Chapter 1

Overview

MX64 is a slot 1 based motherboard that utilizes **VIA 694X** AGPset on **Micro ATX** form factor. It implements an onboard audio CODEC and supports new architectures such as **AGP 4x**, **SDRAM**, **Ultra DMA 33/66**, **Bus master IDE** and **USB** ports. It supports three Dual in-line memory module (DIMM) slots that allow the installation of **SDRAM** memory and expansion up to a maximum of **768MB**.

In addition to the above features, MX64 also implements plenty of fabulous features.

Jumper-less Design Pentium II / Pentium III / Celeron VID signal and SMbus clock generator provide CPU voltage auto-detection and allows the user to set the CPU frequency through the CMOS setup, therefore no jumpers or switches are used. The correct CPU information is saved into the EEPROM. With these technologies, the disadvantages of the Pentium based jumper-less designs are eliminated. There will be no worry of wrong CPU voltage detection and no need to re-open the housing in case of CMOS battery loss. The only jumper left is to clear the CMOS, which is a safety hook if you forget the password.

Full-range CPU core voltage This motherboard supports the CPU core voltage from 1.3V to 3.5V, that can be applied to various CPU type in future.

Zero Voltage Wake on Modem In conjunction with ATX soft power On/Off, it is possible to have system totally power off and wakeup to automatically answer a phone call such as answering machine or to send/receive fax. The most important break through is not only external box modem but also internal modem card can be used to support 0V Wake On Modem. The MX64 and FM56-P internal modem card implement special circuit (patent applied) to make sure the modem card work properly without any power.

Wake on LAN This feature is very similar as 0V Wake On Modem, but it is through local area network. To use Wake on LAN function, you must have a network card that supports this feature and also need to install a network management software.

Overview

Wake on RTC Timer The Wake Up Timer is more like an alarm, which wakes up and power on your system at a pre-defined time for specific application. It can be set to wake up everyday or on specific date within a month. The date/time accuracy is second.

CPU Thermal Protection MX64 has a special thermal detection circuit to have warning through application software when the temperature is higher than a predefined value.

CPU and Housing Fan Monitoring MX64 has one more "fan monitoring" function to prevent system overheat. The system will report and alarm fan malfunction though utility software such as Hardware Monitoring Utility (named AOhw140, where 140 means version number).

System Voltage Monitoring Furthermore, MX64 implements a voltage monitoring system, As you turn on your system, this smart design will continue to monitor your system working voltage. If any of the system voltage is over the component's standard. There will be alarm though software such as Hardware Monitoring Utility for a warning to user.

ACPI Suspend to DRAM You can resume your original work directly from DRAM without going through the Win98 booting process and run your application again. Suspend to DRAM saves your current work into the system memory.

Resetable Fuse MX64 implements resetable fuses to prevent any accidental short circuit caused by keyboard or USB devices hot plug.

FCC DoC Certificate MX64 has passed FCC DoC test. The radiation is very low, you can use any kind of housing.

PC99 Ready For user's convenience in installing the PC system, AOpen adopts the recommended PC99 color scheme in all connectors that mount on this motherboard.

Powerful Utility Software AOpen Bonus Pack CD disc contains many useful utilities, such as Norton Antivirus, AOchip, Hardware Monitoring Utility, and Suspend to Hard Drive utility.

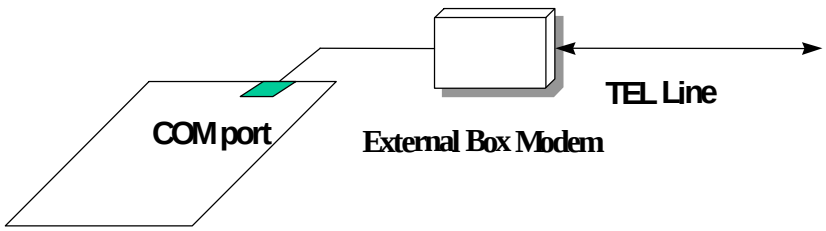
1.1 Specifications

Form Factor	Micro ATX
Board Size	220 mm x 245 mm
CPU	Intel Pentium II / Pentium III / Celeron
System Memory	DIMM 168-pin x3, maximum 768MB.
Second-level Cache	Built-in CPU depends on processor
Chipset	VIA 694X AGPset
Expansion Slots	PCI x 3 and AGP x 1
Audio CODEC	AD1881
Serial Port	Two serial ports UART 16C550 compatible
Parallel Port	One parallel port supports standard parallel port (SPP), enhanced parallel port (EPP) or extended capabilities port (ECP).
Floppy Interface	Floppy interface supports 3.5 inches drives with 720KB, 1.44MB or 2.88MB format or 5.25 inches drives with 360KB, 1.2MB format
IDE Interface	Dual-channel IDE interface support maximum 4 IDE hard disks or CDROM, mode 4, bus master hard disk drives and Ultra DMA 33/66 mode hard drives are also supported.
USB Interface	Two USB ports supported by USB bracket, the BIOS also supports USB driver to simulate legacy keyboard.
PS/2 Mouse	Mini-Din PS/2 mouse connector onboard.
Keyboard	Mini-Din PS/2 keyboard connector onboard.
RTC and Battery	RTC build in chipset, Lithium (CR-2032) battery.
BIOS	AWARD Plug-and-Play, 2M bit Flash ROM BIOS.

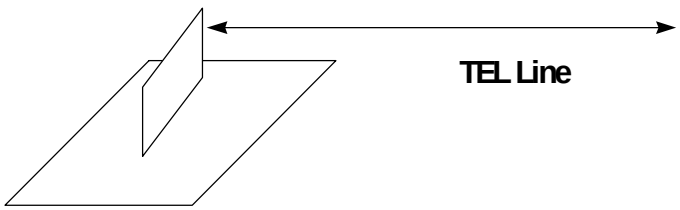
1.2 Zero Voltage Wake on Modem

The Wake on Modem discussed here is to wakeup from true power off (identified by fan of power supply is off), This motherboard still supports traditional green PC suspend mode but it is not discussed here.

With the help ATX soft power On/Off, it is possible to have system totally power off (The traditional suspend mode of power management function does not really turn off the system power supply), and wakeup to automatically answer a phone call such as answering machine or to send/receive fax. You may identify the true power off by checking fan of your power supply. Both external box modem and internal modem card can be used to support 0V Wake On Modem, but if you use external modem, you have to keep the box modem always power-on. AOpen MX64 and internal modem card implement special circuit (patent applied) and make sure the modem card works properly without any power. We recommend you choose AOpen modem card (For example, FM56-P, FM56-H, etc.) for 0V Wake On Modem applications.



External Modem Wake Up



Internal Modem Card Wake Up (such as FM56-P)

For Internal Modem Card (AOpen FM56-P):

1. Go into BIOS setup, Power Management à 0V Wake On Modem, select Enabled.
2. Setup your application, put into Windows 95.
3. Turn system power off by soft power switch.
4. Connect 4-pin Modem Ring-On cable from FM56-P RING connector to MX64 connector WKUP.
5. Connect telephone line to FM56-P. You are now ready to use Wake On Modem.

For External Box Modem:

1. Go into BIOS setup, Power Management à 0V Wake On Modem, select Enabled.
2. Setup your application, put into Windows 95 Start Up.
3. Turn system power off by soft power switch.
4. Connect RS232 cable of external box Modem to COM1 or COM2.
5. Connect telephone line to external box Modem. Turn on Modem power (you must keep Modem power always on). You are now ready to use Wake On Modem.

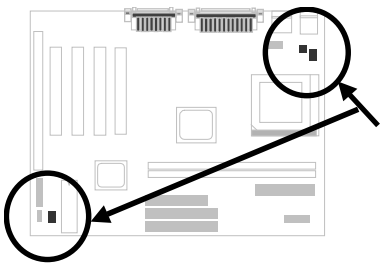
Tip: *External 0V Wake On Modem signal is detected through COM1 or COM2. Internal modem card wake up signal is detected through cable from connector RING (on modem card) to WKUP (on mainboard).*

Note: *If you use external modem, the power of external modem must be kept on to receive signal from telephone line. Internal modem card has no such limitation.*

1.3 System Voltage Monitoring

This motherboard implements a voltage monitoring system. As you turn on your system, this smart design will continue to monitor your system working voltage. If any of the system voltage is over the component's standard. There will be alarm through application software such as Hardware Monitor utility for a warning to user. System voltage monitoring function monitors CPU core voltage. It is automatically implemented by BIOS and Hardware Monitor utility (the file name is like aohw100.exe, where 100 means the version number, no hardware installation is needed.

1.4 Fan Monitoring



There are three fan connectors, two is for CPU, the other can be a housing fan. The fan monitoring function is implemented by connecting fan to 3-pin fan connector **CPUFAN1 and FAN**, and installing Hardware Monitoring Utility.

Note: *You need 3-pin fan that supports SENSE signal for fan monitoring function to work properly.*

1.5 CPU Thermal Protection

This motherboard implements special thermal protection circuit below the CPU. When temperature is higher than a predefined value, the CPU speed will automatically slow down and there will be warning from BIOS and also Hardware Monitoring Utility software.

CPU Thermal Protection is automatically implemented by BIOS and utility software, no extra hardware installation is needed.