

MB-668

LPX- size Intel FC-370 Pentium III
CPU Card with LCD, LAN, Audio,
4 COMs & SSD.

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Packing list

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 MB-668 LPX- size Single Board Computer Card
- 1 Quick Installation Guide
- 1 Support CD contains the followings:
 - User's Manual (this manual in PDF file)
 - Ethernet drivers and utilities
 - VGA drivers and utilities

- 1 hard disk drive (IDE) interface cable (44-pin, pitch 2.0mm)
- 1 floppy disk drive interface cable (34-pin, pitch 2.0mm)
- 1 IDE hard disk drive cable (40-pin, pitch 2.00mm)
- 1 parallel port (26-25-pin, pitch 2.0mm) and serial port (10-9 pin, pitch 2.0mm) adapter kit.
- 1 bag of screws and miscellaneous parts

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Notice

Dear Customer,

Thank you for purchasing the MB-668 board. This user's manual is designed to help you to get the most out of the MB-668, please read it thoroughly before you install and use the board. The product that you have purchased comes with an two-year limited warranty, but AAEON will not be responsible for misuse of the product. Therefore, we strongly urge you to first read the manual before using the product.

To receive the latest version of the user manual, please visit our Web site at:

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General Information

This chapter gives background information of the mainboard.

Sections Include:

- Board Specifications
- Layout and Dimensions

Introduction

The MB-668 is an all-in-one Celeron/Pentium III FC-chip processor based LPX-size single board computer (MB) with a PCI Flat Panel controller, a PCI 100Base-T Ethernet interface. When using an Intel Pentium III processors, the MB-668 achieves outstanding performance that surpasses any other SBC in its class. In addition, the onboard SSD interface supports M-Systems DiskOnChip 2000 series, memory capacity up to 288 MB.

Onboard features include four serial ports (one RS-232, three RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, pin header for two USB (Universal Serial Bus) ports, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high speed PCI IDE controller supports Ultra DMA/33 mode. Up to four IDE devices can be connected, including large hard disks, CD-ROM drives, and tape backup drives, etc.

The MB-668 also features power management to minimize power consumption. It complies with and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode. In addition, the board's watchdog timer can automatically reset the system or generate an interrupt in case the system stops due to a program bug or EMI.

Highly integrated LPX-size SBC

The MB-668 is a highly integrated LPX-size SBC that combines, video, and network functions on a single computer board. It provides up to 1024 x 768 resolution @ 64K colors with on-chip 2MB SDRAM display memory. Major onboard devices adopt PCI technology to achieve outstanding computing performance making the MB-668 one of the world's best and most powerful LPX-size Main Board Computer.

Features

- Supports Intel Celeron /Pentium III FC-370
- Supports DiskOnChip (SSD) up to 288MB
- C&T 69000 LCD controller supports 36-bit TFT Panels
- 10/100Base-T Fast Ethernet
- Supports H/W status monitoring

Specifications

Standard LPX-size SBC functions

- CPU: FC-370 Pentium III (Coppermine), Celeron, and compatible CPUs (With system bus frequencies of 66/100MHz).
- CPU socket: 370 pins Socket
- BIOS: Award 256KB Flash BIOS
- Chipset: Intel 440BX
- I/O chipset: ITE IT8661F / Winbond W83977ATF.
- Memory : Onboard one 168 pins DIMM socket supports up to 512Mbytes SDRAM.
- Enhanced IDE: Two EIDE channels. Supports up to 4 Ultra DMA/ 33 devices with data transfer rate of 33MB/sec.. With two 44-pin IDE connectors power enhanced.
- FDD interface: Supports two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB), with one standard type connector and one FPC connector.
- Parallel port: Two bi-directional parallel ports. Supports SPP, ECP, and EPP modes. One external 25-pin D-sub connector and one 13x2 pin header for LPT1.
- Serial port: One RS-232 and three RS-232/422/485 serial port with +5/+12 power capability. Ports can be configured as COM1, COM2, COM3, COM4, or disabled individually. 16C550 serial UARTs. 3 external D-sub connectors, 1 internal 5x2 pin header supporting COM2.
- IR interface: Supports one IrDA Tx/Rx header (FIR/SIR, IrDA 1.0 spec.).
- KB/Mouse connector : 6-pin mini-DIN connector supports PC/AT keyboard and PS/2 mouse.
- USB connectors: 6-pin onboard conn. supports dual USB external ports.
- Battery: Lithium battery for data retention
- CMOS Backup: CMOS data backup in flash memory, auto system reload when data is loss.

- Watchdog timer: Can generate a system reset, IRQ15, IRQ10, and IRQ11. Software selectable time-out interval (1 sec. ~ 255 min., 1 sec./step)
- DMA: 7 DMA channels (8237 equivalent)
- Interrupt: 15 interrupt levels (8259 equivalent)
- Power management: I/O peripheral devices support power saving and doze/standby/suspend modes. APM 1.2 compliant. Supports ATX power supply, PC 97 and modem ring-in function.
- H/W status monitoring: Winbond W83781D H/W status monitoring IC supports power supply voltages, fan speed control and temperature monitoring.
- LED status pin header: LED status indicator for power, CPU fan, Aux. fan, HDD, low temperature, high temperature and LAN.

Flat Panel/CRT Interface

- Chipset: C&T 69000
- Display memory: 2MB SDRAM built in chip
- Display type: Supports non-interlaced CRT and LCD (TFT, DSTN, and Mono) displays. Can display both CRT and Flat Panel simultaneously.
- Resolution: Up to 1024x768@64K colors.

Audio Interface

- Chipset: ESS ES1938 (Solo-1)
- Audio interface: 16-bit stereo VLSI chip, PCI based AC 97 Digital Audio Processor, Sound Blaster / Pro emulation.

Ethernet Interface

- Chipset: Realtek RTL8139C 10/100Base-T Fast Ethernet controller.
- Ethernet interface : Onboard 10/100Base-Tx RJ-45 connector optional Remote Boot ROM Function.

SSD Interface

- One 32 pins DIP socket supports M-Systems DiskOnChip 2000 series up to 288MB.

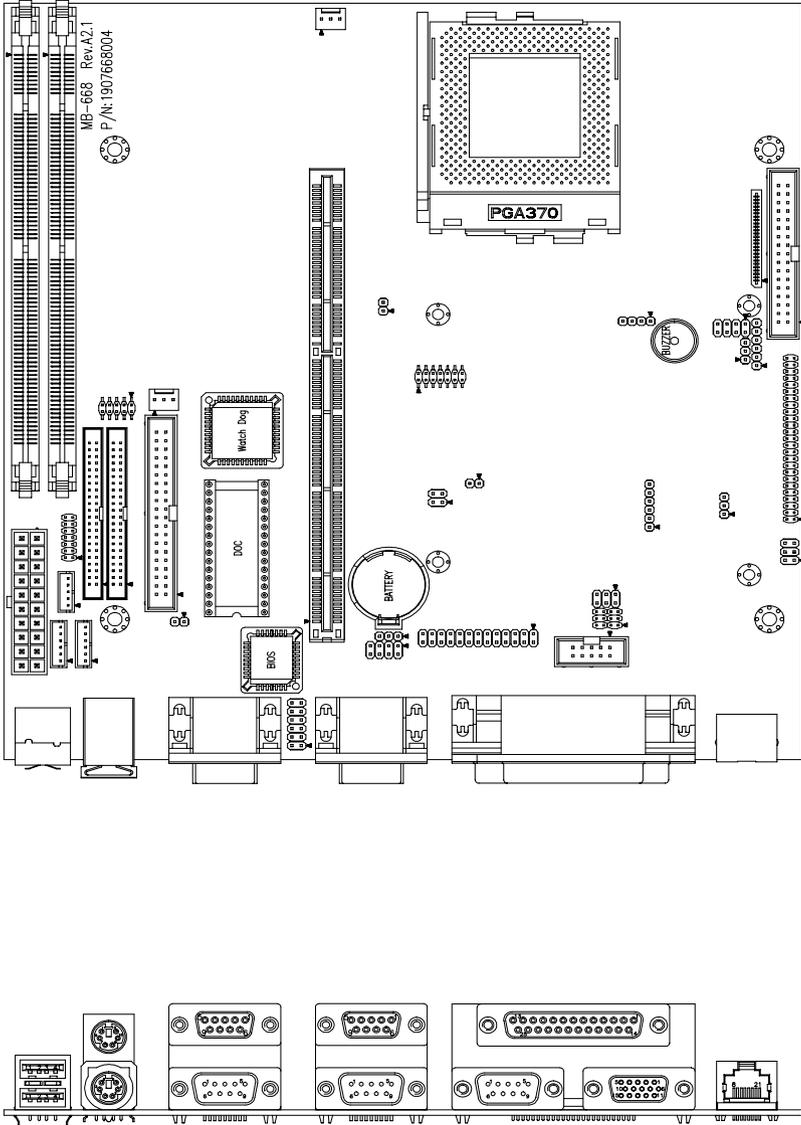
Expansion Slots

- PCI/ISA slot LVDS: One PCI/ISA slot onboard. Reserved for Aaeon's PCM-3524 LVDS module.

Mechanical and environmental

- Power supply voltage: +5V (4.75V to 5.25V),
+12V (11.4V to 12.6V)
- Operating temperature: 32 to 140°F (0 to 60°C)
- Board size: 8.9"(L) x 8.7"(W) (225mm x 220mm)
- Weight: 1.2 lb. (0.52 Kg)

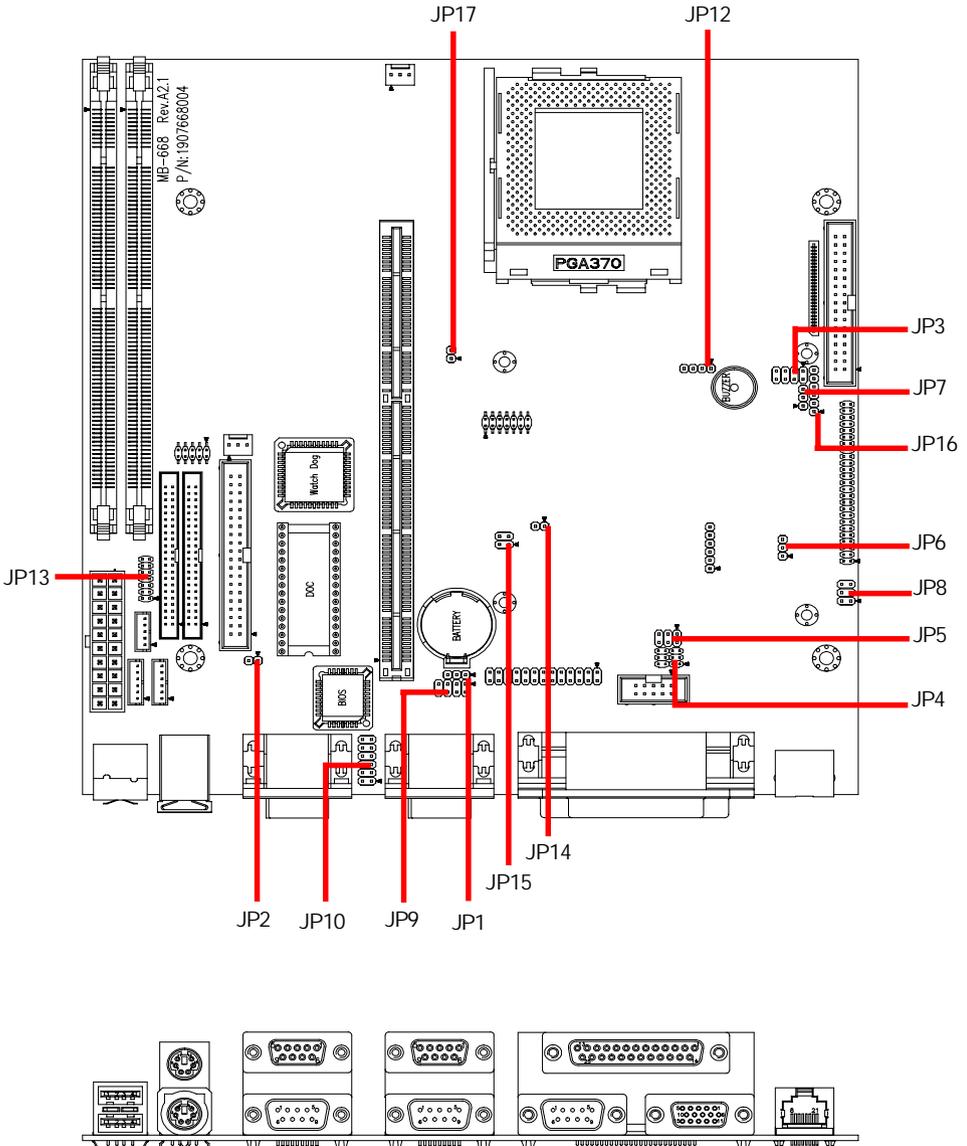
Board Layout



Installation

This chapter describes how to set up the main board hardware, including instructions on setting jumpers and connecting peripherals, switches, and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

Location of Jumpers



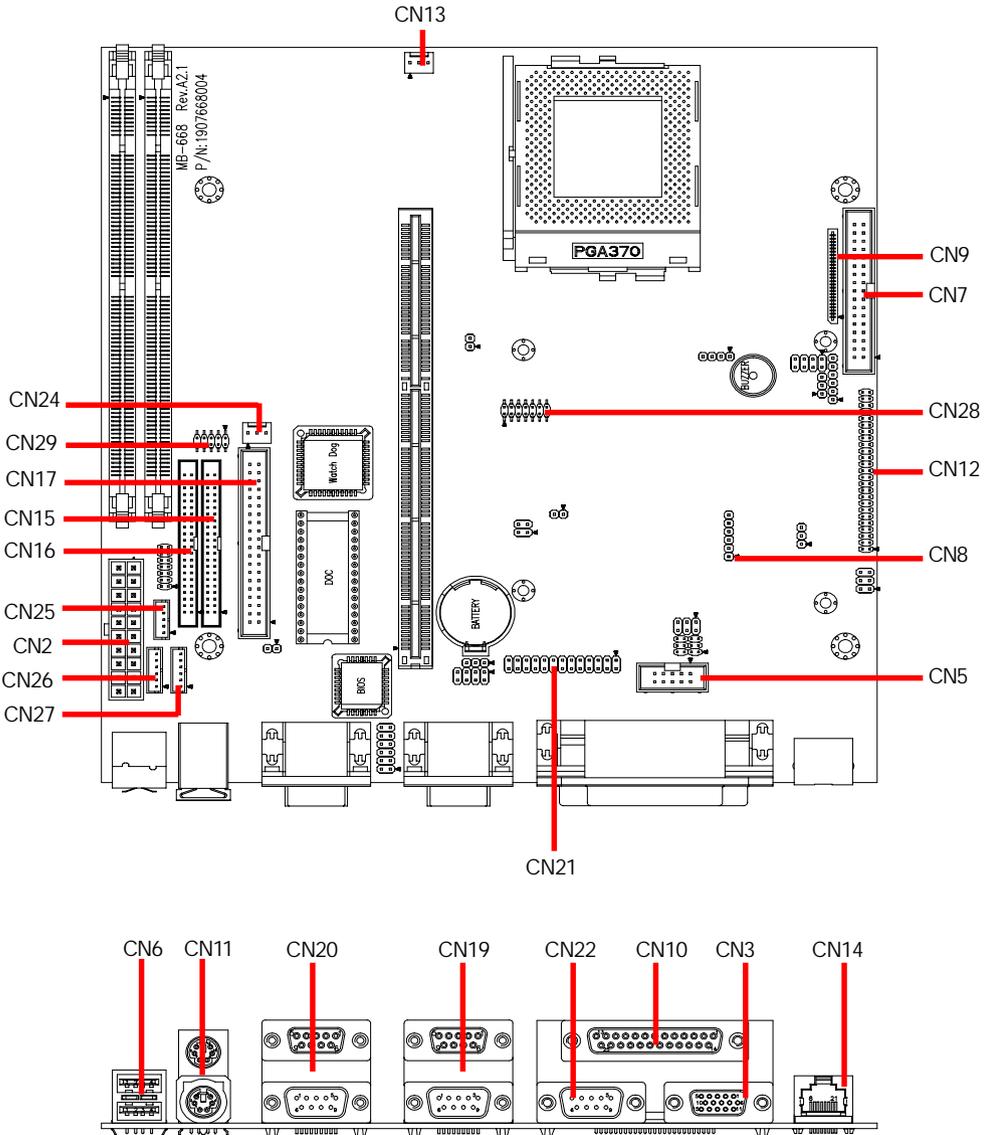
List of Jumpers

Jumpers allow users to manually customize system configurations to their suitable application needs.

The following chart consist the list of each jumper function:

Jumpers	
Label	Function
JP1	Clear CMOS Selection
JP2	Power ON Switch
JP3	Panel Type Selection
JP4,JP5	COM2 RS-232/422/485 Selection
JP6	LCD Panel Voltage Setting
JP7	LCD Clock Signal Selection
JP8	Ethernet Tx/Rx/Link LED Connector
JP9	COM3/COM4 RS-232/422/485 Selection
JP10	COM3/COM2 RI Function/Voltage Selection
JP12	Speaker (external) / Buzzer
JP13	System Status LED Pin Header
JP14	Power Reset Connector
JP15	DiskOnChip (DOC) Address Selection
JP16	IR Touchscreen Power Pin Header
JP17	100/66 Mhz Frequency Select

Location of Connectors



List of Connectors

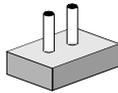
Connectors on board access link to external devices such as hard disk drives, a keyboard, or floppy drives.

The following consist the list of each connector function:

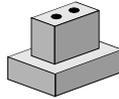
Connectors	
Label	Function
CN2	ATX Power Connector
CN10, CN21	Parallel Port 1 and 2 Connectors
CN5,CN19,CN20	Serial Port COM2, COM3 and COM4 Conn.
CN6, CN26	USB Connector
CN7	Floppy Drive Connector
CN8	IrDA Connector
CN9	(FPC) Floppy Drive Connector
CN3, CN12	Display Connectors (CRT and LCD)
CN11, CN27	Keyboard and Mouse Connector
CN13	CPU Fan Power Connector
CN14	RJ-45 Ethernet Connector
CN15	IDE LS-120 Connector
CN16	Primary IDE Hard Drive Connector
CN17	Secondary IDE Hard Drive Connector
CN22	Serial Port COM 1 Connector
CN24	System Fan Power Connector
CN25	LCD Backlight Power Connector
CN28	Audio Connector
CN29	Digital I/O Connector

Setting jumpers

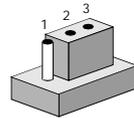
You can configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



Open



Closed



Closed 2-3

The jumper settings are schematically depicted in this manual as follows:



Open



Closed



Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

CPU installing and upgrading

You can upgrade to a more powerful Celeron CPU at any time. Simply remove the old CPU, install the new one, and set the jumpers for the new CPU speed.

Warning! Always disconnect the power cord from your chassis when you are working on it. Do not make connections while the power is on as sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the system chassis.



Caution! Always ground yourself to remove any static charge before touching the system board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.



Install a CPU in the FC-370 socket

MB-668 Series provides a Flip-Chip (FC) socket for easy CPU installation.

1. Make sure the FC-370 socket lever is in the upright position. To raise the lever, pull it out to the side a little and raise it as far as it will go.
2. Place the CPU in the empty socket. Follow the instructions that came with the CPU. If you have no instructions, do the following: Carefully align the CPU so it is parallel to the socket and the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Gently slide the CPU in. It should insert easily. If it doesn't, pull the lever up a little more.

3. Press the lever down. The plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. This normal and won't damage the CPU.

When the CPU is installed, the lever should snap into place at the side of the socket.

Note: To remove a CPU, pull the lever out to the side a little and raise it as far as it will go. Lift the CPU chip out.

When you install a new CPU, be sure to adjust the board settings, such as CPU type and CPU clock. Improper settings may damage the CPU.

Installing SDRAM (DIMMs)

System Memory

The upper edge of the MB-668 contains two sockets for 168 pins dual inline memory module (DIMM). The socket uses 3.3 V unbuffered synchronous (SDRAM). DIMM is available in capacities of 16, 32, 64, 128, or 256 MB. The socket can be filled in the DIMM of any size, giving your SBC-658 single board computer between 16 and 512 MB of memory.

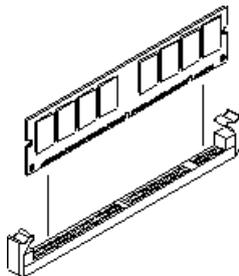
Supplementary information about DIMM

Your MB-668 can accept both regular and PC-100 SDRAM DIMM Module(with or without parity). The MB-668 can only accept PC-100 SDRAM DIMM Module.

Single-sided modules are typically 16 or 128 MB; double-sided modules are usually 32 or 256 MB.

Memory Installation Procedures

To install DIMM, first make sure the two handles of the DIMM socket are in the "open" position. i.e. The handles remain outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. (See Figure below) To take away the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.



Clear CMOS Selection (JP1)

Safety precautions in setting up clear CMOS must be taken, always place jumper on protect mode. In clearing CMOS, place jumper for just a second (follow clear CMOS illustration) then, immediately return jumper to protect mode.

* Protect			Clear CMOS		
1	2	3	1	2	3

* Default

COM2 RS-232/422/485 Selection (JP4,JP5)

JP4 and JP5 provides the user easy accessibility in manually setting RS-232/422/485 in COM2 configuration. Just follow the illustration for both JP4 and JP5 shown below:

	* RS-232				RS-422				RS-485			
JP4	1	4	7	10	1	4	7	10	1	4	7	10
	3	6	9	12	3	6	9	12	3	6	9	12
JP5	* RS-232				RS-422				RS-485			
	1	3	5		1	3	5		1	3	5	
	2	4	6		2	4	6		2	4	6	

* Default

LCD Panel Voltage Setting (JP6)

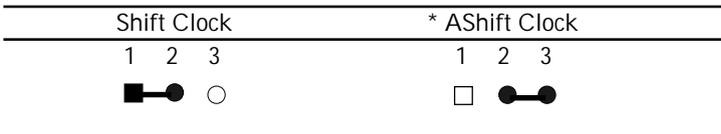
The LCD panel driving voltage is set by using JP6 jumper settings illustrated as follows:



* Default

LCD Clock Signal Selection (JP7)

The LCD clock control signal is set by using JP7 jumper settings illustrated as follows:



* Default

Ethernet Tx/Rx/Link LED Connector (JP8)

With ethernet Tx/Rx/Link LED indicator, the ethernet status can be trace up through LED indicator readings. The pin definitions are listed as follows:

Pin	Signal	Pin	Signal
1	Rx-LED	2	Vcc
3	Link LED	4	Vcc
5	Tx-LED	6	Vcc

COM3/COM4 RS-232/422/485 Selection (JP9)

By manually setting JP9, configurations for COM3/COM4 can be set corresponding with RS-232/422/485 selection. Please see illustration as follows:

* RS-232				RS-422				RS-485			
1	3	5	7	1	3	5	7	1	3	5	7
<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
2	4	6	8	2	4	6	8	2	4	6	8

* Default

COM3/COM2 RI Function/Voltage Selection (JP10)

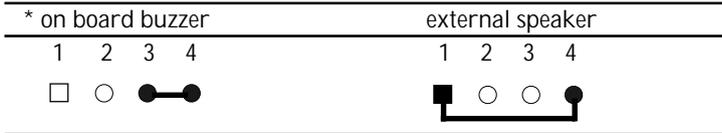
RI function or voltage selection configurations for COM3/COM2 can be set manually through jumper JP10. Jumper settings are illustrated as follows:

	* RI Function			+5Vout			+12Vout		
	1	3	5	1	3	5	1	3	5
COM3	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	2	4	6	2	4	6	2	4	6
	7	9	11	7	9	11	7	9	11
COM2	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	8	10	12	8	10	12	8	10	12

* Default

Speaker/Buzzer (JP12)

This onboard jumper provides users easy manual settings for on board buzzer and external speaker. By just following the illustration of the settings below:



* Default

System Status LED Pin Header (JP13)

LED indicator for system status, it serves as an early warning indicator and as well as a quick troubleshooting indicator. Just follow the pin definition for each 7 LEDs illustrated below:

Pin	Signal	Pin	Signal
1	Power_ON LED	2	Vcc
3	CPU_fan LED	4	Vcc
5	System_fan LED	6	Vcc
7	HDD_access LED	8	Vcc
9	Low_temperature LED (option)	10	Vcc
11	High_temperature LED (option)	12	Vcc
13	LAN_access LED	14	Vcc

DiskOnChip (DOC) Address Selection (JP15)

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. The DiskOnChip is a small plug and play Flash disk. It is easy to use. And it saves integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 16MB up to 288MB, unformatted. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with a standard 32-pin EPROM device.

D400	D800	DC00	* Disable
1 3	1 3	1 3	1 3
<input type="checkbox"/> ○	<input type="checkbox"/> ●	<input checked="" type="checkbox"/> ○	<input checked="" type="checkbox"/> ●
○ ○	○ ●	● ○	● ●
2 4	2 4	2 4	2 4

* Default

IR Touch Screen Power Pin Header (JP16)

This plug in jumper connection provides quick installation for the optional use of IR touch screen on display panels. Just refer to the pin definitions below:

Pin	Signal	Pin	Signal
1	Vcc	2	GND
3	N/C	4	N/C
5	N/C	6	N/C

100/66 Mhz Frequency Selection (JP17)

The end user can manually select the operating frequency with the use of jumper JP17. Illustrated setting as follows:

* 66 Mhz Frequency	100 Mhz Frequency
1 2	1 2
	<input type="checkbox"/> <input type="radio"/>

* Default

Note:

FC-PGA CPUs' frequency ratio are pre-locked within the CPUs. These CPUs run at fixed speed (frequency) regardless of the configurations listed above. If the CPU you are using requires a ratio higher than 5.5X, it is most likely pre-locked. This table is provided for those who are using older PPGA Celeron processors that do not have pre-locked multiplier.

ATX Power Connector (CN2)

For ease and reliability, a standard 20-pin ATX power supply connector is onboard. Which also provide positive plugging through it's guided and locking mechanism. Pin definitions as follows:

Pin	Signal	Pin	Signal
1	N/C	11	N/C
2	N/C	12	-12V
3	GND	13	GND
4	+5V	14	PON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	N/C	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

Parallel Port 1 Connector (CN10) and Parallel Port 2 Connector (CN21)

The mainboard is designed to support two parallel ports. Port 1 connector (CN10) also designated as LPT1 is a standard 25-pin D-sub connector specially prepared for external interface. And port 2 connector (CN21) designated as LPT2 in the form of a 13x2 pin header connector for embedded connection purposes. Both can be enabled and disabled in the BIOS system setup. For example if LPT1 is disabled, LPT2 or LPT3 is enabled. And if LPT2 is disabled, LPT1 or LPT3 is enabled. The pin definitions for both CN10 and CN21 are listed as follows: (Please turn to next page).

Parallel Port 1 Connector (CN10), 25-pin D-sub			
Pin	Signal	Pin	Signal
1	/STB	2	DO
3	D1	4	D2
5	D3	6	D4
7	D5	8	D6
9	D7	10	/ACK
11	BUST	12	PE
13	/SLCT	14	/AUTOFD
15	ERR	16	/INIT
17	/SLCTINI	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	GND

Parallel Port 2 Connector (CN21), 13x2 pin header			
Pin	Signal	Pin	Signal
1	/STB	2	/AUTOFD
3	DO	4	ERR
5	D1	6	/INIT
7	D2	8	/SLCTINI
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	/ACK	20	GND
21	BUST	22	GND
23	PE	24	GND
25	SLCT	26	N/C

Serial Port COM2, COM3 and COM4 Connectors (CN5), (CN19) and (CN20)

The availability of this interface allows connection of serial devices such as mouse, printer, etc.. Pin definitions as follows:

COM2 RS-232/422/485 (CN5)

Pin	Signal	Pin	Signal
1	CM2-1	6	NDSR2
2	CM2-2	7	NRTS2
3	CM2-3	8	NCTS2
4	CM2-4	9	INRI2
5	GND	10	N/C

COM3 RS-232/422/485 (CN19)

Pin	Signal	Pin	Signal
1	DCDA	10	ATXD+
2	RXDA	11	ATXD-
3	TXDA	12	ARXD+
4	DTRA	13	ARXD-
5	GND	14	GND
6	DSRA	15	N/C
7	RTSA	16	N/C
8	CTSA	17	N/C
9	RIA	18	GND

COM4 RS-232/422/485 (CN20)			
Pin	Signal	Pin	Signal
1	DCDB	10	BTXD+
2	RXDB	11	BTXD-
3	TXDB	12	BRXD+
4	DTRB	13	BRXD-
5	GND	14	GND
6	DSRB	15	N/C
7	RTSB	16	N/C
8	CTSB	17	N/C
9	RIB	18	GND

USB Connector (CN6) and (CN26)

MB-668 is equipped with a dual port USB onboard connector. It acquires the new generation of plug and play (Hot Plugging) feature, for both low speed and high speed devices. It could also be expanded up to 127 connections through USB hub. CN26 can be disabled in the BIOS system setup. Refer pin definitions as follows:

USB Connector (CN6)			
Pin	Signal	Pin	Signal
1	Vcc	5	Vcc
2	USB1-	6	USB0-
3	USB1+	7	USB0+
4	GND	8	GND

USB Connector (CN26), Pin header			
Pin	Signal	Pin	Signal
1	Vcc	4	GND
2	USB1-	5	USB0+
3	USB1+	6	USB0-

Floppy drive connector (CN7), FPC (CN9)

You can attach up to two floppy drives to the mainboard controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy chain drive connector cable for (CN7) is required for a dual-drive system. On one end of the cable is a 34-pin flat cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives). Plus an additional Flexible Printed Circuit (FPC) connector (CN9), extra drive means extra memory for your system. An ideal way for cost effective design.

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN7. Make sure that the red or blue wire corresponds to pin 1 on the connector. No worries for CN9 FPC connector, it's guided design for error free connection.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information. If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

Please refer to the pin definitions on the next page.

Floppy Drive Connector (CN7)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	DRIVE TYPE
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	HEAD SELECT
33	GND	34	DISK CHANGE

Note: Please refer to the next page for (CN9) pin definitions.

IrDA Connector (CN8)

How to install infrared module:

- 1.) Plug infrared module into IrDA connector. Caution must be taken with the connector's orientation before plugging into IrDA connector.
- 2.) Enable infrared function in the BIOS system setup.

IrDA connector pin definitions:

Pin	Signal	Pin	Signal
1	Vcc	4	GND
2	FIRx	5	IRTx
3	IRx	6	ClRx

(FPC) Floppy Drive Connector (CN9)

(FPC) Floppy Drive Connector (CN9)			
Pin	Signal	Pin	Signal
1	Vcc	2	INDEX
3	Vcc	4	DRIVE SELECT 2
5	Vcc	6	DISK CHANGE
7	N/C	8	Vcc
9	DENSITY SELECT	10	MOTOR 0
11	N/C	12	DIRECTION
13	Vcc	14	STEP
15	GND	16	WRITE DATA
17	GND	18	WRITE GATE
19	GND	20	TRACK 0
21	GND	22	WRITE PROTECT
23	GND	24	READ DATA
25	GND	26	HEAD SELECT

Display Connectors (CN3) and (CN12)

The MB-668's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD, and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays. (See pin definitions, next page).

VGA Display Connector (CN3)

A standard conventional D-sub connector is equipped to interface with conventional CRT displays. Refer to pin definitions as follows:

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	N/C
5	Chassis GND
6	Chassis GND
7	Chassis GND
8	Chassis GND
9	Vcc
10	Chassis GND
11	N/C
12	DDDA
13	H-SYNC
14	V-SYNC
15	DDCK

LCD display connector (CN12)

CN12 is a 50-pin, dual-in-line header used for flat panel displays.

When the MB-668's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the VGA interface is done completely via the software utility. You do not have to set any jumpers.

Pin	Signal	Pin	Signal
1	+12 V _{DC}	2	+12 V _{DC}
3	GND	4	GND
5	+5 V _{DC}	6	+5 V _{DC}
7	ENAVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHF CLK	36	FLM (V SYS)
37	M	38	LP (H SYS)
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

Keyboard and Mouse Connector (CN11) and (CN27)

The MB-668 provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. But in most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on-self-test (POST) after a reset if the keyboard is not present. The mainboard BIOS Advanced setup menu allows you to select "Present" or "Absent" under the "System Keyboard" section. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test). Take note that both can't be used simultaneously. Please refer to the pin definitions of both CN11 and CN27 listed below:

Keyboard and Mouse Connector (CN11), Dual mini-din connector			
Pin	Signal	Pin	Signal
1	KB DATA	7	MS DATA
2	MS DATA	8	N/C
3	GND	9	GND
4	Vcc	10	Vcc
5	KB CLOCK	11	MS CLOCK
6	MS CLOCK	12	N/C

Keyboard and Mouse Connector (CN27), 6-pin connector			
Pin	Signal	Pin	Signal
1	KB DATA	4	MS DATA
2	MS DATA	5	N/C
3	GND	6	GND

CPU and System Fan Power Connector (CN13) and (CN24)

Two 3-pin plug in and error free onboard connectors are located accessibly for trouble-free connection and disconnection. For CPU fan it is labeled CN13 and CN24 for system fan. Both pin definitions are listed below:

CPU Fan Power Connector (CN13)	
Pin	Signal
1	GND
2	+12V
3	fan speed sensor

System Fan Power Connector (CN24)	
Pin	Signal
1	GND
2	+12V
3	fan speed sensor

RJ-45 Ethernet Connector (CN14)

MB-668 is outfitted with a standard RJ-45 LAN connector. With support from Realtek RTL8139C chipset using either 10Mbps or 100Mbps are possible through it's N-way auto-negotiation featured operation. Refer to the pin definitions on the next page.

RJ-45 Ethernet Connector (CN14)			
Pin	Signal	Pin	Signal
1	TX+	5	N/C
2	TX-	6	RX-
3	RX+	7	N/C
4	N/C	8	N/C

IDE Hard Drive Connectors

IDE LS-120 Connector (CN15)

Primary IDE Hard Drive Connector (CN16)

Secondary IDE Hard Drive Connector (CN17)

You can attach up to three Enhanced Integrated Device Electronics hard disk drives to the mainboard's internal controller. The mainboard's IDE controller uses a PCI local-bus interface. This advance interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

Connecting the hard drive

Connecting drives, their done in a daisy-chain fashion and requires one of the three cables, depending on the drive size. 1.8" and 2.5" drives need one 44-pin to two 44-pin flat cable connector. 3.5" drives use one 44-pin to two 40-pin connector.

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

1. Connect one end of the cable to CN15, CN16 or CN17. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is marked and connectors are slotted.
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drives. (see your hard drive's documentation for the location of the connector).

Connect a second drive as described above.

continue to the next page

Unlike floppy drives, IDE hard drives can be connected to either end of the cable. The pin definitions for this section are listed below:

(Both CN15 and CN16 share the same pin definitions.)

IDE LS-120 Connector (CN15) and Primary HDD Connector (CN16)			
Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	ALE
29	N/C	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND
41	Vcc	42	MVcc
43	GND	44	N/C

Secondary IDE Hard Drive Connector (CN17)

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	ALE
29	N/C	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND

Serial Port COM1 (CN22)

This port is also readily available for quick connect and disconnect of serial devices like mouse, printer and etc.. Pin definitions are listed as follows:

Serial Port COM1 RS-232 (CN22)			
Pin	Signal	Pin	Signal
1	NRLSD1	6	NDSR1
2	NRXD1	7	NRTS1
3	NTXD1	8	NCTS1
4	NDTR1	9	NRI1
5	GND	10	GND

LCD Backlight Power Connector (CN25)

CN25 enables power transmission when connected from the main-board to the LCD panel for backlight lighting. Refer to the pin definitions below:

Pin	Signal
1	+12V ENB
2	GND
3	N/C
4	N/C
5	+5V ENB

Audio Connector (CN28)

MB-668 comes with an integrated 14-pin flat audio cable connector. Which provides major audio signal connections with the main-board. Below are the pin definitions for (CN28):

Pin	Signal	Pin	Signal
1	MIC_IN	2	MIC_Vcc
3	GND	4	CD_GND
5	LINE_IN Left	6	CD_Left
7	LINE_IN Right	8	CD_GND
9	GND1	10	CD_Right
11	Audio OUT Left	12	Audio OUT Right
13	GND	14	GND

Digital I/O Connector (CN29)

MB-668 offers digital I/O functions connector for easy access and link with digital devices. (Input 4031: GPI15 [bit7]; Input 4032: GPI17 [bit1], GPI18 [bit2], GPI19 [bit3]; Output 4036: GPO17 [bit1], GPO 18 [bit2], GPO19 [bit3], GPO20 [bit4]) The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	DIO_IN1	2	DIO_IN2
3	DIO_IN3	4	DIO_IN4
5	DIO_OUT1	6	DIO_OUT2
7	DIO_OUT3	8	DIO_OUT4
9	Vcc	10	GND

CHAPTER 3

Award BIOS Setup

This chapter describes how to configure the BIOS for the system.

Starting setup

The Award BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:

1. By pressing Del immediately after switching the system on, or
2. By pressing Del or pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing Ctr-Alt-Del. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Setup keys

These keys help you navigate in Award BIOS:

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc	Main Menu: Quit and not save changes into CMOS RAM Other pages: Exit current page and return to Main Menu
PgUP/+	Increase the numeric value or make changes
PgDn/-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Change color from total 16 colors. F2 to select color forward, Shift-F2 to select color backward
F3	Calendar, only for Status Page Setup Menu
F4	Reserved
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F8	Reserved
F9	Reserved
F10	Save all the CMOS changes, only for Main Menu

Getting help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press Esc or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the Award-BIOS supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing Insert; when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing Ctrl-Alt-Delete.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Award Software or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may cause the system to become unstable.

Main setup Menu



Standard CMOS	Options in the original PC AT-compatible BIOS.
BIOS Features	Award Software enhanced BIOS options.
Chipset Features	Options specific to your system chipset.
Power Management	Advanced Power Management (APM) options.
PnP/PCI Configuration	Plug and Play standard and PCI Local Bus configuration options.
Integrated Peripherals	I/O subsystems that depend on the integrated peripherals controller in your system.
Supervisor/User Password Setting	Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access.
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk parameters.

Load BIOS Defaults	BIOS defaults are factory settings for the most stable, minimal-performance system operations.
Load Setup Defaults	Setup defaults are factory settings for optimal-performance system operations.
Save & Exit Setup	Save settings in nonvolatile CMOS RAM and exit Setup.
Exit Without Save	Abandon all changes and exit Setup.

This standard setup menu allows users to configure system components such as the date, time, hard disk drive, floppy drive, display, and memory. Online help for each field can be accessed by pressing F1.

Date and Time Configuration

The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

HARD DISKS

The BIOS supports up to two IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

NOTE: We recommend that you select type AUTO for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detects its specifications during POST, every time the system boots.

If you do not want to select drive type AUTO, other methods of

selecting the drive type are available:

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.
2. Select USER and enter values into each drive parameter field.
3. Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

- **Type:** The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.
- **Size:** Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.
- **Cyls:** Number of cylinders
- **Head:** Number of heads
- **Precomp:** Write precompensation cylinder
- **Landz:** Landing zone
- **Sector:** Number of sectors
- **Mode:** Auto, Normal, large, or LBA
 - **Auto:** The BIOS automatically determines the optimal mode.
 - **Normal:** Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.
 - **Large:** For drives that do not support LBA and have more than 1024 cylinders.

- **LBA** (Logical Block Addressing): During drive accesses, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

Drive A

Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

LCD & CRT

This field may appear as an alternative to The Video field. select your video display device:

LCD	Liquid crystal display
CRT	Auxiliary monitor
Both	Display on both devices

Pannel:

This selection item allow user to select LCD BIOS to match the LCD types.

Halt On

During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

These are the selections:

- **No errors:** POST does not stop for any errors.
- **All errors If:** the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
- **All, But Keyboard:** POST does not stop for a keyboard error, but stops for all other errors. All, But Diskette POST does not stop for diskette drive errors, but stops for all other errors.
- **All, But Disk/Key:** POST does not stop for a keyboard or disk error, but stops for all other errors.

Memory

You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

•Base Memory

Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

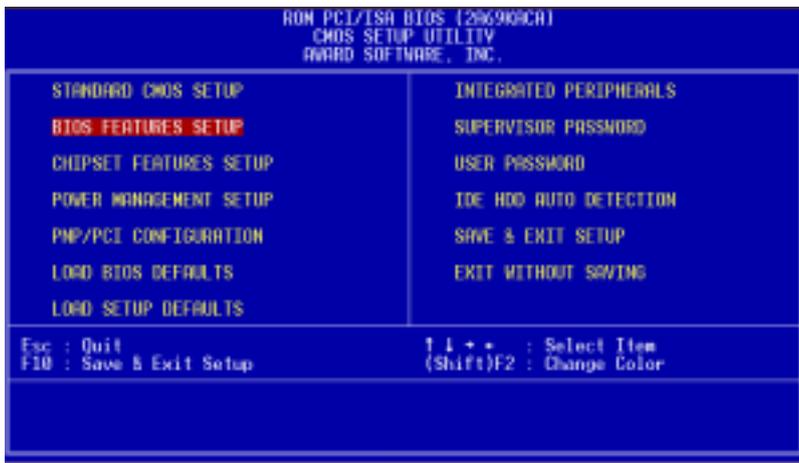
•Extended Memory

Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

•Other Memory

Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.

BIOS features setup



By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed.



The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

CPU Internal Cache/External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

The External Cache field may not appear if your system does not have external cache memory.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on-self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

Boot Up from LAN

When enabled, the BIOS attempts to boot from a LAN boot image before it attempts to boot from a local storage device.

The Choice: Disabled, Enabled

Boot Sequence

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, the BIOS now offers many boot sequence options.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

Boot Up Floppy Seek

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting- Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled

Typematic Rate (Chars/Sec)- Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30

Typematic Dealy (Msec)- Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

OS Select For DRAM>64MB-Select the operating system that is running with greater than 64MB or RAM on the system.

The choice: Non-OS2, OS2

Report No FDD For WIN 95- Wheather report no FDD for WIn 95 or not.

The choice: Yes, no

Shadow

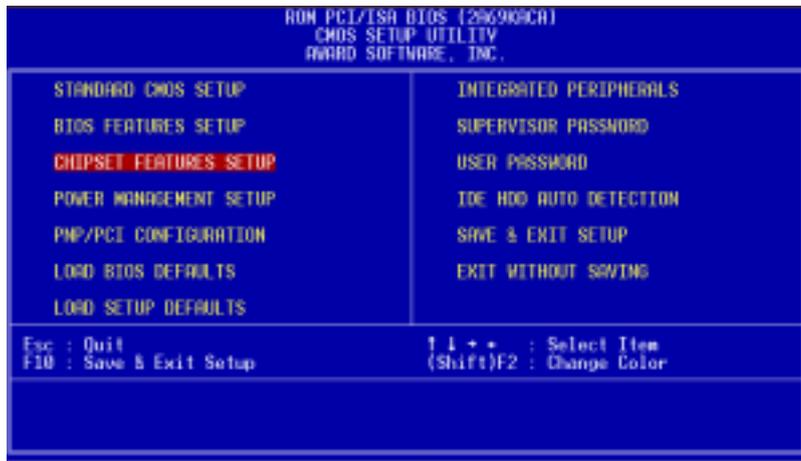
Software that resides in a read-only memory (ROM) chip on a device is called firmware. The AwardBIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C8000-DFFFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

CHIPSET features setup



By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed.



The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as SDRAM. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Because of the complexity and technical nature of some of the options, not all of the options are described here.

SDRAM RAS-to-CAS Delay

This field lets you control the number of DCLKs between a Row Activate command and a read or write command.

SDRAM RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. This field applies only if synchronous DRAM is installed in the system.

SDRAM CAS Latency Time

When synchronous DRAM is installed, you can control the number of CLKs between when the SDRAMs sample a read command and when the controller samples read data from the SDRAMs. Do not reset this field from the default value specified by the system designer.

SDRAM Precharge Control

When Enabled, all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

DRAM Data Integrity Mode

Select Non-ECC or ECC (error-correcting code), according to the type of installed DRAM.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Video RAM Cacheable

Selecting Enabled allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.

8/16 Bit I/O Recovery Time

The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.

These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

Memory Hole at 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

Passive Release

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

Auto Detect DIMM/PCI Clk

When the Auto Detect DIMM/PCI clk enable, the Utility will automatically detect the DIMM/PCI clock in your system.

Spread Spectrum

When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device

High Limit Temperature Warning

When the single board computer exceeds the high limit temperature warning level, the buzzer will sound and the LED will flash.

Low Limit Temperature Warning

When the single board computer exceeds the low limit temperature warning level, the buzzer will sound and the LED will flash.

IN0, IN1, IN2, +5V,-5V,+12V,-12V

These fields display the current voltage of up to seven voltage input lines, if your computer contains a monitoring system.

The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the section for each mode, below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

Video Off Method

Determines the manner in which the monitor is blanked.

V/H SYNC+Blank	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

Video Off After

As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Doze Mode

After the selected period of system inactivity, the CPU clock throttles to a small percentage of its duty cycle between 10 percent and 25 percent for most chipsets. All other devices still operate at full speed.

Standby Mode

After the selected period of system inactivity, the CPU clock stops, the hard drive enters an idle state, and the L2 cache enters a power-save mode. All other devices still operate at full speed.

Suspend Mode

After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes.

HDD Power Down

After the selected period of drive inactivity, any system IDE devices compatible with the ATA-2 specification or later power manage themselves, putting themselves into an idle state after the specified timeout and then waking themselves up when accessed.

Throttle Duty Cycle

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

PCI/VGA Act Minus Monitor

When Enabled, any video activity restarts the global timer for Standby mode.

Soft-OFF by Power Button

Pressing the power button for more than 4 seconds forces the system to enter the soft-off state when the system has "hung"

The Choice: Delay 4 seconds, instant off

CPU FAN off in Suspend

During the suspend mode the CPU fan can be turned off.

The Choice: Enabled, disabled

Power on by Ring

An input signal on the serial ring indicator (in other words an incoming call on the modem) awakens the system from a soft off state.

Wake Up On LAN

The motherboard enabled or disabled will execute a wake up process whenever LAN (Realtech 8139C) receives a wake up event such as a magic packet.

The Choice: Disabled, Enabled

IRQ8 Break [Event From] Suspend

You can select Enabled or Disabled for monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Reload Global Timer Events

When Enabled, an event occurring on each device listed below restarts the global timer for Standby mode.

IRQ3-7, 9-15, NMI

Primary IDE 0

Primary IDE 1

Floppy Disk

Serial Port

Parallel Port

The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

NOTE: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

Resources Controlled By

The Plug and Play AwardBIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

Assign IRQ for VGA

If you are not using your system's VGA controller, select Disabled to free the IRQ resource.

Assign IRQ for USB

Select Enabled if your system has a USB controller and you have one or more USB devices connected. By selecting Disabled setting there is no IRQ resource for USB controller.

Load BIOS defaults/Load setup defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. The BIOS DEFAULTS provides the most stable settings, though they do not provide optimal performance. LOAD SETUP DEFAULTS, on the other hand, provides for maximum system performance. If the stored record created by the setup utility becomes corrupted (and therefore unusable), BIOS defaults will load automatically when you turn the system on.



Integrated peripherals setup



By choosing the INTEGRATED PERIPHERALS option from the initial SETUP SCREEN menu, the screen below is displayed.



The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

IDE Primary Master/Slave UDMA

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

On-Chip PCI IDE Primary

The system chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Init Display First

This item allows you to active PCI slot or onboard first.

The choice: PCI slot, onboard

KBC input clock

The system designer must select the correct frequency for the keyboard controller input clock. Do not change this from the default value.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

UART Mode Select

Select an operating mode for the second serial port:

Normal	RS-232C serial port
Standard	RS-232C serial port
IrDA 1.0	Infrared port compliant with IrDA 1.0 specification
IrDA SIR	IrDA-compliant serial infrared port
IrDA MIR	1 MB/sec infrared port
IrDA FIR	Fast infrared standard
FIR	Fast infrared standard
MIR 0.57M	0.57-MB/sec infrared port
MIR 1.15M	1.15-MB/sec infrared port
Sharp IR	4-MB/sec data transmission
HPSIR	IrDA-compliant serial infrared prot
ASK IR	Amplitude shift keyed infrared port

UART2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

Onboard Serial Ports (1, 2, 3, 4)

Normally, the main board's I/O chips will occupy a certain portion of memory space. For each I/O device the computer provides an I/O address. The more devices attached the more address needed to organize the memory storage areas. If all the I/O devices were run through the same address, your devices would come to a near halt. By providing the end user with four serial ports this allows devices to run more efficiently if needed.

Selections of logical COM port addresses are as follows. (3F8, 3E8H, 2F8, 2E8H)

RxD, TxD Active

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

Parallel Port Mode

Two bi-directional parallel ports. Supports SPP, ECP, EPP, ECP + EPP.

ECP Mode Use DMA

Select a DMA channel for the port.

EPP Mode select

Select EPP port type 1.7 or 1.9.

IR Transmission Delay

Disable setting will have no transmission delay when SIR is changed from RX mode to TX mode.

Enabled setting will delay transmission for 4 characters time when SIR is changed from RX mode to TX mode.

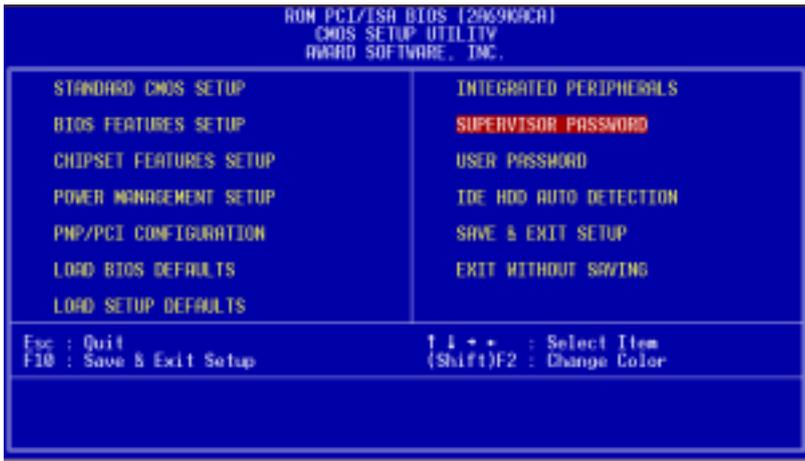
Onboard Parallel Port

Select a logical LPT port address and corresponding interrupt for the physical parallel port

The Choice: 278H, 378, disabled

Supervisor/User password setting

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.



When you select this function, a message appears at the center of the screen:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

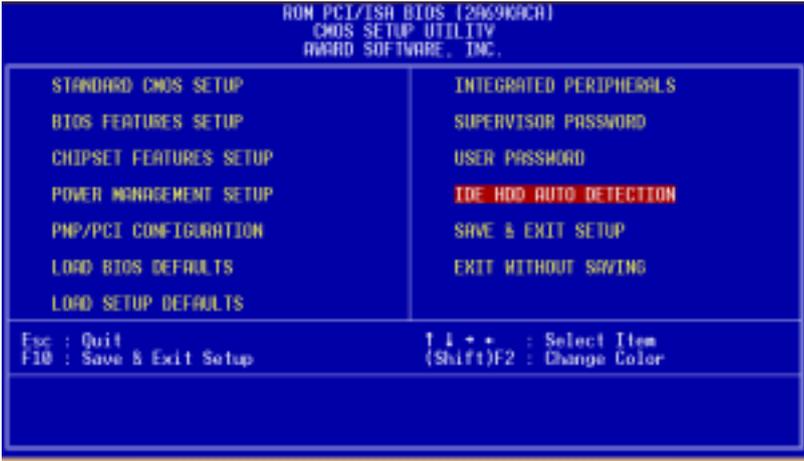
System Enter a password each time the system boots and when ever you enter Setup.

Setup Enter a password when ever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

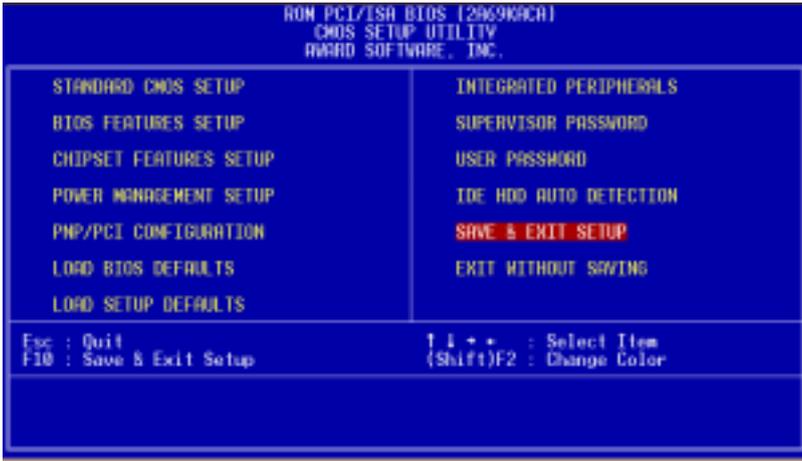
IDE HDD auto detection

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration. You need to repeat the setup for each of the IDE combinations:



Save & exit setup

If you select this option and press <ENTER>, the values entered in the setup utility will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.



Flat Panel/CRT Controller Display Drivers and Utilities

This chapter provides information about:

- Driver types and installation

Software Drivers

This chapter describes the operation and installation of the display drivers supplied on the Supporting CD-ROM that are shipped with your product.

The onboard VGA adapter is based on the CHIPS VGA Flat Panel/CRT controller and is fully IBM VGA compatible. This controller offers a large set of extended functions and higher resolutions. If you intend to use your VGA adapter in standard VGA modes only, you do not need to install any of these drivers. Since your VGA adapter is fully compatible, it does not require any special drivers to operate in standard modes.

The purpose of the enclosed software drivers is to take advantage of the extended features of the CHIPS VGA Flat Panel/CRT controller.

Hardware configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.

Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver from the Supporting CD-ROM, you should:

- Know how to copy files from a CD-ROM to a directory on the hard disk
- Understand the MS-DOS directory structure

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information before you proceed with the installation.

Before you begin

Make sure you know the version of the application for which you are installing drivers. The Supporting CD-ROM contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

Windows® 95

These drivers are designed to work with Microsoft® Windows®. You can install these drivers through the Windows® operating system.

Driver installation

1. Install Windows® 95 as you normally would for a VGA display. Click the Start button, go to Settings and click on Control Panel. Choose the Display icon and double click on the icon. In the Display Properties window, show as figure 1:

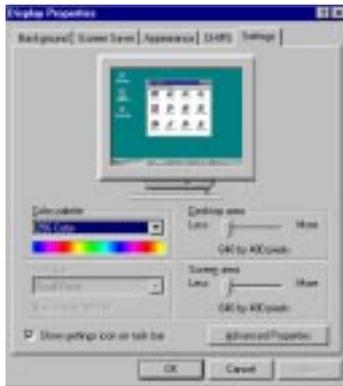


figure 1

Click the setting button, then click the Advanced Properties icon into the Advanced Display properties windows, show as figure2:



figure 2

click on Change Display Type. In the Change Display Type window, click on the Change button under Adapter Type into the select Device window show as figure 3: This will bring up the Select Device window.



figure 3

2. Place the Supporting CD-ROM in your CD-ROM drive.

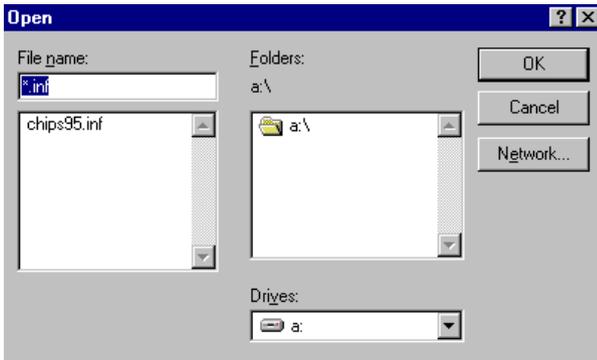


figure 4

In the Select Device window, click on Have Disk, Select Browse, and find the Win95 driver "chips95.inf" in the Supporting CD-ROM:

cd-rom: \CD ROM\model name\driver\vga driver
 \win95\chips95.inf and then click OK.

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

The name of the Chips And Tech " 69000 PCI " driver will appear highlighted in the Models list box how as figure. Click OK to start the driver installation show as figure 5:

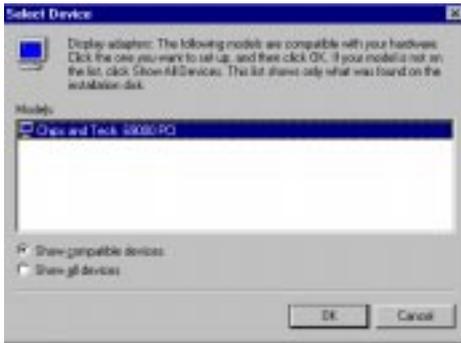


figure 5

3. Once the installation is complete, the Advanced display Properties window will reappear. Show as figure 6:



figure 6

Click on close to close the window. Then the Display Properties window will reappear. Show as figure 7:

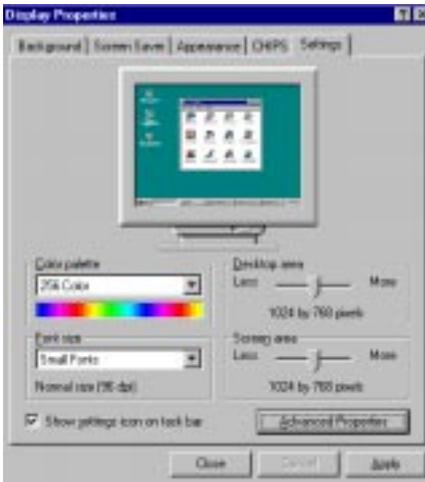


figure 7

Click on Apply. Restart the system for the new settings to take effect, show as figure 8:



figure 8

Windows® 3.1

These drivers are designed to work with Microsoft Windows Version 3.1. You should install these drivers through Windows.

Driver installation

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.
2. Place the Supporting CD-ROM into your CD-ROM drive. In Windows Program Manager, choose File from the Options Menu. Then from the pull-down menu, choose Run. At the Command Line prompt, type.

```
cd-rom:\CD ROM\model name\driver\vga driver\win31\setup.exe
```

Press the <ENTER> key or click OK to begin the installation.

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

At this point the setup program locates the directory where Windows is installed. For proper operation, the drivers must be installed in the Windows subdirectory.

3. Press <ENTER> to complete the installation. Once completed, you can find the icon Chips CPL under the Control Panel. The icon allows you to select and load the installed drivers.

OS/2

These drivers are designed to function with the OS/2 Version 4.0, 3.0 and 2.11 operating systems.

To install this driver, do the following steps:

1. Open an OS/2 full screen or windowed session.
2. Place the Supporting CD-ROM into your CD-ROM drive.
3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

```
cd-rom :\CD ROM\model name\driver\vga driver\os2\setup.cmd
```

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

When the Setup Program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

A log of the information output during the install can be found in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:
 1. Open the OS/2 System folder.
 2. Open the System Setup folder.
 3. Open the Display Driver Install Object.

This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

4. When the Display Driver Install window appears, select Primary Display and then select OK.
5. When the Primary Display Driver List window appears, select "Chips and Technologies 69000" from the list of adapter types, then select OK or install the video driver.

6. When the installation is complete, you will need to shut down and then restart the system for the changes to take effect. Make sure to remove the installation diskette before restarting the system.

Windows® NT 3.51

These drivers are designed to work with Microsoft® Windows®.

Driver installation

1. Install Windows® NT 3.51 as you normally would for a VGA display. Click the Start button, go to Settings and click on Control Panel icon. Then choose the Display and double click on the icon. In the Display Properties window, click the Setting button, then click the Display Type button into the Display Type windows, then click on Change button from the Adapter Type icon. And click on Have Disk button in the change display window.
2. Place the Supporting CD-ROM into your CD-ROM drive.

and type:

```
cd-rom: \CD ROM\model name\drive\vga drive\  
win98 nt\windows.nt\nt35\Oemsetup.inf
```

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

Select the adapter "Chips and Tech 69000PCI" and click OK.

Click on Install to install the selected driver. Once the installation is complete, shut down and restart the system.

Driver installation

1. Install Windows® 98 as you normally would for a VGA display. Click the Start button, go to Settings and click on Control Panel icon. Then choose the Display and double click on the icon. In the Display Properties window, click the Setting button from the Display Type window, and click on Advanced button in the change display window. Next select the Adapter menu from the many tabs in the Advanced window. Then select Change from the adapter menu. A Update Device Driver Wizard will appear, click on the Next button at the bottom. The next Driver Wizard window will provide you with two choices, select Display a list of all the Drivers in a specific location, so you can select the driver you want. Following select the Have Disk option. You will be asked to provide the manufacturers file from a certain location, select your CD-ROM drive and click on Browse.

2. Place the Supporting CD-ROM into your CD-ROM drive. In the Select Device window, click on Have Disk, select "Browse" and find the WIN 98 driver from:

```
cd-rom : \CD ROM\model name\driver\vga driver\win98  
\windows.\Oemsetup.inf
```

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

and then click OK. The name of the Chips and Technologies, Inc. Video Controller driver will appear highlighted in the Modules list box. Select Chips and Tech. 69000 and Click OK. Click OK to start the driver installation.

3. Once the installation is complete, the Change Display Type window will reappear. Click on close to close the window. Then the Display Properties window will reappear. Click on Apply. Restart the system for the new settings to take effect.

Windows® NT 4.0

Driver installation

1. Install Windows® NT 4.0 as you normally would for a VGA display. Click the Start button, go to Settings and click on Control Panel icon. Then choose the Display and double click on the icon. In the Display Properties window, click the Setting button, then click the Display Type button into the Display Type windows, then click on Change button from the Adapter Type icon. And click on Have Disk button in the change display window.
2. Place the Supporting CD-ROM into your CD-ROM drive. In the Select Device window, click on Have Disk, select "Browse" and find the NT 4.0 driver from:

```
cd-rom : \CD ROM\model name\driver\vga driver\          win98  
nt\windows.nt\nt40\Oemsetup.inf
```

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

and then click OK. The name of the Chips and Technologies, Inc. Video Controller driver will appear highlighted in the Modules list box. Select Chips and Tech. 69000 and Click OK. Click OK to start the driver installation.

3. Once the installation is complete, the Change Display Type window will reappear. Click on close to close the window. Then the Display Properties window will reappear. Click on Apply. Restart the system for the new settings to take effect.

Ethernet Software Configuration

This chapter describes how to configure the Ethernet Card to match your application requirements.

Ethernet Driver Installation Windows 98

To install the LAN Driver for Realtech 8139.C 10/100 Base Tx RJ-45 follow the directions listed below.

Click on the start button, select the setting button then select Control Panel from the list of icons. Double click on the ADD NEW HARDWARE icon in the control panel page. Follow the Set Up Wizard to install the LAN Driver.

When asked, DO YOU WANT WINDOWS TO SEARCH FOR YOUR NEW HARDWARE?

Select, No I want to select the hardware from a list. Choose the network adapter option from the ADD NEW HARDWARE WIZARD. Then click the have disk button followed by the browse button.

Place the Supporting CD-ROM into your CD-ROM drive. In the Select Device window, click on Have Disk, select "Browse" and find the LAN 8139C driver from:

cd-rom : \CD ROM\model name\driver\LAN driver\
win98\windows\Oemsetup.inf

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

and then click OK. The name of the LAN REALTECH 8139C driver will appear highlighted in the Modules list box. Select Realtech 8139C and Click OK. Click OK to start the driver installation.

Once the installation is complete, restart the system for the new settings to take effect.

Ethernet software configuration

The onboard Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Award BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, please refer to the following instruction:

1. Power the mainboard on. Ensure that the RSET8139.EXE file is located in the working drive.
2. At the prompt, type RSET8139.EXE and press <ENTER>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and DOWN keys. To change a selected item, press <ENTER>, and a screen will appear with the available options. Highlight your option and press <ENTER>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and the configuration is what you want, press <ESC>. A prompt will appear asking if you want to save the configuration. Press "Y" if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen which shows the format and result of any diagnostic tests undertaken.

Audio Setup

This MB 668 is equipped with an audio interface that records and playback CD-quality audio. This chapter provides instructions for installing the software drivers on the included CDROM.

Introduction

The MB-668 on board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the ESS Solo-1 audio controller from ESS Labs, Inc. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

The MB-668 on board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for the audio, FM, and MPU-401 logical devices. It is compatible with Sound Blaster[®], Sound Blaster Pro[®] version 3.01, voice and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

Setting Up in Windows 98

The Supporting CD-ROM contains the Windows 98 drivers. Please see the online help for details.



Note: Refer to your Windows 98 manual or online help for any questions on Windows 98.

Installing the Drivers and the Application

After turning on the system, Windows 98 begins loading and starts detecting new hardware installed on the system.



Tip: If you want to install the drivers manually, or your Windows 98 does not detect the new audio hardware, please perform the same installation procedure as described in NT 4.0 setion.

1. When Windows 98 detects the presence of the onboard audio chip, it begins to build the ESS Solo-1 driver database. The New Hardware Found dialog box displays.
2. Select Driver from disk provided by hardware manufacturer and click on OK. Windows 98 prompts you for the driver disk.
3. Specify the path of the Supporting CD-ROM as follows, then click on OK. The system will copy the necessary driver files to your hard disk drive.

cd-rom: \CD ROM\model name\driver\sound\audio
\English\OEMSETUP

"cd-rom": the driver letter of your CD-ROM drive

"model name": the model number of your product



Tip: Prepare the Windows 98 CD-ROM disk before setting up the onboard audio. Windows 98 will prompt you to insert the Windows 98 CD-ROM disk when you install the joystick or MIDI device.



Note: If the file being copied is older than the file currently existing in your system, we suggest you to keep the existing file.

4. Windows 98 makes changes to the system settings and begins detecting the following new hardware components:
 - Gameport Joystick
 - ES1938 PCI Audio Drive
 - ES1938 DOS Emulation
5. Upon initial installation, the setup process begins setting up the software.
6. Windows 98 makes final changes to the system settings, and you will be prompted to re-boot the system.

Setting Up in NT4.0

Installing the Audio Drivers

Follow these steps to install the audio drivers:

Driver installation

1. Execute the installation wizard named "SETUP" in the following directory:
cd-rom : \CD ROM\model name\driver\Audio\Ctrun
"cd-rom" : the drive letter of your CD-ROM drive
"model name" : the model number of your product
2. After the ESS Solo-1 Audio Drive Installation window shows up, click on the Next button.
3. Simply follow the instructions to finish the installation.

Programming the Watchdog Timer

The mainboard is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial stand-alone and unmanned environments.

Programming the watchdog timer

How to program the WATCHDOG TIMER

1. To set the time-out interval of watchdog timer:
 - output the desired value to port 0x443. Since the data is of 1 byte, the maximum value will be 255. In our design 2 ~ 255 will denote 2 ~ 255 sec.
 - `outportb(0x443, 30 <HEX>); // set watchdog to 30 seconds`
2. To set the time-out event:
 - output data to port 0x444,
 - `Timeout=SEC.Q=1`
 - `WDRST=IRQSET=3 & TIMEOUT`
 - `IRQ15=IRQSET=2 & TIMEOUT`
 - `IRQ11=IRQSET=4 & TIMEOUT`
 - `IRQ10=IRQSET=5 & TIMEOUT`

 - `outportb(0x444, 3); // set time-out event to reset-system`
3. To disable watchdog timer:
 - output value 0 to port 0x443
 - `outportb(0x443, 0); // disable watchdog timer`
4. To enable or refresh watchdog timer (the watchdog timer will return to its initial value, then count down):
 - access the I/O port 0x443, e.g.

```
outportb(0x443, data); // refresh watchdog timer
```

* note: if you want to refresh the watchdog timer, you have to disable it first.

Demo program

```
outportb(0x444, 3); // set time-out event to reset-system
outportb(0x443, 10); // set time-out interval to 16 seconds
customer_job(); // execute your job here, be sure your
                // job will finished within 16 seconds
outportb(0x443, 0); // refresh watchdog timer, otherwise
                    // the system will reset after time-out
outportb(0x443, 20); // set time-out interval to 32 seconds
another_job(); // another job finished in 32 seconds
outportb(0x443, 0) // disable watchdog timer
...
...
```