

SBC-659

Half-size Intel FC-370 Pentium III CPU
Card with Intel 815E chipset, Dual LAN,
Audio, Dual COMs, LCD & 4 USB.

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A Message to the Customer

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Each and every AAEON product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new AAEON equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name AAEON has come to be known.

Your satisfaction is our primary concern. Here is a guide to AAEON's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your AAEON products. In fact, most problems reported are minor and are able to be easily solved over the phone.

In addition, free technical support is available from AAEON engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

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AAEON warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of shipment.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by AAEON, or which have been subject to misuse, abuse, accident or improper installation. AAEON assumes no liability under the terms of this warranty as a consequence of such events.

Because of AAEON's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an AAEON product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, AAEON products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing list

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

- 1 SBC-659 Half- size Single Board Computer Card
- 1 Quick Installation Guide
- 1 Support CD contains the followings:
 - User's Manual (this manual in PDF file)
 - Ethernet driver and utilities
 - VGA driver and utilities
 - Audio driver and utilities

- 1 floppy disk drive interface cable (34-pin, pitch 2.0mm)
- 1 IDE hard disk drive cable (40-pin, pitch 2.54mm)
- 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 SBC-659 board. This user's manual is designed to help you to get the most out of the SBC-659, 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

If your requirements for a single board computer consist of a half-sized footprint, dual Ethernet, pure PCI interface and Intel quality logic chipset, then SBC-659 is the solution. This half-sized single board computer is ideal for internet data access server.

The dual Ethernet socket ensures consistent high server throughput and transparent backup connections in corporate servers. Two RJ-45 connectors controlled by two separate chipsets, Intel 815E and Intel 82559GD both offering 10/100Base Ethernet interface.

The processors used on this single board computer may vary, however to acquire the full potential of this embedded computer we suggest Intel Celeron or Pentium III offering 300~766MHz (With system bus frequencies of 66 MHz), 450-850 MHz (With system bus frequencies of 100MHz), or 533-1GHz (With system bus frequencies of 133MHz). The logic chipset onboard is entirely Intel, controlling the LCD, LAN and audio functions.

This half-sized board features our first built in audio interface, supporting microphone in, line in/out, speaker out and CD in capabilities. Codec job tasking are performed by ALC 200 chip. The VGA has a display memory size of 4MB, supporting non-interlaced CRT and up to 18/36-bit LCD through DVI/DVO module.

On the solder side we offer a 144-pin SODIMM socket providing a maximum of 256MB of memory. A compact flash connector is provided onboard. For expansion modules a PC/104 + connector is integrated into this half-sized card.

SBC-659 supports one IDE device, dual floppy disk, four USB ports onboard, two RS-232 serial ports and of which one can be configured as RS-232/422/485. The single bi-directional parallel ports can support SPP, ECP and EPP modes. The standard ATX power connector enables this half sized SBC to be operated without a backplane if necessary.

Features

- Supports Intel Celeron /Pentium III FC-370 CPUs
- High Speed AGP 2X for VGA function onboard (Intel 815E built in)
- Two 10/100 Base-T Fast Ethernet (Intel 815 E built in and Intel 82559GD)
- Supports H/W status monitoring
- Integrated AC-97 2.1 SoundBlaster compatible PCI 3D Audio
- Onboard Intel 815E controller supports 18/36-bit TFT panel
- Supports Compact Flash Memory
- Supports PC-104 Plus modules
- Four USB ports onboard
- Two COM ports onboard
- DVI interface onboard
- Pure PCI interface, supports ISA through backplane

Specifications

Standard LPX-size SBC functions

- **CPU:** FC-370 Pentium III (Coppermine), Celeron, and compatible CPUs (With system bus frequencies of 66/100/133MHz).
- **CPU socket:** 370 pins Socket
- **BIOS:** Award 2 MB Flash BIOS
- **Chipset:** Intel 815E
- **I/O chipset:** ITE IT8712F.
- **Memory :** Onboard one 144 pins SODIMM socket supports up to 256Mbytes SDRAM (PC-100/133 SDRAM supported).
- **Enhanced IDE:** One IDE channel. Support Ultra DMA/ 100 mode with data transfer rate of 100MB/sec.
- **FDD interface:** Supports two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB).
- **Parallel port:** One bi-directional parallel ports. Supports SPP, ECP, and EPP modes.
- **Serial port:** Two RS-232 serial ports can be configured as COM1, COM2, COM3, COM4, or disabled individually and of which one and be configured as RS-232/422/485 (COM2). (16C550 equivalent).
- **IRDA interface:** Supports SIR and CIR
- **KB/Mouse connector :** 6-pin mini-DIN connector supports PC/AT keyboard and PS/2 mouse and wake on KBD function.
- **USB connectors:** 10-pin onboard connector supports four USB ports.
- **Battery:** Lithium battery for data retention
- **Watchdog timer:** Can generate a system reset, IRQ15, or NMI. 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:** Supports ATX power supply. I/O peripheral support power saving and doze/standby/suspend modes. APM 1.2 compliant.

- **H/W status monitoring:** Embedded in ITE 8712 supports power, supply voltages, 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:** embedded In Intel 815E
- **Display memory:** Share system memory 4MB SDRAM (Max)
- **Display type:** Supports non-interlaced CRT and up to 18/36 bit LCD (TFT, LCD, only). Can display both CRT and Flat Panel simultaneously.

Audio Interface

- **Chipset:** Intel 815E
- **Audio interface:** One 14 pin header for microphone in, line in, line out, speaker out and CD-IN.
- **Codec:** ALC 200

Ethernet Interface

- **Chipset:** Intel 815E embedded in ICH2 and Intel 82559GD
- **Ethernet interface :** Dual 10/100Base-Tx RJ-45 connectors. LAN LED support (Active, Link, Speed) Supports WOL and optional support for AOL.

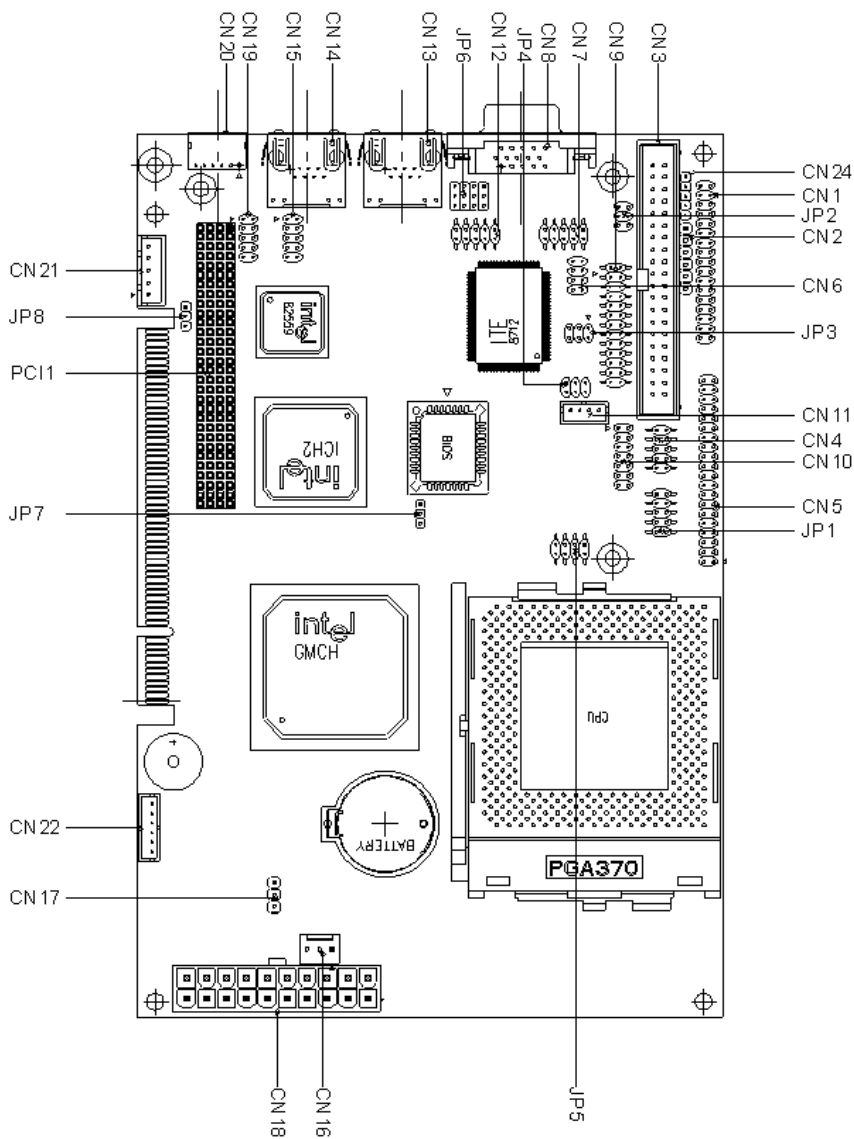
Compact Flash socket onboard

- Compact flash connector onboard support type 2 CFD

Mechanical and environmental

- **Power supply voltage:** +5V, -5V, +12V, -12V, +3.3V
- **Operating temperature:** 32 to 140°F (0 to 60°C)
- **Board size:** 7.3"(L) x 4.8"(W) (185mm x 122mm)
- **Weight:** 1.2 lb. (0.3 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.

Safety precautions

Warning!



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

Caution!



Always ground yourself to remove any static charge before touching the CPU card. 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.

Removing the CPU

The SBC-659 all-in-one CPU module supports most Pentium III/ Celeron or 586 CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's PGA socket by following the procedures outlined below. If your system has an existing CPU, you need to remove it before installing the new CPU.

Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.
2. Lift the CPU out of the PGA socket. The old chip may be difficult to remove. You may find spray chip lubricant, designed for pin-grid-array (PGA) devices, and a chip puller helpful. These are available at electronics hobbyists' supply stores.

Installing A CPU

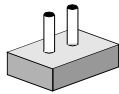
To install the CPU, follow the instructions that came with it. If no documentation was provided, the general procedures for installing a CPU are outlined below:

1. Lubricate the pins on the CPU with lubricant for PGA devices. This makes the CPU slide in much easier and greatly reduces the chance of damaging the pins and other components.
2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.
3. Gently push the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. **DO NOT USE EXCESSIVE FORCE!**

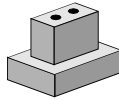
When you install a new CPU, you may have to adjust other settings on the board, such as CPU type, CPU clock, and PCI speed, to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

Setting jumpers

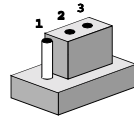
You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the 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.

Generally, you simply need a jumper to make most connections.

Installing SODIMM

Supplementary information about DIMM

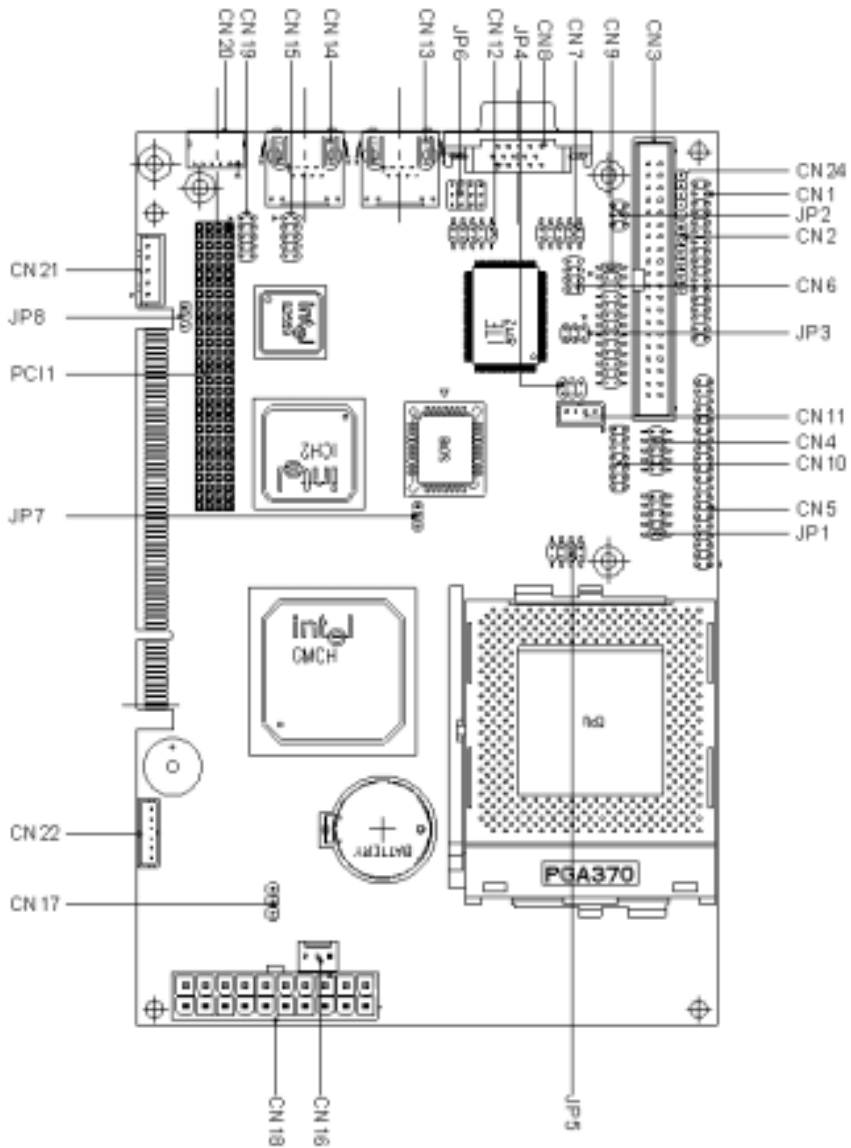
Your SBC-659 can accept both regular and PC-100/133 SDRAM DIMM Module. Onboard one 144-pin SODIMM socket supports up to 256MB of memory.

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

Memory Installation Procedures

To install SODIMM, first make sure you are holding the SODIMM memory module at a 45 degree angle. Slowly slide the SODIMM module along the plastic guides on both ends of the socket. Then press the 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 SODIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

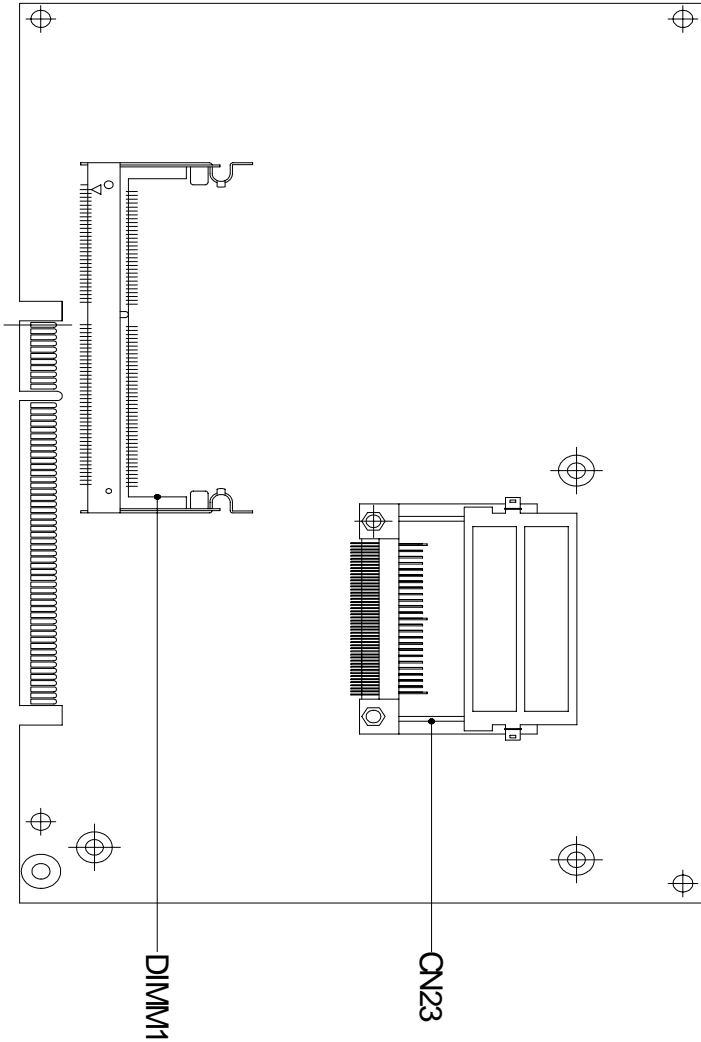
Location of Jumpers and Connectors



Jumpers

Connector	Function
DIMM 1	SO-DIMM
JP1 (1-2)	Front Panel (Power On)
JP1 (3-4)	Front Panel (IDE Driver LED)
JP1 (5-6)	Front Panel (External Speaker)
JP1 (7-8)	Front Panel (Case Open)
JP1 (9-10)	Front Panel (Reset)
JP2	COM2 Ring/+5V/+12V Select
JP3	COM2 RS-232/422/485 Select
JP4	Audio Out Select
JP5(1-2,3-4)	FSB Auto Select
JP5(5-6,7-8)	FSB Manual Select
JP6	COM2 RS-232/422/485 Select
JP7	Clear CMOS
JP8	PC/104 Plus Voltage Select

Location of Solder Side Connectors



Connectors

Connector	Function
CN1	Floppy Drive Connector
CN2	IrDA Connector
CN3	IDE Hard Drive Connector
CN4	Digital I/O Connector
CN5	Digital Visual Interface Connector
CN6	External LAN LED Indicator Connector
CN7	COM1 RS-232 Serial Port Connector
CN8	VGA Display Connector
CN9	Parallel Port Connector
CN10	Audio Connector
CN11	Audio Out Connector (1 Watt)
CN12	COM2 RS-232/422/485 Serial Port Connector
CN13	100 Base-Tx Ethernet Connector
CN14	100 Base-Tx Ethernet Connector
CN15	USB 1-2 Connector
CN16	CPU Fan Power Connector
CN17	North Bridge Fan Power Connector
CN18	ATX Power Connector
CN19	USB 3-4 Connector
CN20	Keyboard and PS/2 Mouse Connector
CN21	Internal Keyboard Connector
CN22	External Power On Connector
CN23	Compact Flash Connector
CN24	Wake On Lan Connector

Front Panel (JP1)

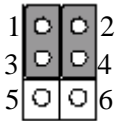
Front Panel (JP1)

1	□	○	2	GND / Power on Button
3	○	○	4	IDE LED- / IDE LED +
5	○	○	6	Speaker - / Speaker +
7	○	○	8	Case Open / GND
9	○	○	10	Reset Switch- / GND

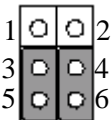
Audio out (JP4)

Non-Amplifier

Default

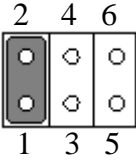


Amplifier

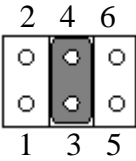


COM2 (Ring, +5V, +12V) JP2

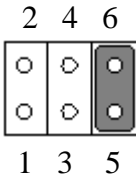
+12V



+5V



Ring

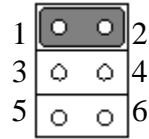
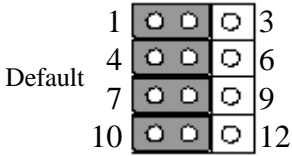


RS-232/422/485 COM2(JP3,JP6) Setting

RS-232

JP6

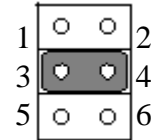
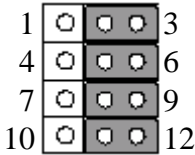
JP3



RS-422

JP6

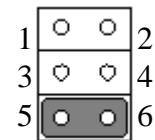
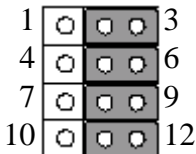
JP3



RS-485

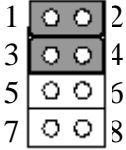
JP6

JP3

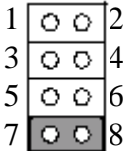


FSB Select (JP5)

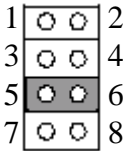
Auto Select	Default
-------------	---------



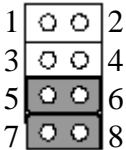
CPU/100MHz	SDRAM/100MHz
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CPU/133MHz	SDRAM/133MHz
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CPU/66MHz	SDRAM/100MHz
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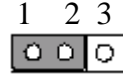
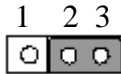
Clear CMOS (JP7)

You can use JP7 to clear the CMOS data if necessary. To reset the CMOS data, place a jumper on JP7 (Clear CMOS) for just a few seconds, and then remove the jumper to the (Protect) position.

Clear CMOS (JP7)

Clear CMOS

Protect*



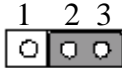
*default

PC/104 Plus Voltage Select (JP8)

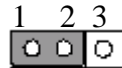
You can use JP8 to set the voltage input/output at 5 volts or 3.3 volts.

Voltage Input/Output (JP8)

3.3V



5V



Floppy Drive Connector (CN1)

Floppy drive connector (CN1)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N.C.
5	GND	6	N.C.
7	GND	8	INDEX
9	GND	10	MOTOR A
11	GND	12	DRIVE SELECT B
13	GND	14	DRIVE SELECT A
15	GND	16	MOTOR B
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	N.C.	30	READ DATA
31	GND	32	SIDE 1
33	N.C.	34	DISK CHANGE

IrDA Connector (CN2)

The IrDA connector (CN2) can be configured to support wireless infrared modules. With this module and application software such as laplink or Win95, Direct Cable connection can transfer files between laptops, notebooks, PDA and printers. This connector supports HPSIR (115.2Kbps, 2 meters), (ASK-IR (56Kbps) and fast IR (4Mbps, 2 meters). Install infrared module onto IrDA connector and enabled infrared function from BIOS setup, make sure to have correct orientation when you plug onto IRDA connector (CN2).

Pin	Signal
1	+5V
2	CIRTX
3	IRRX
4	GND
5	IRTX
6	CIRRX

IDE Hard Drive Connector (CN3)

IDE hard drive connector (CN3)

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	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ14	32	N.C.
33	ADDR 1	34	ATA66DETECT
35	ADDR 0	36	ADDR 2
37	CS#1	38	CS#3
39	IDEACTP	40	GND

Digital I/O Connector (CN4)

SBC-659 offers 4 bit TTL input/output digital I/O functions. Input 801H; GPI27 [bit1], GPI26[bit2], GPI25[bit3], GPI24[bit4] and Output 801H; GPO23[bit1], GPO22[bit2], GPO21[bit3], GPO20[bit4]. With the input and output consisting of the following:

Digital I/O Connector (CN4)

Pin	Signal	Pin	Signal
1	IN1	2	IN2
3	IN3	4	IN4
5	OUT1	6	OUT2
7	OUT3	8	OUT4
9	+5V	10	GND

Digital Visual Interface Connector (CN5)

Digital Visual Interface Connector (CN5)			
Pin	Signal	Pin	Signal
A1	FTCLK0	B1	FTD0
A2	FTCLK1	B2	FTD1
A3	CRT-HSYNC	B3	FTD2
A4	FTBLNK	B4	GND
A5	FTHSYNC	B5	FTD3
A6	FTVSYNC	B6	FTD4
A7	SL_STALL	B7	FTD5
A8	GND	B8	CRT-VSYNC
A9	3VFTSCL	B9	FTD6
A10	3VFTSDA	B10	FTD7
A11	3VHTPLG	B11	FTD8
A12	+5V	B12	VEE_OK
A13	PCIRST	B13	FTD9
A14	+12V	B14	FTD10
A15	FPVDDEN	B15	FTD11
A16	GND	B16	+3.3V
A17	GPO22	B17	+3.3V
A18	SMBDATA	B18	GND
A19	SMBCLK	B19	+3.3V
A20	+5V	B20	FPBKLENR

External LAN LED Indicator Connector (CN6)

External LAN LED Indicator Connector (CN6)

Pin	Signal
1	Active
2	Link
3	Speed
4	VCC3
5	Active
6	Link
7	Speed
8	VCC3

VGA connector (CN8)

The mainboard'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.

VGA display connector (CN8)

CN8 is a 15-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN8 to a standard 15-pin D-SUB connector commonly used for VGA.

VGA display connector (CN8)

Pin	Signal	Pin	Signal
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	DDCSDA
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	DDCSCL
8	GND	16	N/C

Parallel port connector (CN9)

Normally, the parallel port is used to connect the board to a printer. The SBC-659 includes an onboard parallel port, accessed through CN9, a 26-pin flat-cable connector. A traditional DB-25 connector cable is needed to install the printer to the board. The cable has a 26-pin connector on one end and a DB-25 pin connector on the other.

Parallel port IRQ

The onboard parallel port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Parallel port connector table (CN9)

Parallel port connector (CN9)

Pin	Signal	Pin	Signal
1	STROBE	14	AFD
2	PTD0	15	ERROR
3	PTD1	16	INIT
4	PTD2	17	SLIN
5	PTD3	18	GND
6	PTD4	19	GND
7	PTD5	20	GND
8	PTD6	21	GND
9	PTD7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT	26	N.C.

Audio Connector (CN10)

On board SBC-659, there is a 14-pin header for audio capability. The pin definition is provided below.

Audio connector (CN 10)

Pin	Signal	Pin	Signal
1	MIC IN	2	MIC VCC
3	GND	4	CD GND
5	LINE IN L	6	CD IN L
7	LINE IN R	8	CD GND
9	GND	10	CD IN R
11	LINE OUT L	12	LINE OUT R
13	GND	14	GND

Audio Out Connector 1 Watt (CN11)

Audio Out Connector 1 Watt (CN11)

Pin	Signal
1	OUT L+
2	OUT L-
3	OUT R+
4	OUT R-

COM 1 (CN 7) & COM 2 (CN 12) Serial Ports

On board offer two serial ports for serial devices connection. Pin definitions show as below.

COM 1 RS-232 (CN7)

Pin	Signal	Pin	Signal
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI	10	N.C.

COM 2 RS-232/422/485 (CN12)

Pin	Signal	Pin	Signal
1	DCD2(422TXD-/485DATA-)	2	RXD2 (422RXD+)
3	TXD2(422TXD+/485DATA+)	4	DTR2 (422RXD-)
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RI/+5V/+12V	10	N.C.

100Base-Tx Fast Ethernet connector (CN13,14)

Onboard supports one standard RJ-45 connector for Ethernet connection. The RJ-45 connector has two LED indicators. Both LED displays indicate the speed of information being processed, however the Lan speed does vary.

* The on board Intel 82559XX fast Ethernet controller supports 10Mb/s and 100Mb/s N-way auto-negotiation operation.

100Base-Tx Ethernet connector (CN14)

Pin	Signal	Pin	Signal
1	TX1+	9	N.C.
2	TX1-	10	N.C.
3	RX1+	11	GND
4	N.C.	12	GND
5	N.C.	13	ACTIVE LED
6	RX1-	14	LINK LED
7	N.C.	15	+3.3 V
8	N.C.	16	SPEED LED

100Base-Tx Ethernet connector (CN13)

Pin	Signal	Pin	Signal
1	TX+	9	N.C.
2	TX-	10	N.C.
3	RX+	11	GND
4	N.C.	12	GND
5	N.C.	13	ACTIVE LED
6	RX-	14	LINK LED
7	N.C.	15	+3.3 V
8	N.C.	16	SPEED LED

USB connector (CN15, CN19)

The SBC-659 provides four USB (Universal Serial Bus) interfaces, which give complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.0, and can be disabled in the system BIOS setup.

USB 0-1 connector (CN15)

Pin	Function	Pin	Function
1	+5V	2	GND
3	USBD0-	4	GND
5	USBD0+	6	USBD1+
7	GND	8	USBD1-
9	GND	10	+5V

USB 2-3 connector (CN19)

Pin	Function	Pin	Function
1	+5V	2	GND
3	USBD2-	4	GND
5	USBD2+	6	USBD3+
7	GND	8	USBD3-
9	GND	10	+5V

CPU Fan power connectors (CN16)

CPU fan power connector (CN 16)

Plug in the fan cable to the 3-pin fan connector onboard. The fan connector is marked CN16.

CPU fan power connector (CN16)

Pin	Signal
1	GND
2	+12V
3	Fan speed sensor

Power connector (CN18)

ATX power connector (CN18)

The ATX power supply uses 20-pin connector shown below. Make sure you plug in the right direction.

ATX power connector (CN18)

Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS ON
5	GND	15	GND
6	+5 V	16	GND
7	GND	17	GND
8	POWER OK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

PS/2 Keyboard and Mouse Connector (CN20)

On board SBC-659, there is a standard 6-pin header for PS/2 keyboard and mouse connector. The pin definition is provided below.

Keyboard and mouse connector (CN 20)

Pin	Signal	Pin	Signal
1	MS CLOCK	2	KB Clock
3	+5V	4	GND
5	KB DATA	6	MS DATA
7	N/C	8	N/C

Internal Keyboard Connector (CN21)

On board SBC-659, there is a 5-pin header for internal keyboard connection. The pin definition is provided below.

Inboard keyboard connector (CN 21)

Pin	Signal
1	CLK
2	DATA
3	N.C.
4	GND
5	+5V

External Power On Connector (CN22)

On board SBC-659, there is a 6-pin header for external power on function. The pin definition is provided below.

External Power On Connector (CN 22)

Pin	Signal
1	N.C.
2	GND
3	N.C.
4	GND
5	PS-ON
6	5VSB

Compact Flash Connector (CN23)

Compact Flash Connector (CN23)

Pin	Signal	Pin	Signal
1	GND	26	GND
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IO READ
10	GND	35	IO WRITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N.C.
16	GND	41	IDE RESET
17	GND	42	IO READY
18	ADDR2	43	N.C.
19	ADDR1	44	+5V
20	ADDR0	45	DASP
21	DATA0	46	DIAG
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	N.C.	49	DATA10
25	GND	50	GND

Wake On Lan Connector (CN24)

Wake On Lan Connector (CN24)

Pin	Signal
1	+5V
2	GND
3	WOL
4	SMBDATA
5	SMBCLK

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	Item Help
F3	Reserved
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.

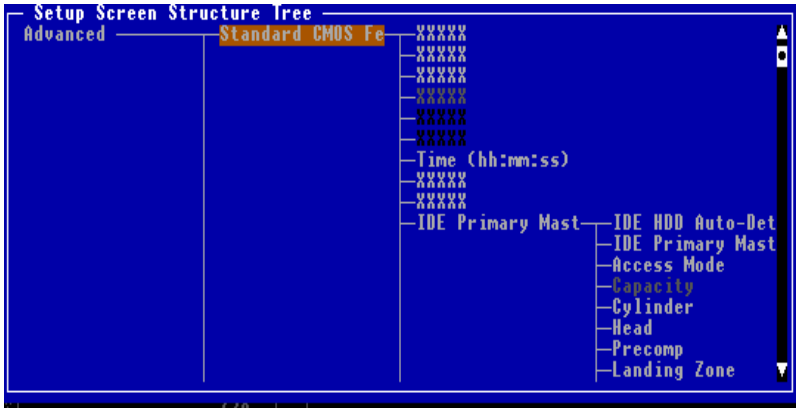
In Case of Problems

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 Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configuration

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/ voltage control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/ stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set User and Supervisor Passwords.

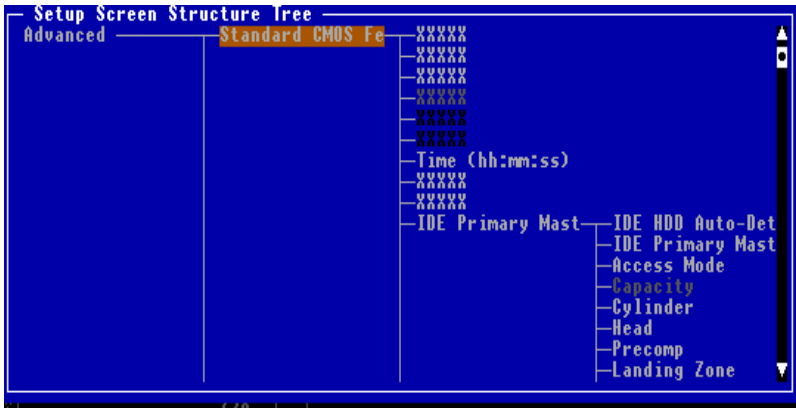
Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Features



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 hours. 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 four 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. 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 predefined 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 predefined 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 access, 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 mega byte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 mega byte capacity

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 nonfatal 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.

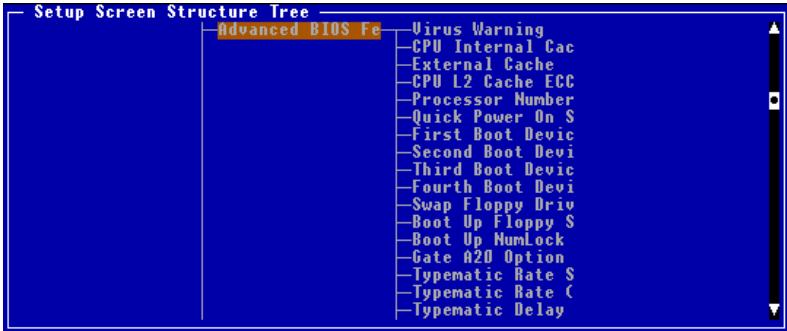
Extended Memory

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.

Advanced BIOS Features



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.

Processor Number Feature

This option is for Pentium III processor. During Enabled, this will check the CPU Serial number. Disabled this option if you don't want the system to know the serial number.

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.

First/Second/Third/Fourth Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The choices: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disable.

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.

Boot Up System Speed

Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.

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 Delay (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.

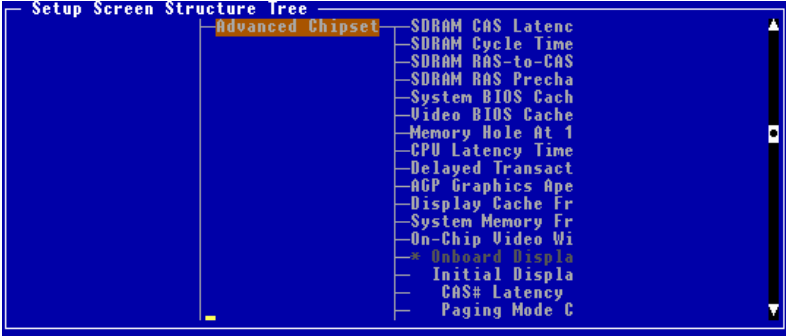
The choice: Non-OS2, OS2

HDD S.M.A.R.T Capability

Hard disk drives have built in problem detection capability (Self-Monitoring Analysis and Reporting Technology). If a foreseen problem is about to take place, the computer will give a you a warning signal. The choice: Enable, Disable

Report No FDD For WIN 95- Report no FDD for Win 95 or not. The choice: Yes, no

Advanced Chipset Features



SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.
The choices: 5/7, 7/9 disable.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

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. The choices:

Enabled, Disabled

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. The choices:

Enabled, Disabled Memory

Hole At 15-16m

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory. The choices:

15-16 M, disabled

CPU Latency Timer

During enable, a deferrable CPU cycle will only be Deferred after it has been in Snoop Stall for 31 clocks and another ADS# has arrived. During disable, a deferrable CPU cycle will be deferred immediately after the GMCH receives another ADS#.

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.

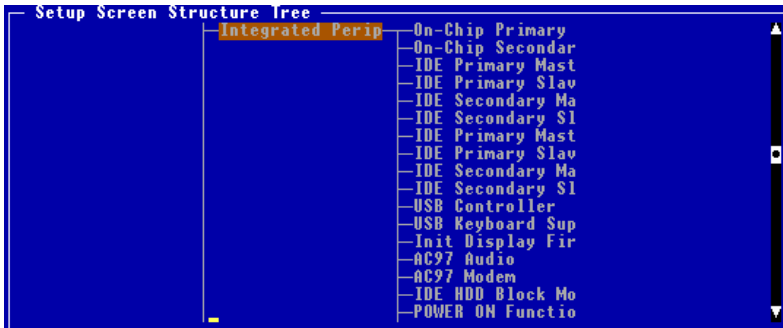
AGP Graphics Aperture Size

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The choices: 32M, 64M.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use. The choices: 32MB, 64MB, Disabled

Integrated Peripherals



On-Chip Primary PCI IDE

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.

On-Chip Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the secondary IDE interface. Select Disabled to deactivate this interface.

The choices: Enable, Disable

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmable Input/Output) fields let you set a PIO mode (0-1) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choices: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The choices: Auto, disable

USB Controller

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

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus 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

AC97 Audio

The default setting of Auto enables the AC97 audio if it is detected onboard

IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

Power on Function

Select the different manners for powering on the system.

The choices: Keyboard 98, password, any key, hot key, button only, mouse click, mouse move.

KB Power on Password

The system will ask for a password, after entering the correct password the keyboard can then be used.

Hot Key Power On

Simply pressing on the pre-selected keyboard key the system will power on.

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
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
ASK IR	Amplitude shift keyed infrared port
SCR	

Onboard Serial Ports (1, 2)

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. Also the corresponding interrupt needs to be selected.

Selections of logical COM port addresses are as follows. (3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3)

Onboard Parallel Port

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

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, disabled

Parallel Port Mode

Two bidirectional parallel ports. Supports SPP, ECP, EPP, ECP + EPP.

ECP Mode Use DMA

Select a DMA channel for the port.

PWRON After PWR-Fail

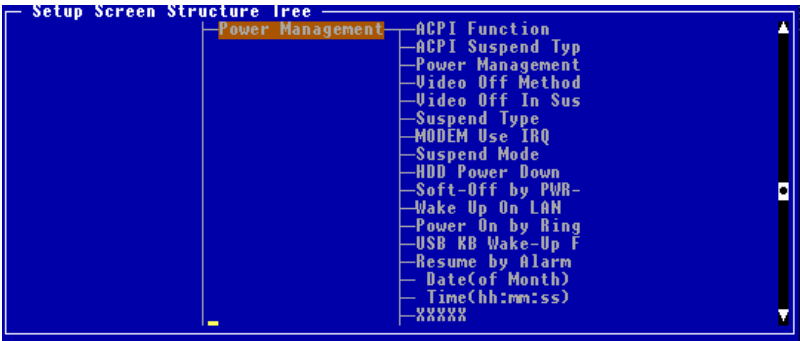
This option will determine how the system will power on after a power failure.

The choice: off, on, former status

Watch Dog Timer

You can enable the system watchdog timer, a hardware timer that generates either an NMI or a reset when the software that it monitors does not respond as expected each time the watch dog polls it (select the time period in a separate field) The choice: Disabled, 10 sec, 20 sec, 30 sec, 40 sec, 1 min, 2 min, 4 min.

Power Management Setup



ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The Choices: Enable/Disable

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

Disable (Default)	No power management. Disable all four modes.
Min. Power Saving	Minimum power management. Doze mode = 1 hour. Standby mode = 1 hour. Suspend mode = 1 hour. HDD Power Down = 15 minutes.
Max. Power Saving	Maximum power management--ONLY AVAILABLE FOR SL CPU'S. Doze mode = 1 min., Standby mode = 1 min., Suspend mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hour except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer
Blank Screen	This option only writes blanks to the video buffer
DPMS	Initial display power management signaling

Video Off In Suspend

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. In this case the video hardware can be selected to shut off after a period of system inactivity. This determines the manner in which the monitor is blanked.

Suspend Type

Select the suspend type. The choice: PWRON suspend, Stop Grant

MODEM use IRQ

This determines the IRQ in which the MODEM can use.

The choices: 3, 4, 5, 7, 9, 10, 11, NA

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, the HDD powers down while all other devices remain active.

Soft-Off by PWR-BTTN

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.

Wake Up On Lan

The board enabled or disabled will execute a wake up process whenever LAN (Intel 815E) receives a wake up event such as a magic packet.

The Choice: Disabled, Enabled

Power On By Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) boots the system from a soft off state.

Resume By Alarm

This option is used to Enable/Disable USB keyboard wake up with suspend to RAM.

The choices: Enable, disable

Date Alarm

You can choose which month the system will boot up. Set to 0 to boot everyday.

Time Alarm

You can choose what hour, minute and second the system will boot up.

<Reload Global Timer Events>

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as Enabled, even when the system is in a power down mode.

Primary IDE 0

Primary IDE 1

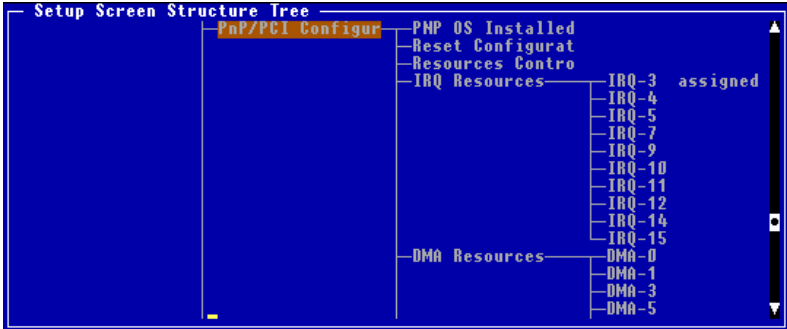
Secondary IDE 0

Secondary IDE 1

FDD, COM, LPT Port

PCI PIRQ (A-D)#

PnP/PCI Configurations



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 can not boot. The choices: Enabled, Disabled

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is proceeded by a ">". The choices: Auto, Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

DMA Resources

This sub menu can let you control the DMA resource.

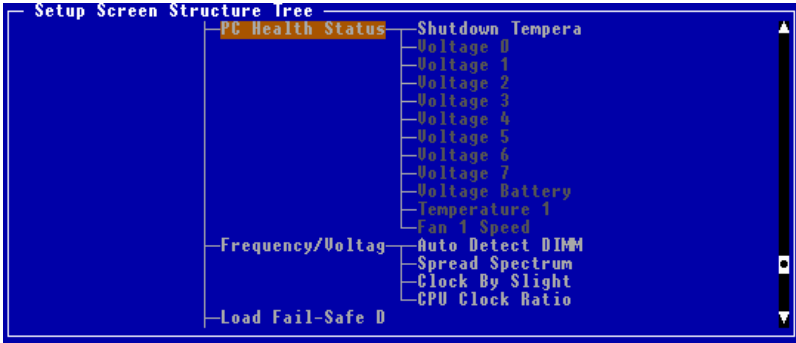
PCI/VGA Palette Snoop

Leave this field at Disabled. Choices: Enabled, Disabled.

Lan Controller For 82559

Operation controller for 82559 Lan. You may choose to enable or disable this function.

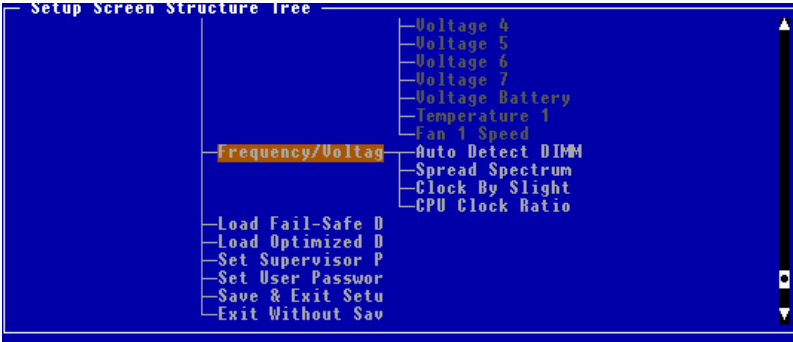
PC Health Status



Shutdown Temperature

Your system can be configured to shutdown once reaching a certain temperature. To protect your system from overheating or damage, select a certain temperature level in the PC Health Status menu.

Frequency/Voltage Control



Auto Detect DIMM/PCI CLK

This item allows you to enable/disable auto detect DIMM/PCI clock. The choices: Enable/Disable

Spread Spectrum

This allows you to enable/disable the spread spectrum modulate. When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme pulse spikes to flat curves thus reducing EMI.

The choices: Enable, Disable

Clock By Slight Adjust

This item allows you to select the CPU clock from 166 MHz to 100 MHz or 99 MHz to 66 MHz depending on the CPU host clock.

CPU Clock Ratio

This item allows you to select the CPU ratio.

Load Fail-Safe Defaults

```
Item Structure
Item string : Load Fail-Safe Defaults
      [X] Normal
      [ ] Show only
      [ ] Disable
      [ ] Gap
BIOS default : ( No Value )
SETUP default : ( No Value )
HELP content  : None
```

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing “Y” loads the BIOS default values for the most stable, minimal performance system operations.

Load Optimized Default

```
Item Structure
Item string : Load Optimized Defaults
      [X] Normal
      [ ] Show only
      [ ] Disable
      [ ] Gap
BIOS default : ( No Value )
SETUP default : ( No Value )
HELP content  : None
```

Load Optimized Default

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are factory settings for optimal performance system operations

Set Supervisor Password



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

ENTER PASSWORD:

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:

CONFIRM PASSWORD:

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.

Set User Password



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

ENTER PASSWORD:

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:

CONFIRM PASSWORD:

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.

Save to CMOS and EXIT

```
Item Structure
Item string : Save & Exit Setup
      [X] Normal
      [ ] Show only
      [ ] Disable
      [ ] Gap
BIOS default : ( No Value )
SETUP default : ( No Value )
HELP content : None
```

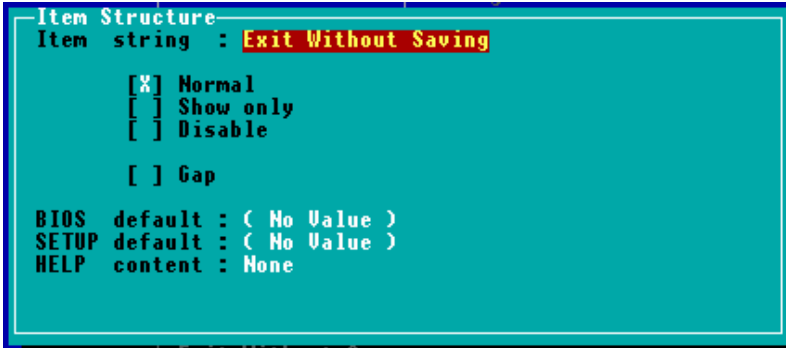
Save to CMOS and EXIT

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and Exit (Y/N)?

Pressing “Y” stores the selections made in the menus in CMOS, a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Quit without Saving



Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

CHAPTER 4

DRIVERS INSTALLATION

This SBC-659 is equipped with an audio, VGA and Dual LAN interface. This chapter provides instructions for installing the software drivers on these peripherals.

Installing Drivers

Notice: Attention

First if using operating systems such as Windows 95/98/2000® a chipset driver must be installed before VGA, LAN or Audio drivers are installed.

Second if using Windows 95/98/2000® operating systems an Ultra ATA storage driver must also be installed after the chipset driver.

Notice: Attention

Installing Chipset Driver for Windows 95/98/2000®

The chipset driver must be installed in order to proceed to LAN, VGA and AUDIO drivers.

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen.

==>Find the Chipset folder, click on it

==>Find the Intel folder, click on it

==>Find the InfUpdate folder, click on it

==>Find the InfInst folder, click on it

==>Find the Win9X & Win2K folder, click on it

==>Find the Setup ICON, and double click

==>Click on Next

==>Click on Yes

==>Click on Next

==>Now the shut down computer for restart should be visible, follow the command and the chipset driver has be installed.

Installing Ultra ATA Storage Driver for Windows 95/98/2000®

The Ultra ATA Storage Driver must be installed in order to use Windows 95/98/2000 ® operating systems.

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen.

==>Find the MB folder, click on it

==>Find the intel ATA 603_Multi folder, click on it

==>Click on Next

==>Click on Yes

==>Select the optional: Select storage folder where to store Ultra ATA

==>Click on Next

==>Click on Next

==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82562 for Windows 95 or 98 Ver. 1.0®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on System button
- ==>Click on Device Manager button
- ==>Click on PCI Ethernet Controller
- ==>Click on Remove
- ==>Click on OK
- ==>Click on Refresh
- ==>Click on Next
- ==>Select the Optional: Search for best Lan driver.....
- ==>Click on Next
- ==>Select CDROM file
- ==>Select LAN
- ==>Click on OK
- ==>Click on Next
- ==>Net82557.inf will appear
- ==>Click on Next
- ==>Click on Finish
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82559 for Windows 95 or 98 Ver. 1.0®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on System button
- ==>Click on Device Manager button
- ==>Click on PCI Ethernet Controller
- ==>Click on Remove
- ==>Click on OK
- ==>Click on Refresh
- ==>Click on Next
- ==>Select the Optional: Other Location.....
- ==>Click on Browse
- ==>Select CDROM file
- ==>Select Next
- ==>Click on OK
- ==>Click on Finish
- ==>Then you will be asked to confirm the location of the select file....
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82562 for Windows 95 or 98 Ver. 2.0®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on System button
- ==>Click on Device Manager button
- ==>Click on PCI Ethernet Controller
- ==>Click on Remove
- ==>Click on OK
- ==>Click on Refresh
- ==>Click on Next
- ==>Select the Optional: Search for best Lan driver.....
- ==>Click on Next
- ==>Select CDROM file
- ==>Select LAN
- ==>Click on OK
- ==>Click on Next
- ==>Net82557.inf will appear
- ==>Click on Next
- ==>Click on Finish
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82559 for 98 V2.0

Win 98 version 2.0 already supports Intel 82559. You do not have to install 82559 driver because it is already combined in the operating system.

Installing VGA for Windows 95/98®

- ==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..
- ==>Click on Intel folder
- ==>Click on 810_815 folder
- ==>Click on Win9X folder
- ==>Click on Graphics folder
- ==>Click on Set Up folder
- ==>Click on Next
- ==>Click on yes
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Audio for Windows 95/98®

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..

==>Click on Sound folder

==>Click on Alc 200 folder

==>Click on Win98 folder

==>Click on V1.80 folder

==>Click on WDM_1 folder

==>Next you will be asked to save this WDM file in a certain location. C drive, D drive, My documents etc.

==>Click on Unzip

==>Click on OK

==>Now find the WDM file that you have just saved. C drive, D drive etc.

==>Click on WDM file in the save location

==>Click on the Setup ICON

==>You will see an optional language window

==>Click on OK

==>Click on Next

==>Click on OK

==>Click on GO

==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Security Driver for Windows NT®

Please perform this procedure first

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..

==>Click on Chipset folder

==>Click on Intel folder

==>Click on Security folder

==>Click on Setup folder

==>Click on Next

==>Click on Yes

==>Click on Next

==>Click on Next

==>Now the shut down computer for restart Window should be visible, follow the command and the Security driver has be installed.

Installing Ultra ATA Storage Driver for Windows NT®

The Ultra ATA Storage Driver must be installed in order to use Windows NT ® operating systems.

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen.

==>Find the MB folder, click on it

==>Find the intel ATA 603_Multi folder, click on it

==>Click on Next

==>Click on Yes

==>Select the optional: Select storage folder where to store Ultra ATA

==>Click on Next

==>Click on Next

==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing VGA for Windows NT®

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..

==>Click on VGA folder

==>Click on Intel folder

==>Click on 810_815 folder

==>Click on NT4 folder

==>Click on Graphics folder

==>Click on Set Up folder

==>Click on Next

==>Click on yes

==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Audio for Windows NT®

- ==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..
- ==>Click on Sound folder
- ==>Click on Alc 200 folder
- ==>Click on WinNT folder
- ==>Click on V1.80 folder
- ==>Click on WDM_1
- ==>Next you will be asked to save this WDM file in a certain location. C drive, D drive, My documents etc.
- ==>Click on Unzip
- ==>Click on OK
- ==>Now find the WDM file that you have just saved. C drive, D drive etc.
- ==>Click on WDM file in the save location
- ==>Click on the Setup ICON
- ==>You will see an optional language window select English
- ==>Click on OK
- ==>Click on Next
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82562 for Windows NT®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on Network
- ==>Click on yes
- ==>Click on next
- ==>Click on Select from list.....
- ==>Click on have disk
- ==>Type in file location: (CD Disk drive) E:\CDROM
- ==>Click on OK
- ==>Intel Pro Adapter will appear
- ==>Click on OK
- ==>Click on Next
- ==>Click on Next
- ==>Click on OK
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82559 for Windows NT®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on Network
- ==>Click on yes
- ==>Click on next
- ==>Click on Select from list.....
- ==>Click on have disk
- ==>Type in file location: (CD Disk drive) E:\CDROM
- ==>Click on OK
- ==>Intel Pro Adapter will appear
- ==>Click on OK
- ==>Click on Next
- ==>Click on Next
- ==>Click on Next
- ==>Click on Next
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing VGA for Windows 2000®

==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..

==>Click on VGA folder

==>Click on Intel folder

==>Click on 810_815 folder

==>Click on Win2000 folder

==>Click on 815 folder

==>Click on Set Up folder

==>Click on Next

==>Click on yes

==>Click on Next

==>Click on yes

==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Audio for Windows 2000®

- ==>Place the Driver CDROM into your CDROM drive. Pull up the CDROM file on your screen..
- ==>Click on Sound folder
- ==>Click on Alc 200 folder
- ==>Click on Win2000 folder
- ==>Click on V1.80 folder
- ==>Click on WDM_1 folder
- ==>Click on Unzip
- ==>Next you will be asked to save this WDM file in a certain location. C drive, D drive, My documents etc.
- ==>Now find the WDM file that you have just saved. C drive, D drive etc.
- ==>Click on WDM file in the save location
- ==>Click on the Setup ICON
- ==>You will see an optional language window select English
- ==>Click on Next
- ==>Click on GO
- ==>Click on Yes
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has be installed.

Installing Intel 82562 for Windows 2000®

- ==>Place the Driver CDROM into your CDROM drive.
- ==>Click on Start button
- ==>Click on Settings button
- ==>Click on Control Panel button
- ==>Click on System button
- ==>Click on Hardware button
- ==>Click on Device Manager button
- ==>Click on Ethernet Controller
- ==>Click on Driver
- ==>Click on Update Driver
- ==>Click on Next
- ==>Click on Uninstall
- ==>Click on OK
- ==>Click on Action
- ==>Click on Scan Hardware
- ==>Click on Ethernet Controller
- ==>Click on Driver
- ==>Click on Update Driver
- ==>Click on Next
- ==>Click on Search for a suitable driver for my device.....
- ==>Click on Next
- ==>Remove the floppy disk option setting and engage the specific location setting
- ==>Then Net 82557 (will be auto detected)
- ==>Click on Finish
- ==>Now the shut down computer for restart Window should be visible, follow the command and the chipset driver has been installed.

Installing Intel 82559 for Win 2000

Win 2000 already supports Intel 82559. You do not have to install 82559 driver because it is already combined in the operating system.