPU Core/Bus ratio and CPU Bus Frequency can both be set through BIOS setup

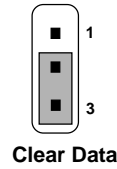
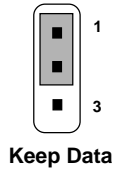
If	<u>CPU Clock</u>	=	100MHz
	<u>Core/Bus ratio</u>	=	4
then	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	100MHz x 4
		=	400MHz



Jumpers

Clear CMOS Jumper: JBAT1

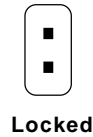
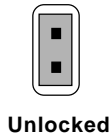
A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of this jumper to keep the CMOS data.



Note: You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

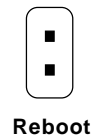
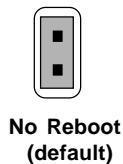
FWH Boot Block Protect: JP1

This jumper is used to locked/unlocked FWH BIOS Flash.



System Error Reset: JP2

This jumper is used to Enabled/Disabled the reboot system.





CPU Core/Bus Ratio Strap to Safe Mode: JP3



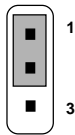
Safe Mode
(Core/Bus Ratio by 2)



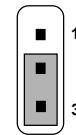
Core/Bus ratio in ICH
Register (Default)

Software Audio Select (Reserved): JP4

This jumper allows user to select the Audio software.



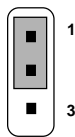
Select Onboard
Audio (default)



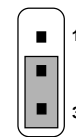
Select AMR Audio

Keyboard Power On Function: JVS1

The JVS1 jumper is used for setting Keyboard Power on Feature. This function should be set through BIOS Keyboard and PS/2 mouse Wake-up function.



5V Standby
Enable
Keyboard
Power on
function

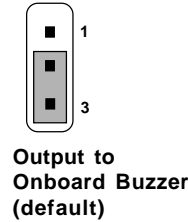
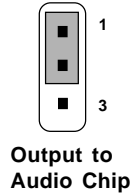


5V (default)
Disable
keyboard
power on
function



Speaker Output Select: J7

This is used to select the Speaker Output.



Suspend To RAM: JSTR

This jumper is used to enabled support for STR(suspend to RAM). The power supply should be more than 750mA or up to be able to enabled the STR support.

JSTR	Function
Short	Disabled STR
Open	Enabled STR

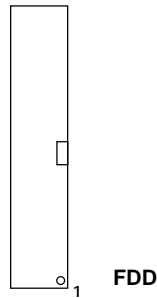
Note: VGA card onboard must support ACPI mode, for this function to wrok.



Connectors

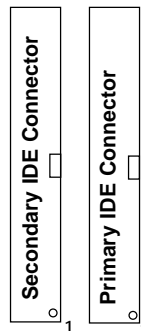
Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector FDC that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cable.



Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.



IDE1(Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

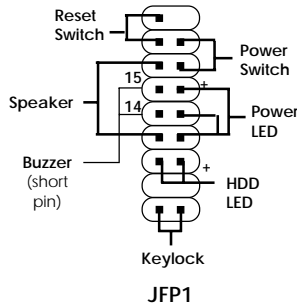
IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.



Case Connector: JFP1

The Power Switch, Reset Switch, Key Lock, Power LED, Speaker and HDD LED are all connected to the JFP1 connector block.



Power Switch

Connect to a 2-pin push button switch. This switch had the same feature with JRMS1.

Reset Switch

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

Power LED

The Power LED is lit while the system power is on. You can connect the Power LED from the system case to this pin. When the system enters suspend mode, the power LED will blink. (see Power Saving LED Connector: JGL1)

Speaker

Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

- Short pin 14-15: On-board Buzzer Enabled.
- Open pin 14-15: On-board Buzzer Disabled.

HDD LED

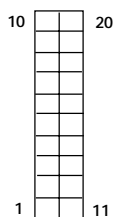
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

ATX 20-pin Power Connector: JWR1

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard.



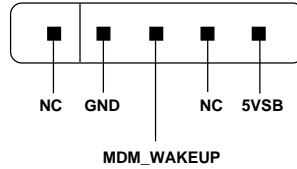
ATX Power Connector

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V



Modem Wake Up Connector: JMDM1

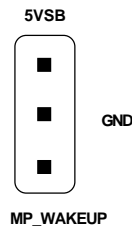
This connector is for used with Modem add-on card that supports the Modem Wake Up function.



Note: Modem wake-up signal is active “low”.

Wake-Up on LAN connector: JWOL

This connector is for use with LAN add-on cards that supports Wake Up on LAN function.



Note: LAN wake-up signal is active “high”.

Chassis Intrusion Switch Connector: J4

This connector is connected to 2-pin connector chassis switch. If the Chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status.

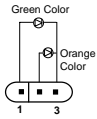
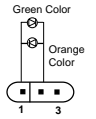
Power Saving Switch Connector: JGS1

Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



Power Saving LED Connector: JGL1

JGL1 can be connected with Power Saving LED. There are two type of LED that you can use: 3-pin LED or 2-pin LED(ACPI request). LED will lit while the system is in suspend mode.

3-pin LED	2-pin LED
	
1-2 Single Color 1-3 Blink	1-2 Dual Color



Appendix B - Schematics



Notes



Appendix C - Bill for Materials



Notes



Appendix D - Mechanical Drawings



Notes



Appendix E - Test Reports

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