

Gene-5310

All-in-One SubCompact Board
Intel MMX CPU with LCD,
2 Ethernet, Audio, TV-Out, LVDS
& 2 COM Ports

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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 GENE-5310 All-in-One Single Board Computer
- 1 Hard disk drive (IDE) interface cable (44 pin, pitch 2.0mm)
- 1 Floppy disk drive interface (34 pin, pitch 2.0mm)
- 1 6-pin mini-DIN dual outlet adapter for keyboard and PS/2
- 1 Parallel port (26-25 pin, pitch 2.0mm) mouse & serial port (10-9 pin, pitch 2.0mm) adapter kit
- 1 USB cable with bracket (2.00mm)
- 1 Audio 3.14-pin (2.00mm) and RCA jack cable 4-pin (2.54mm)
- 1 bag of screws and miscellaneous parts
- 1 Quick Installation Guide
- 1 CD-ROM contains the followings:
 - User's Manual (this manual in PDF file)
 - Ethernet drivers and utilities
 - VGA drivers and utilities
 - Audio drivers and utilities
 - Latest BIOS (as of the CD-ROM was made)

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

Notice

Dear Customer,

Thank you for purchasing the GENE-5310 board. This user's manual is designed to help you to get the most out of the GENE-5310, please read it thoroughly before you install and use the board. The product that you have purchased comes with a 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 on the mainboard.

Sections include:

- Board specifications
- Layout and dimensions

Introduction

The GENE-5310 is an all-in-one Tillamook MMX processor based single board computer (SBC) with a audio controller, PCI Flat Panel controller, dual 10/100Base-T Ethernet interface and PC/104 expansion capability. This compact (only 5.75" x 4") unit offers all the functions of a single board computer, but still fits in the space of a HDD drive.

Onboard features include two serial ports (one RS-232, one 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 two IDE devices can be connected, including large hard disks, CD-ROM drives, and tape backup drives, etc.

The GENE-5310 also features power management to minimize power consumption. It complies with the APM standard and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode. In addition, the board's watchdog timer can be programmed to reset the system or generate an interrupt in case the system stops due to a program bug or SMI.

Highly integrated multi-media SBC

The GENE-5310 is a highly integrated multi-media SBC that combines audio, video, and network functions on a FDD drive size single computer board. It provides an AC-97 audio interface 2.0 version and up to 1024 x 768 resolution @ 16M colors with UMA 8MB SDRAM display memory. Major onboard devices adopt PCI technology to achieve outstanding computing performance when used with Tillamook MMX level processors, making the GENE-5310 one of the world's smallest and most powerful all-in-one multimedia boards.

LVDS Introduction

Low Voltage Differential Signaling is a low noise, low power, low amplitude method for high-speed (gigabits per second) data transmission over copper wire.

LVDS differs from normal input/output (I/O) in a few ways: Normal digital I/O works with 5 volts as a high (binary 1) and 0 volts as a low (binary 0). When you use a differential, you add a third option (-5 volts), which provides an extra level with which to encode and results in a higher maximum data transfer rate.

A higher data transfer rate means fewer wires are required, as in UW (Ultra Wide) and UW-2/3 SCSI harddrive, which use only 68 wires. These devices require a high transfer rate over short distances. Using standard I/O transfer, SCSI hard drives would require a lot more than 68 wires. Low voltage means that the standard 5 volts is replaced by either 3.3 volts or 1.5 volts. LVDS uses a dual wire system, running 180 degrees of each other. This enables noise to travel at the same level, which in turn can get filtered more easily and effectively.

With standard I/O signaling, data storage is contingent upon the actual voltage level. Voltage level can be affected by wire length (longer wires increase resistance, which lowers voltage). But with LVDS, data storage is distinguished only by positive and negative voltage values, not the voltage level. Therefore, data can travel over greater lengths of wire while maintaining a clear and consistent data stream.

Features

- **3.5" FDD SubCompact Form Factor**
- **Supports Intel Tillamook BGA MMX CPU 266MHz**
- **Integrated AGP 2D/3D Graphics Accelerator**
- **Supports CRT and 24-bit TFT panels**
- **Supports NTSC/PAL TV output**
- **Integrated AC-97 2.0 SoundBlaster compatible legacy audio**
- **Support Compact Flash Storage**
- **LVDS interface through Daughter board**
- **Supports Dual 10/100Base-T Fast Ethernet**
- **Supports Ultra DMA/33 mode with data transfer rate up to 33 MB/sec.**
- **2 COMs / 1 Parallel / 2 USB / 1 IrDA Port**
- **5 Volt only operation**

Specifications

Standard SBC Functions

CPU : Intel Tillamook MMX BGA integrated processor (low power)

BIOS: Award 256KB FLASH BIOS

Chipset: CBI7/VT82C686B

Memory : Onboard one 144-pin SODIMM socket supports up to 256 Mbytes SDRAM

Enhanced IDE: Supports two IDE devices. BIOS auto detect. Supports PIO mode 4 and Bus Master. Also supports Multi-word DMA and Ultra DMA/33.

FDD interface: Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)

Parallel port: Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP, ECP, and EPP.

Serial port: One RS-232 and one RS-232/422/485 serial ports. Ports can be configured as COM1, COM2 or disabled individually (16C550 equivalent)

IR interface: Supports one IrDA Tx/Rx header

KB/Mouse connector: Dual 6-pin mini DIN connector supports PC/AT keyboard and PS/2 mouse.

USB connectors: Dual USB ports on board

Battery: Lithium battery for data retention

Watchdog Timer: Can generate a system reset, IRQ, or NMI. Supports Win95, Win 98, Win2000, Win3.1. Software selectable time-out interval (1 sec. ~ 20sec., 1 sec./step)

DMA: 7 DMA channels

Interrupt: 15 interrupt levels

Power management: Supports AT power supply. Supports PC97 I/O peripheral devices support power saving and doze modes

Flat Panel/CRT Interface

Chipset: North Bridge CBI7

Display memory: Shared memory up to 8MB

Display type: Supports non-interlaced CRT and up to 24-bit TFT LCD displays. Can display both CRT and flat panel simultaneously

Resolution: Up to 1024x768 @ 16M colors

RCA TV-Out Connector

Chipset: TV Express MA830 digital TV encoder, supports both PAL and NTSC

Interface: Onboard pin header supports NTSC/PAL composite output

Audio Interface

Chipset: VT82C686B

Interface: Integrated SoundBlaster, Sound Blaster Pro, and Windows Sound system

Ethernet Interface

Chipset: Dual Intel 82559GD MicroBGA package

Ethernet interface: Onboard Dual 100Base-T RJ-45 connector.

SSD Interface

One socket supports Compact Flash Disk (Type II)

Expansion Interface

PC/104 connector: One 16-bit 104-pin connector onboard Connectors

Mechanical and Environmental

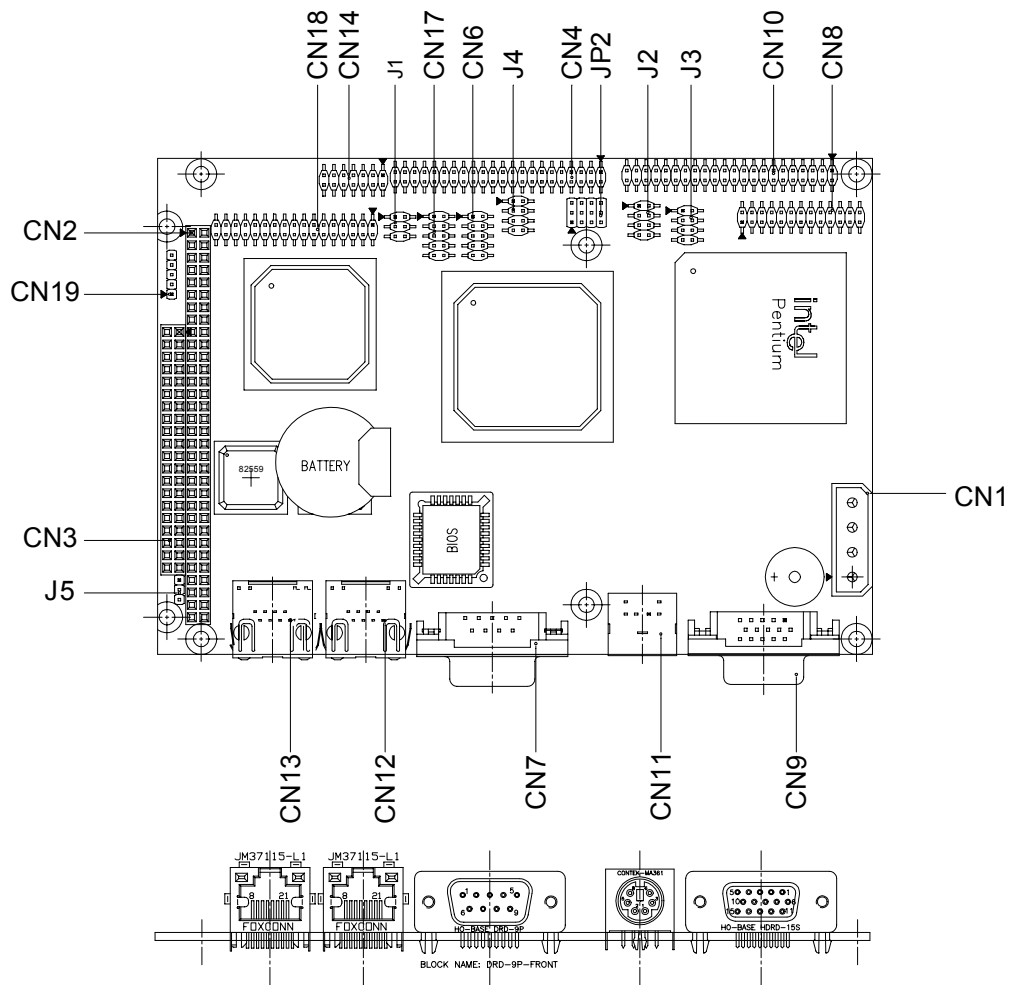
Power supply voltage: +5V (4.75V to 5.25V)

Operating temperature: 32 to 140 °F (0 to 60 °C)

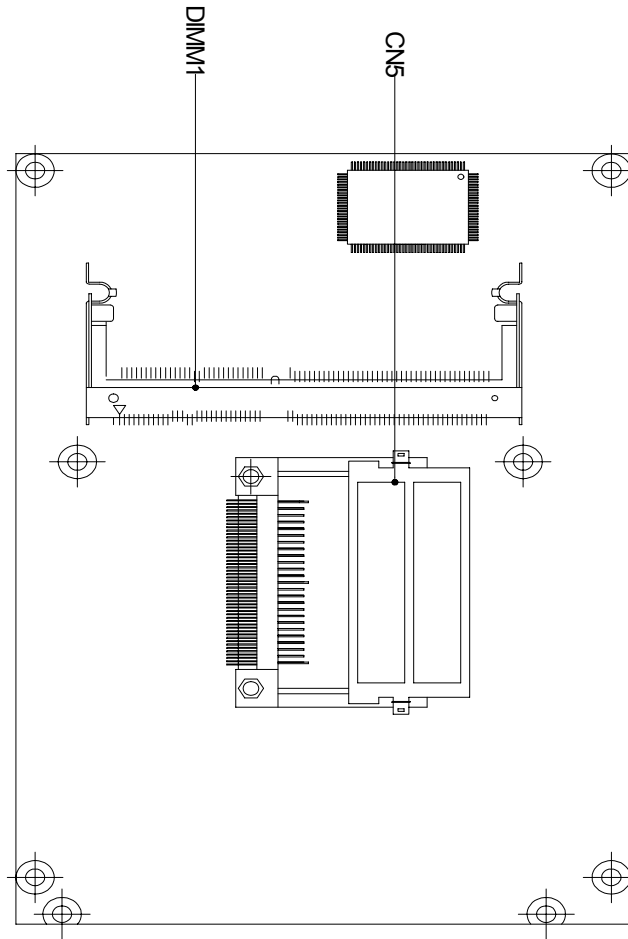
Board size: 5.75" (L) x 4" (W) (146 mm x 101.6 mm)

Weight: 0.88 lb. (0.4 Kg)

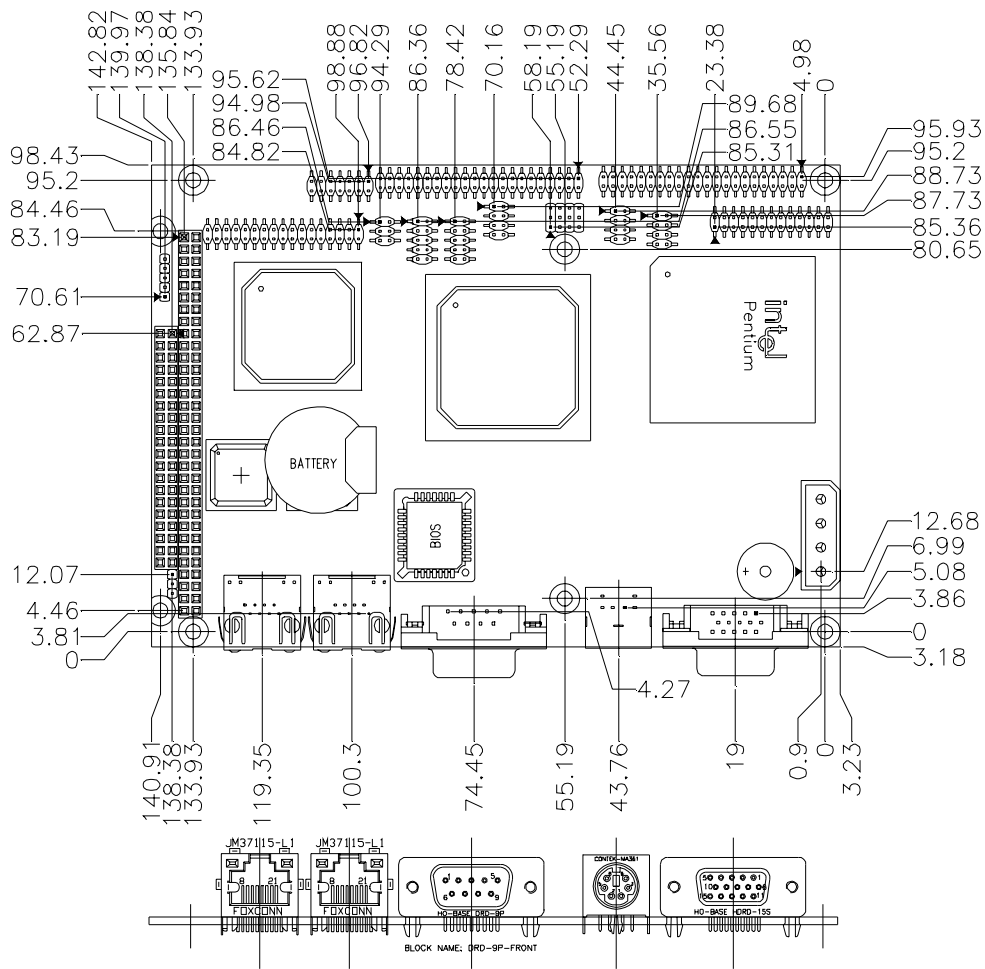
Board layout



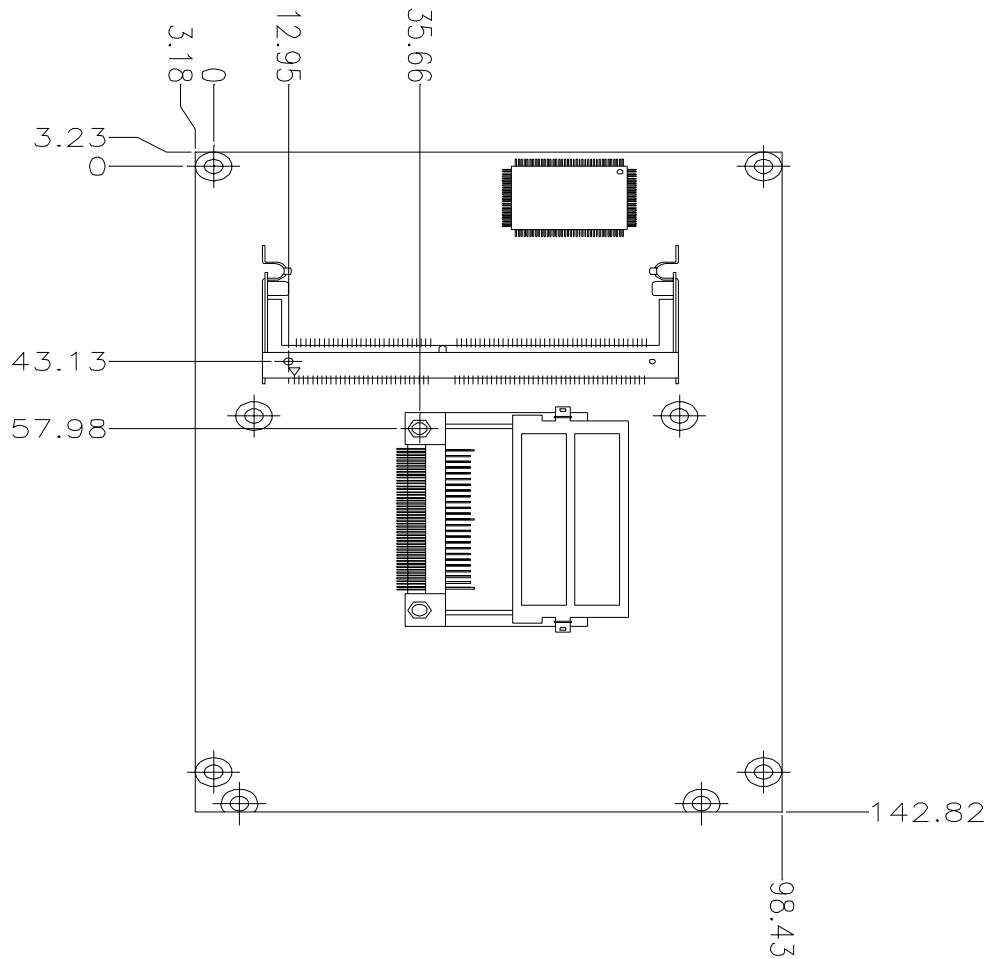
Board layout (Reverse Side)



Board dimensions



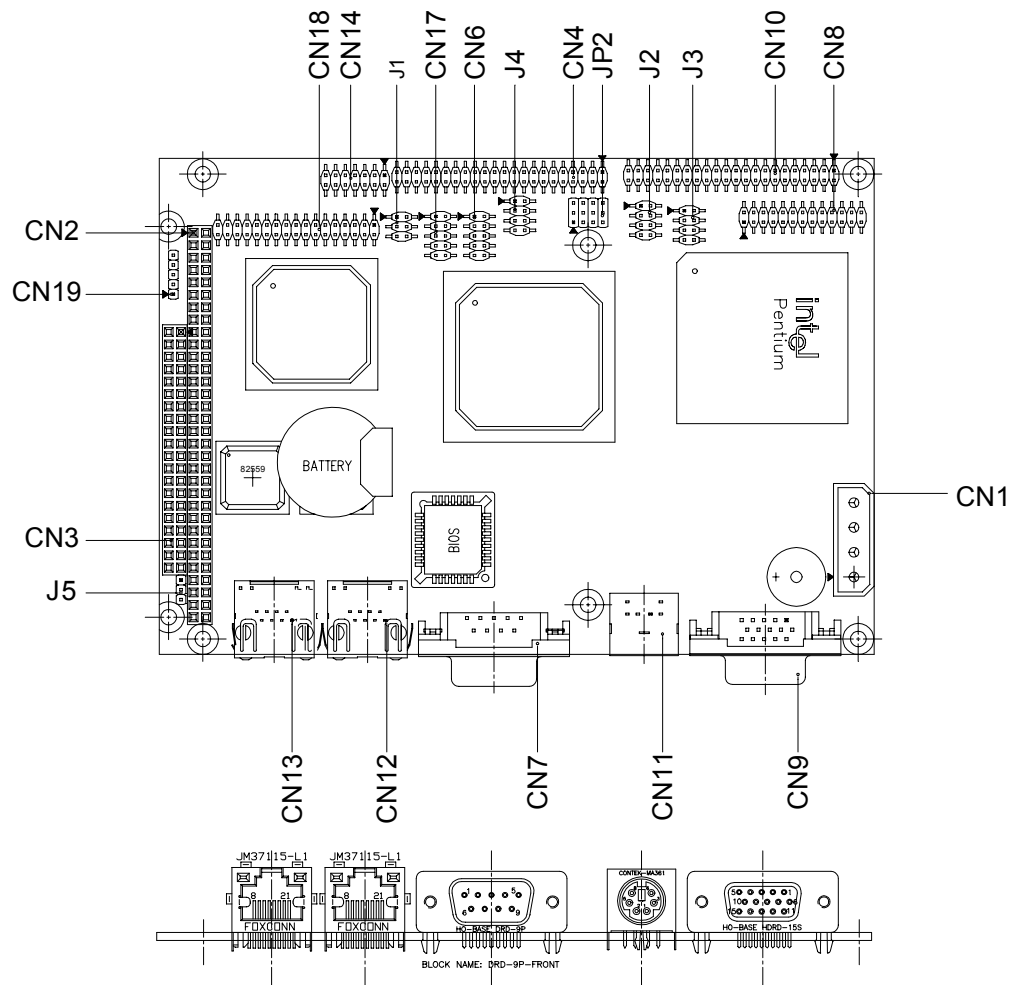
Board dimensions (Reverse Side)



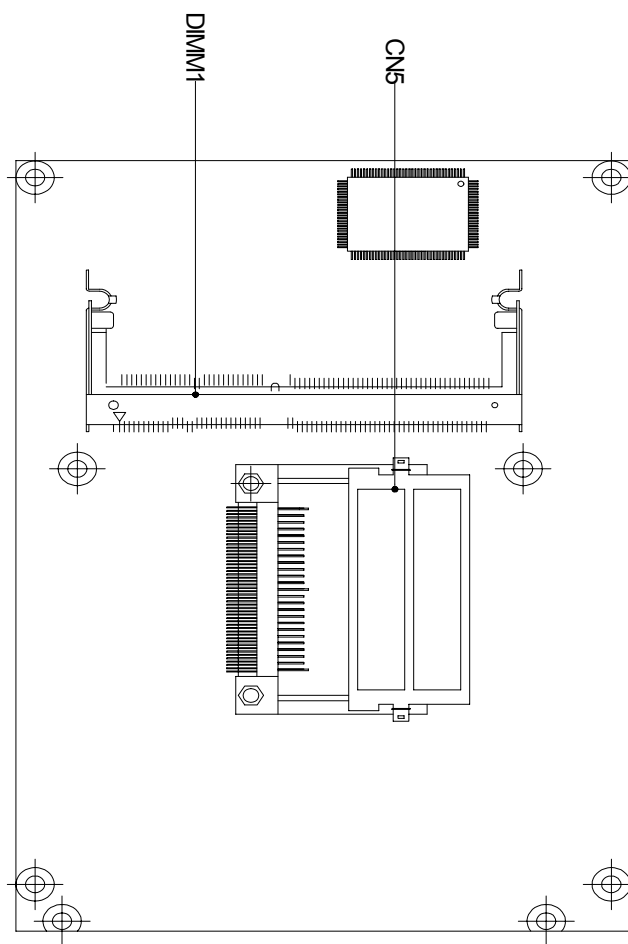
Installation

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.

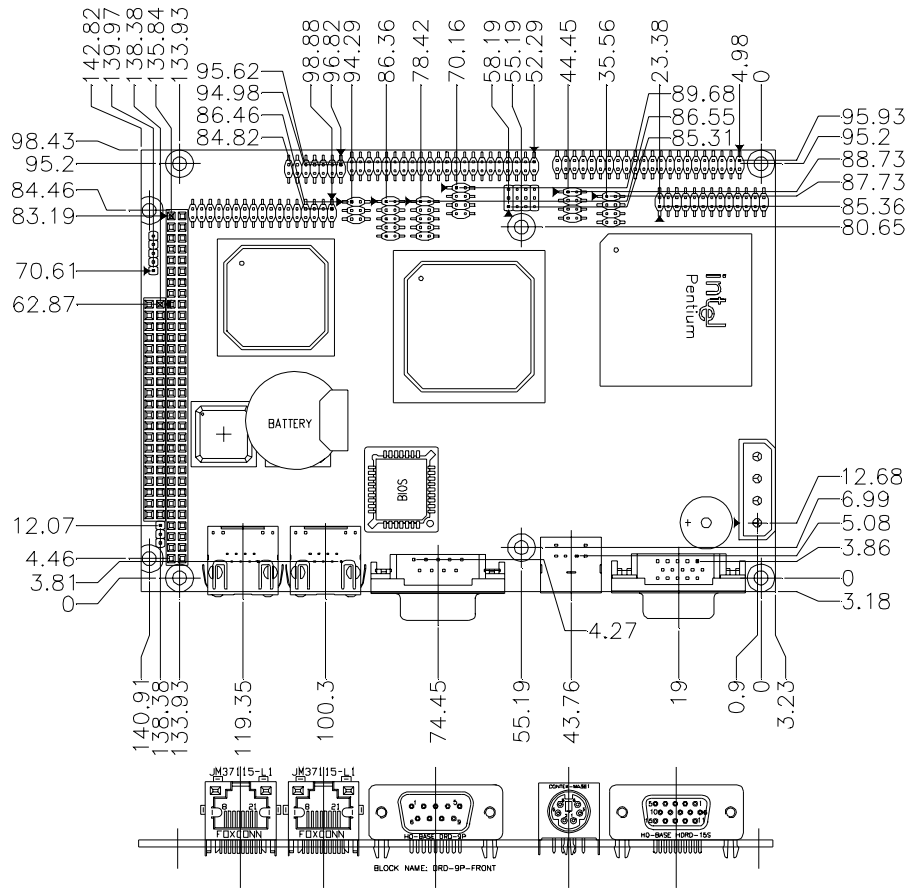
Locating jumpers & connectors



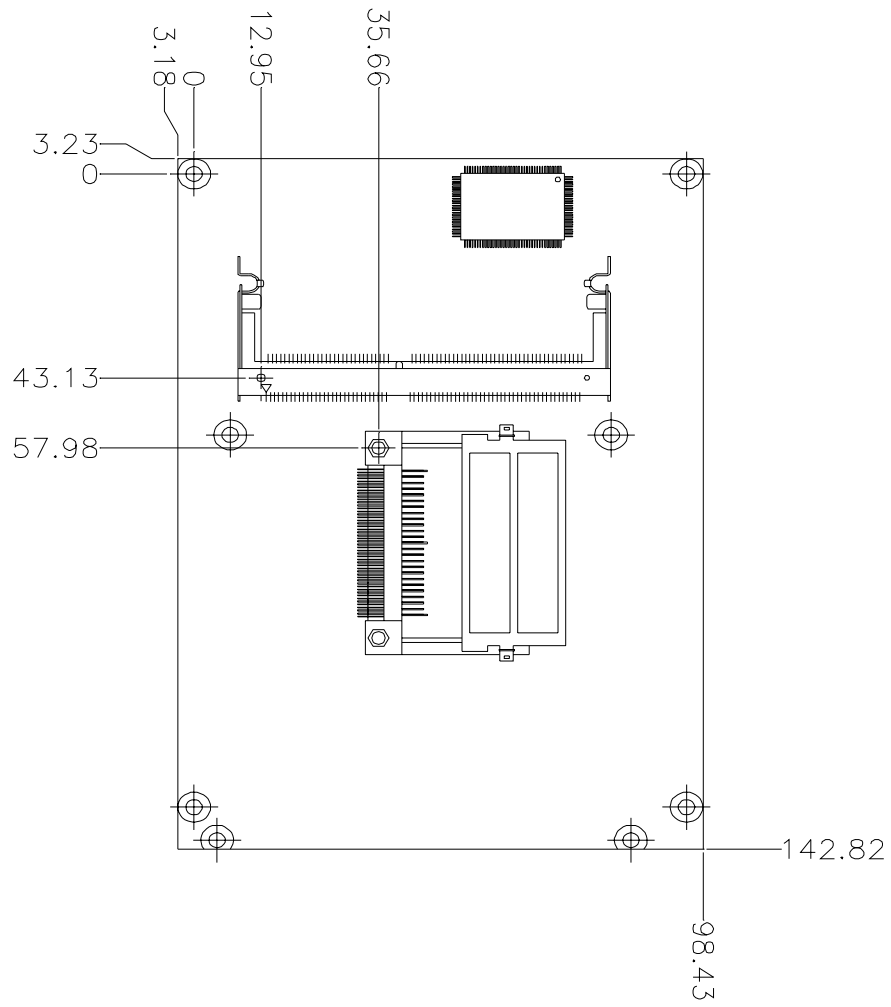
Locating jumpers & connectors (Reverse side)



Mechanical Drawing



Mechanical Drawing (Reverse)



Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers	
Label	Function
J1	RS-232/422/485 COM Port Select
J3	Shift Clock Selection & LCD Panel Voltage Setting
J5	Clear CMOS
JP2	RS-232/422/485 COM Port Select

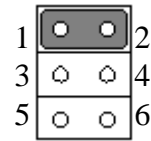
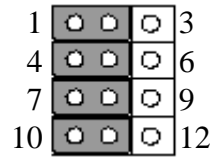
Connectors

Connectors

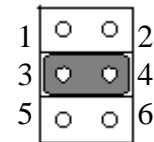
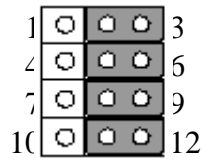
Label	Function
CN1	Power Connector (5 Volt)
CN2 & 3	PC/104 Connector
CN4	IDE Connector
CN5	Compact Flash Socket
CN6	Serial Port Connector (COM2)
CN7	Serial Port Connector (COM1)
CN8	Parallel Port Connector
CN9	VGA Connector
CN10	LCD Connector for DSTN & TTL Panels
CN11	PS/2 Mouse and Keyboard Connector
CN12	RJ-45 Ethernet Connector
CN13	RJ-45 Ethernet Connector
CN14	Audio Connector
CN17	USB Connector
CN18	FDD Connector
CN19	IrDA Connector
DIMM1	SO-DIMM Socket
J2	Front Panel
J4	TV Out Connector

RS-232/422/485 COM2(J1,JP2) Setting

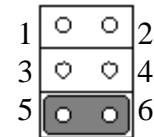
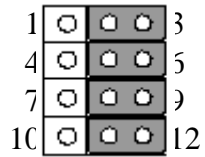
RS-232	JP2	J1
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RS-422	JP2	J1
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RS-485	JP2	J1
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





Shift Clock Selection & LCD Panel Voltage Setting (J3)





Shift Clock -

SHFCLK 1		2 +5V
CLOCK 3		4 LCD Voltage selection
SHFCLK 5		6 +3.3V
GND 7		8 +3.3V





Shift Clock +

SHFCLK 1		2 +5V
CLOCK 3		4 LCD Voltage selection
SHFCLK 5		6 +3.3V
GND 7		8 +3.3V

+5V

SHFCLK 1		2 +5V
CLOCK 3		4 LCD Voltage selection
SHFCLK 5		6 +3.3V
GND 7		8 +3.3V







+3.3V

SHFCLK 1		2 +5V
CLOCK 3		4 LCD Voltage selection
SHFCLK 5		6 +3.3V
GND 7		8 +3.3V

Clear CMOS (J5) Pin 1~3

You can use J5 pin 1~3 to clear the CMOS data if necessary. To reset the CMOS data, set J5 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed.

Clear CMOS (J5) Pin 1~3

	Protect*	Clear CMOS
JP5	1  2  3 	1  2  3 

*default

Power connector (CN1)

In single board computer (non-passive backplane) applications, you will need to connect the power to the Gene-5310 board using CN1. This connector is fully compatible with the standard PC power supply connector. See the following table for its pin assignments:

Power connector (CN1)

Pin	Signal
1	+5V
2	GND
3	GND
4	+12V

IDE hard drive connector (CN4)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the Gene-5310 internal controller. The Gene-5310 IDE controller uses a PCI local-bus interface. This advanced interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size.

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 CN4. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
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.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and the other one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

IDE hard drive connector (CN4)

IDE hard drive connector (CN4)			
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	NC
21	DREQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	GND
29	DACK#	30	GND
31	IRQ14	32	NC
33	ADDR 1	34	NC
35	ADDR 0	36	ADDR 2
37	HARDDISKSELECT0	38	HARDDISKSELECT1
39	IDE ACTIVE	40	GND
41	+5V	42	+5V
43	NC	44	GND

Serial port / COM 2 (CN6)

The Gene-5310 offers two serial ports, one RS-232 and one RS-232/422/485. These ports allow you to connect them to serial devices (mouse, printers, etc.).

COM2 (CN6)

PIN	Signal	PIN	Signal
1	CM2-1	2	CM2-2
3	CM2-3	4	CM2-4
5	GND	6	SDSRB2X
7	SRTSB2X	8	SCTSB2X
9	SRIB2X	10	N.C.

Serial port / COM 1 (CN7)

The Gene-5310 offers two serial ports, one RS-232 and one RS-232/422/485. These ports allow you to connect them to serial devices (mouse, printers, etc.).

COM1 (CN7)

PIN	Signal	PIN	Signal
1	NDCD1	2	NRXD1
3	NTXD1	4	NDTR1
5	GND	6	NRI1
7	NRTS1	8	NCTS1
9	NDSR1	10	N.C.

Parallel port connector (CN8)

Normally, the parallel port is used to connect the board to a printer. The Gene-5310 includes an onboard parallel port, accessed through a 26-pin flat-cable connector. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

Parallel port IRQ

The Gene-5310 supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Parallel port connector table (CN8)

Parallel port connector (CN8)

Pin	Signal	Pin	Signal
1	STROBE	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	NC

Display connectors (CN9, CN10)

The Gene-5310 can drive conventional CRT displays and is capable of driving a wide range of flat panel 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 (CN9)

A simple one-to-one adapter can be used to match CN9 to a standard 15-pin D-SUB connector commonly used for VGA.

Pin	Signal	Pin	Signal
1	Red video	9	DENSITYSELECT (no pin)
2	Green video	10	Sync return (GND)
3	Blue video	11	Monitor ID (notused)
4	Not used	12	SDA
5	GND	13	Horizontal Sync
6	Red returned(GND)	14	Vertical Sync
7	Green returned(GND)	15	SCL
8	Blue returned (GND)		

LCD Connector For TTL (CN10)

CN10 is a 44-pin, dual-in-line header used for flat panel displays.

When the mainboard'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.

LCD connector for TTL (CN10)

Pin	Signal	Pin	Signal
1	+12 V _{DC}	2	+12 V _{DC}
3	GND	4	GND
5	+5 V (or 3.3V)	6	+5 V (or 3.3V)
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	N/C	34	N/C
35	SHF CLK	36	FLM (V SYS)
37	M	38	LP (H SYS)
39	GND	40	ENABKL
41	NC	42	NC
43	NC	44	NC

LCD Connector For DSTN (CN10)

CN10 is a 44-pin, dual-in-line header used for flat panel displays.

When the mainboard'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.

LCD Pin Definition for DSTN (CN10)

Pin	Signal	Pin	Signal
1	NC	2	NC
3	GND	4	GND
5	+5V or +3.3V	6	+5V or +3.3V
7	DISP	8	GND
9	NC	10	NC
11	NC	12	NC
13	DU3	14	DU2
15	DU1	16	DU0
17	NC	18	NC
19	DU7	20	DU6
21	DL7	22	DL6
23	DL5	24	DL4
25	NC	26	NC
27	DU5	28	DU4
29	DL3	30	DL2
31	DL1	32	DL0
33	NC	34	NC
35	XCK	36	YD
37	NC	38	LP
39	GND	40	NC
41	NC	42	NC
43	NC	44	NC

Keyboard and PS/2 mouse connector (CN11)

The Gene-5310 provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. 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.

Keyboard and mouse connector (CN11)

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

100Base-T Ethernet connector (CN12, CN13)

This 100Base-T Ethernet connector is a standard RJ-45 connector. The onboard Intel 82559GD Fast Ethernet controller supports 10Mb/s and 100 Mb/s N-way auto-negotiation operation. Ethernet is the most popular type of local area network, which sends its communications through radio frequency signals carried by a coaxial cable.

Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps. A newer version of Ethernet, called *100Base-T* (or *Fast Ethernet*), supports data transfer rates of 100 Mbps. And the newest version, *Gigabit Ethernet* supports data rates of 1 gigabit (1,000 megabits) per second.

100Base-Tx Ethernet connector (CN12, 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

Audio connector (CN14)

The Gene-5310 provides all major audio signals on a 14-pin flat-cable connector, CN14.

Attach the Mic In, Line In, and Audio Out to the corresponding pins as shown in the following table.

Audio connector (CN14)

Pin	Signal	Pin	Signal
1	MIC In	2	+2.5V
3	GND	4	CD_GND
5	Line In Left	6	CD_Left
7	Line In Right	8	CD_GND
9	GND	10	CD_Right
11	Audio Out Left	12	Audio Out Right
13	GND	14	GND

USB connector (CN17)

The Gene-5310 provides dual USB (Universal Serial Bus) ports, that provide 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 connector (CN17)

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

Floppy drive connector (CN18)

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 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).

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 CN18. Make sure that the red or blue wire corresponds to pin 1 on the connector.
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.

Floppy drive connector (CN18)

Floppy drive connector (CN18)			
Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	NC
5	GND	6	NC
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	READDATA
31	GND	32	HEAD SELECT
33	GND	34	DISK CHANGE

IrDA connector (CN19)

The IrDA connector (CN19) can be configured to support wireless infrared module, with this module and application software such as laplink or Win95/98 Direct Cable connection, user can transfer files to or from 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 enable infrared function from BIOS setup. Make sure to have correct orientation when you plug onto IrDA connector (CN19).

IrDA connector (CN19)

Pin	Signal
1	+5V
2	N.C.
3	IrRx
4	GND
5	IrTx

Front Panel (J2)

Front Panel (J2)			
1	□	○	2 GND/Power LED
3	○	○	4 GND/IDELED
5	○	○	6 EXTSMI/GND
7	○	○	8 RESET/GND

TV-output connector (J4)

The Gene-5310 has an eight pin connector offering tv output connection. The pin definition is listed below.

TV-Out 4*2 Pin Connector (2.0mm) (J4)			
Pin	Signal	Pin	Signal
1	LUMF	2	Composite
3	GND	4	GND
5	CHROMF	6	NC
7	GND	8	NC

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.

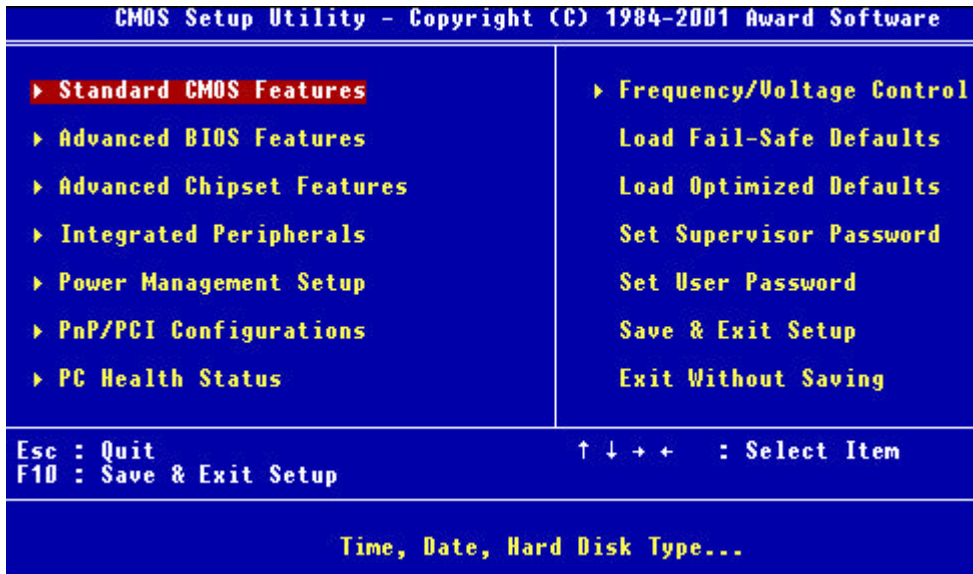
In Case of Problems

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.

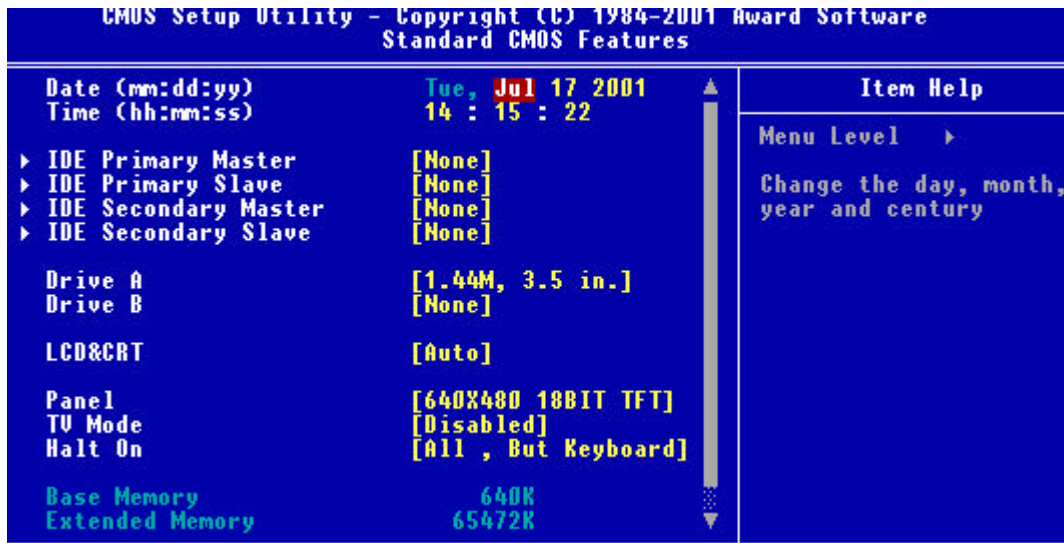
Save and Exit Setup

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. NONE- No drive type to be selected
2. Manual- This will allow you to manually set the drive type you are using in your system. (See Below)

ACCESS Mode: Auto, Large, CHS or LBA

- **Auto:** The BIOS automatically determines the optimal mode.
- **CHS:** This allows the user to enter their own hardware values
- **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.

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

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

TV Mode

Phase Alternation Line (PAL) is the [analog](#) television display standard that is used in Europe and certain other parts of the world. PAL is one of the three major TV standards together with the American National Television Systems Committee ([NTSC](#)) color television system and the French Sequential Couleur avec Memoire (SECAM). NTSC is also used in Japan. SECAM is used in countries of the former Soviet Union.

The choices: NTSC, PAL, Disable

LCD&CRT

GENE-5310 can be used with various visual display peripherals. It can also display the same image on both a CRT and LCD monitor simultaneously. This function allows the end user to select the type of visual display peripheral they are incorporating with the GENE-5310 single board computer.

The choices: LCD, CRT, Both, and AUTO

Panel

GENE-5310 can be used with various display panels. Please select the type of panel you are incorporating with our single board computer. Consult your panel manual for detail information.

The choices: Reserved, (800x600 TFT), (640x480 18-bit TFT), (800x600 18-bit DSTN), (640x480 18-bit DSTN), and (1024x768 TFT).

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.

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 Boot Device

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

The choices: Floppy, LS120, HDD0, HDD1, HDD2, HDD3, SCSI, CDROM, LAN, Disabled.

Boot Other Device

If your boot device is not included in the following choices Floppy, LS120, HDD0, HDD1, HDD2, HDD3, SCSI, CDROM, LAN, you may set **First/Second/Third Boot devices to Disable** and **enable the BOOT Other Device function**. The system will automatically boot the other device.

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 Delay

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

Typematic Rate

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, 30.

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

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 Award BIOS 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 are C0000-C7FFF. 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.

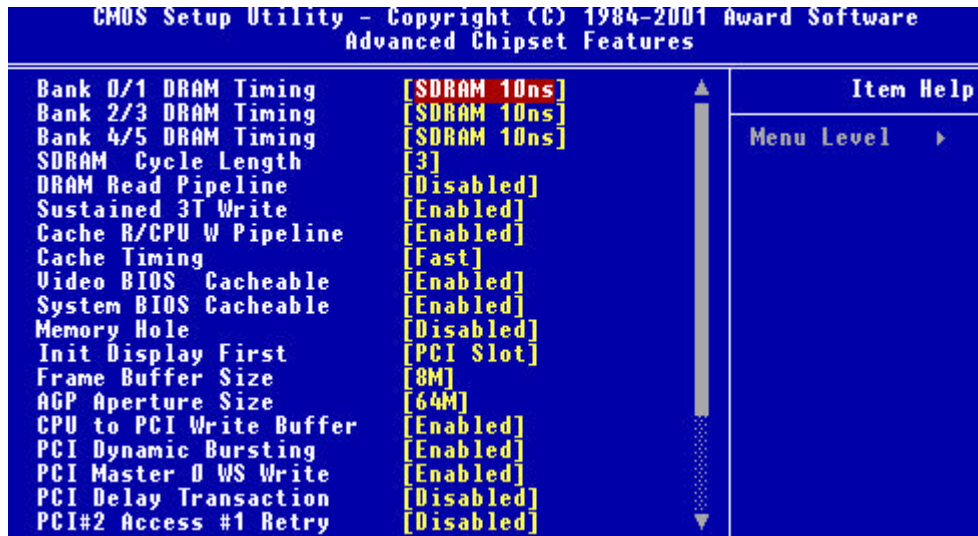
Small Logo (EPA) Show

The choices: Enabled, disabled

Cyrix 6x86/MII CPUID

Disable CPUID instructions if you are using Netware version 5.0.

Advanced Chipset Features



Bank 0/1 Dram Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you are qualified.

Bank 2/3 Dram Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you are qualified.

Bank 4/5 Dram Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you are qualified.

SDRAM Cycle Length

This field sets the CAS latency timing.

The choices: 3, 2

DRAM Read Pipeline

The choices: Enable, disable.

Sustained 3T Write

You may enable this field when pipelined burst synchronous SRAM 9PBSRAM cache memory is installed. It enables sustain three cycle write access for PBSRAM access at 66 or 75 MHz

Cache P/CPU W Pipeline

The choices: Enable, disable.

Cache Timing

For a secondary cache of one bank, select faster. For a secondary cache of two banks, select fastest.

The choices: Fast, Fastest

Memory Hole

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

Initial Display first

This function allows the end user to determine their primary display.

The choices: AGP, PCI slot

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFh, 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.

Frame Buffer Size

Share memory size for VGA interface can be adjusted to your preference.

The choices: 4M, 8M, and NA

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: **4M, 8M, 16M, 32M, 64M, 128M**

On-Chip USB

Select enabled if your system contains a Universal Serial Bus controller and you have a USB keyboard. If you disable this function you will not be able to access the USB Keyboard Support below.

USB Keyboard Support

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

OnChip Sound

This item allows you to control the onboard VIA 1611 audio.

The choices: Auto, disabled

CPU to PCI Write Buffer

When this field is enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and PCI bus. When, disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI Dynamic Bursting

When enabled, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions do not.

PCI Master 0 WS Write

When enabled, writes to the PCI bus are executed with zero wait states.

PCI Delay 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.

PCI#2 Access #1 Retry

When disabled, PCI#2 will be connected until access finishes (default). When enabled, PCI#2 will be disconnected if max retries are attempted without success.

AGP Master 1 WS Write

System will run single wait state delay before write data from buffer, if user set to disable system will run twice wait states so system can stable.

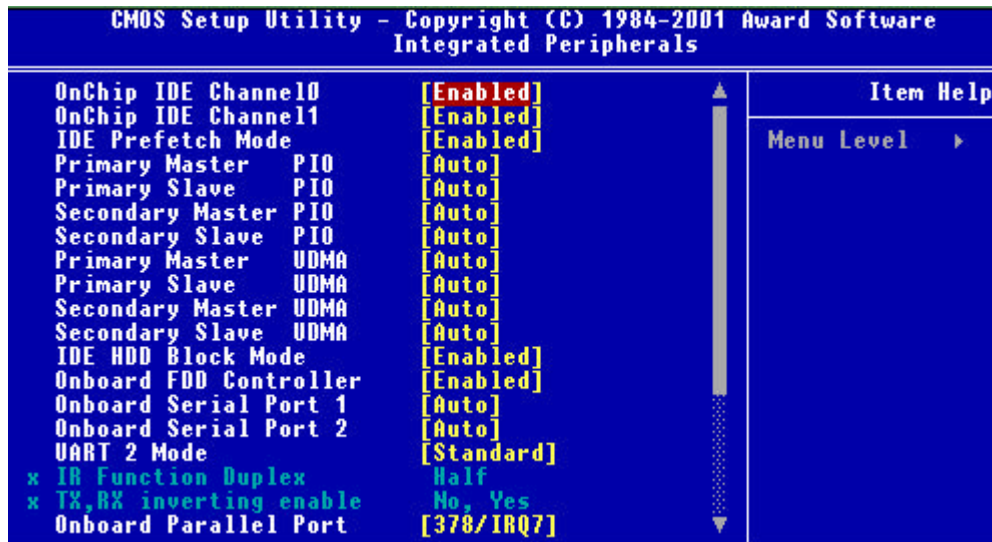
AGP Master 1 WS Read

System will run single wait state delay before read data from buffer, if user set to disable system will run twice wait states so system can stable.

Memory Parity / ECC Check

Select enabled, disabled or Auto. In auto mode the BIOS enables memory checking automatically when it detects the presence of ECC or parity DRAM.

Integrated Peripherals



On-Chip IDE Channel 0

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 IDE Channel 1

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 Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching, ofr faster drive accesses. If you install a primary and or secondary add in IDE interface, set this field to Disabled if the interface does not support prefetching.

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 DMA33/66 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 IDE Cable both support Ultra DMA 33/66 select Auto to enable BIOS support.

The choices: Auto, disable

IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

Onboard FDC/FDD 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 2 Mode

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 port
ASK IR	Amplitude shift keyed infrared port

IR Function Duplex

Select the value required by the IR device connected to the IR port. Full duplex mode permits simultaneous two direction transmission. Half duplex mode permits transmission in one direction only at a time.

TX, RX inverting enable

Consult your IR peripheral documentation to select the correct setting .

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 EPP Type

Select EPP port type 1.7 or 1.9.

Parallel Port Mode

Two bidirectional parallel ports.

Supports Normal, ECP, EPP, ECP + EPP.

ECP Mode Use DMA

Select a DMA channel for the port.

Onboard Legacy Audio

Onboard Legacy Audio can be set as enabled or disabled. However disabling the Legacy Audio will render the functions listed below useless.

Sound Blaster

The on board Sound Blaster can be configured as enable or disable.

SB I/O Base Address

Select a base I/O address for the Sound Blaster interface.

The choices: 220H, 240H, 260H, 280H

SB IRQ Select

Select a IRQ to use for the on board sound blaster.

The choices: IRQ 5, IRQ 7, IRQ 9, IRQ 10

SB DMA Select

Select a DMA address to use for the on board sound blaster.

The choices: DMA0, DMA1, DMA2, DMA3

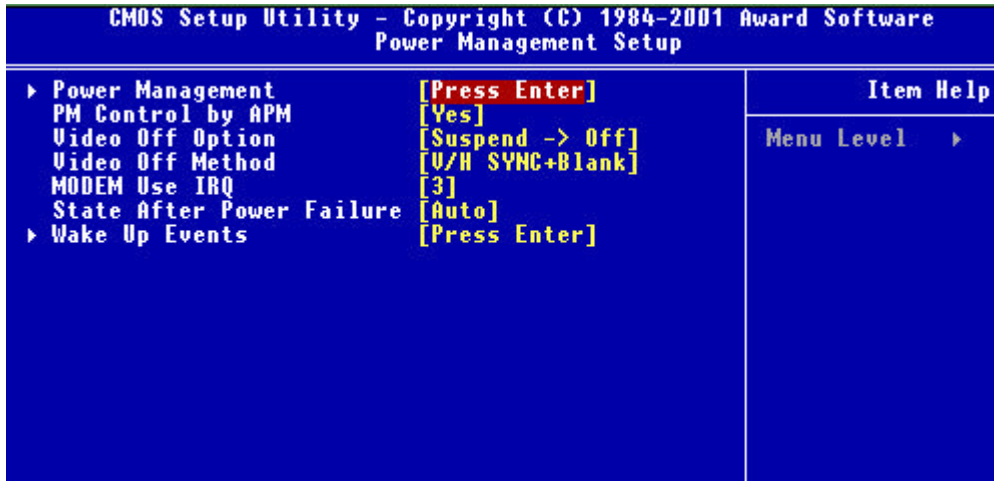
MPU-401

Select enabled to configure the MPU-401 interface.

MPU-401 I/O Address

Select a base I/O address for the MPU-401 interface.

Power Management Setup



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

Maximum Saving

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 Minute
3. Suspend Mode - 1 Minute

Minimum Saving

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 Hour
3. Suspend Mode - 1 Hour

User Define

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.
3. Suspend Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.

PM Control by APM

If advanced power management is installed on your system, selecting Yes gives better power savings.

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 Option

Select the power saving modes during which the monitor goes blank.

Always on	Monitor remains on during power saving modes.
Suspend--Off	Monitor blanked when system enters suspension mode.
Suspend, standby--Off	Off monitor blanked when system enters either suspend or standby mode.
All Modes--Off	Monitor blanked when system enters any power saving mode.

MODEM use IRQ

This determines the IRQ in which the MODEM can use.

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

State after power failure

This field lets your computer determine the state it returns to after a power failure. If the function is set as OFF then the computer will not boot after power fail. If the function is set as ON then the computer will remain reboot after power fail.

-Wake Up Events-

VGA

When enabled, you can set the VGA to awaken the system

LPT & COM

When LPT & COM is set to ON, any activity from one of the system peripheral devices or IRQs, wakes up the system.

HDD & FDD

When HDD & FDD is set as ON, any activity from one of the listed system peripheral devices wakes up the system.

PCI Master

When PCI Master is set as ON, any activity from one of the listed system peripheral devices wakes up the system.

RTC Alarm Resume

This function acts like an alarm clock. If it is enabled the system will power on at the predetermined time and date.

Date- Set the date for system to awake.

Resume Time-Set the time for system to awake.

Primary INTR

When set ON, activity will neither prevent the system from going into a power management mode nor awaken it.

IRQs Activity Monitoring

The list of IRQ can either have their activity monitored or not monitored.

PnP/PCI Configurations

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software PnP/PCI Configurations		Item Help
PNP OS Installed	[No]	Menu Level ▶ Select Yes if you are using a Plug and Play capable operating system. Select No if you need the BIOS to configure non-boot devices.
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Manual]	
▶ IRQ Resources	[Press Enter]	
▶ DMA Resources	[Press Enter]	
PCI/UGA Palette Snoop	[Disabled]	
Assign IRQ For USB	[Enabled]	

PNP OS installed

Select Yes if the system operating environment is Plug and Play aware, for example Windows 95.

Select No if you need the BIOS to configure non-boot devices.

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 preceded by a “>”. **The choices: Reserved, 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

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

PCI/VGA Palette Snoop

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

Assign IRQ for USB

The choices: Enable, disable

PC Health Status

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software	
PC Health Status	
Vcore	Item Help
2.5V	Menu Level ▶
3.3V	
5V	
12V	

PC Health Status

Your system does not allow you to alter any of the setting in this menu. The system engineer has already designated the correct setting for Gene-5310.

Frequency/Voltage Control

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Frequency/Voltage Control		
Auto Detect DIMM/PCI Clk	[Enabled]	Item Help
Spread Spectrum	[Disabled]	
CPU Host Clock (CPU/PCI)	[Default]	Menu Level ▶

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: **. 25% , . 50% , Disable**

CPU Host Clock (CPU/PCI)

Select Default or select a timing combination for the CPU and the PCI bus. When set to default, the bios uses the actual CPU and PCI bus clock values.

Load Fail-Safe Defaults



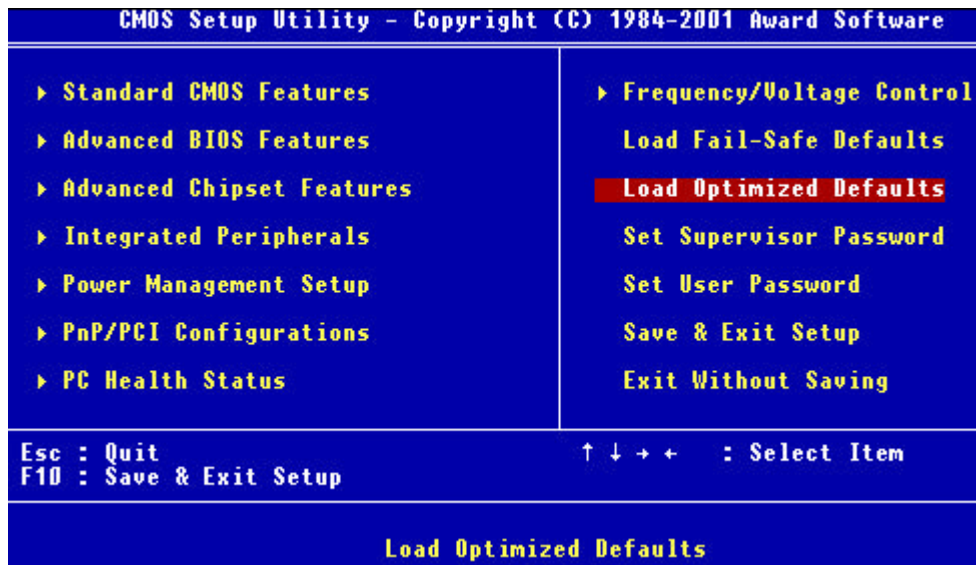
Load Fail-Safe Defaults

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



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.

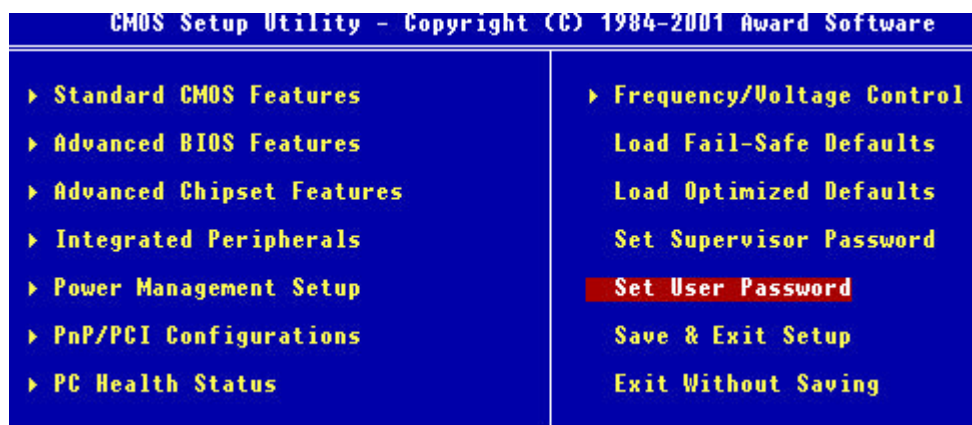
In the Security Option item in the BIOS Features Setup screen, select System or Setup:

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.

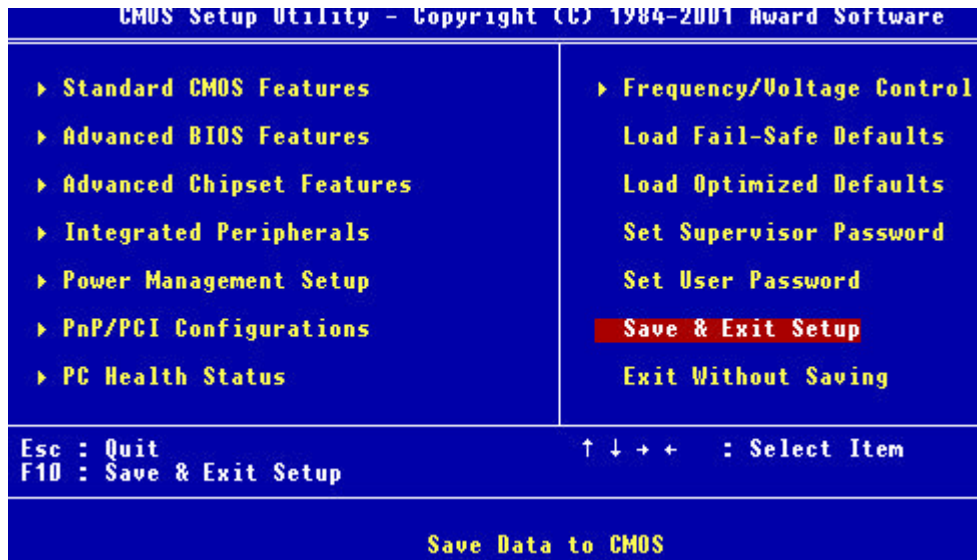
In the Security Option item in the BIOS Features Setup screen, select System or Setup:

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



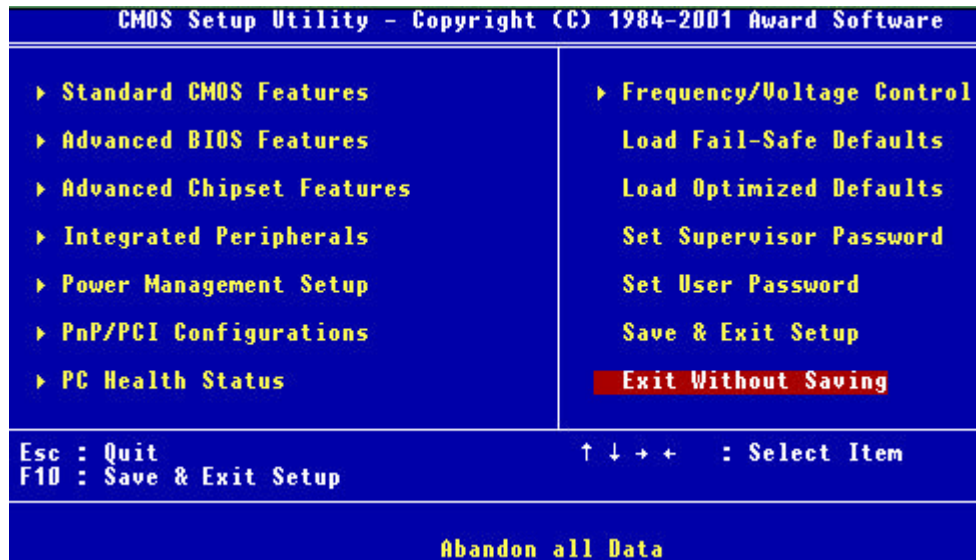
Save to CMOS and EXIT

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.

Exit 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 INSTALLA- TION

This Gene-5310 is equipped with an audio, VGA and LAN interface. This chapter provides instructions for installing the software drivers on these peripherals.

VGA Driver Installation for Windows OS

- =>Insert the **Gene-5310 CD Diskette** into the CD ROM Drive.
- =>Click on the **Start** Button
- =>Click on the **Settings** ICON
- =>Click on the **Control Panel** ICON
- =>Click on the **Systems** ICON
- =>Click on the **Device Manager** Tab
- =>Click on the **Display Adapter** File
- =>Another file will appear below the Display adapter (CBi7), click on this file
- =>Click on the **Driver** Tab
- =>Click on the **Update Driver** Button
- =>A driver installation image will appear
- =>Click on **Next**
- =>Select CD ROM drive
- =>Click on **Next**
- =>Select the **5310 Driver** File
- =>Select **VGA Folder**
- =>Select the corresponding operating system being used
- =>Click on **Yes**
- =>Click on **Next**
- =>Click on **Next**
- =>Click on **Finish**
- =>Installation process is complete shutdown the computer and allow the system to reboot

Intel 82559GD Driver Installation for WIN. OS

The ethernet driver installation procedure must be performed twice, because Gene-5310 has two Ethernet ports onboard

- =>Insert the **Gene-5310 CDDiskette** into the CD ROM Drive.
- =>Click on the **Start Button**
- =>Click on the **Settings ICON**
- =>Click on the **Control Panel ICON**
- =>Click on the **Systems ICON**
- =>Click on the **Device Manager Tab**
- =>Click on the **Network Adapter File**
- =>Another file will appear below the Networkn adapter (82559XX), click on this file
- =>Click on **Driver**
- =>Click on **Update Driver**
- =>A driver installation image will appear
- =>Click on **Next**
- =>Select, search for a better driver than the one your devise is using now
- =>Click on **Next**
- =>Select **CD ROM Drive**
- =>Click on **Next**
- =>Select the **5310 Driver File**
- =>Select the Ethernet File
- =>Click on **Yes**
- =>Click on **Next**
- =>Click on **Next**
- =>Click on **Finish**
- =>Installation process is complete shutdown the computer and allow the system to reboot

Audio Driver Installation for Windows OS

- =>Insert the **Gene-5310 CD Diskette** into the CD ROM Drive.
- =>Click on the **Start Button**
- =>Click on the **Settings ICON**
- =>Click on the **Control Panel ICON**
- =>Click on the **Systems ICON**
- =>Click on the **Device Manager Tab**
- =>Select the **Sound Controller File**
- =>Another file will appear under the Sound Controller file (VT82C686B), select this file
- =>Click on **Driver**
- =>Click on **Update Driver**
- =>A driver installation image will appear
- =>Click on **Next**
- =>Select, search for a better driver than the one your device is using now
- =>Click on **Next**
- =>Select **CD ROM Drive**
- =>Click on **Next**
- =>Select the **5310 Driver File**
- =>Select the **Audio File**
- =>Click on **Yes**
- =>Click on **Next**
- =>Click on **Next**
- =>A image of VIA Audio will appear
- =>Installation process is complete shutdown the computer and allow the system to reboot

APPENDIX

A

Programming the Watch-dog Timer

The mainboard is equipped with a watch-dog timer that resets the CPU or generates an interrupt if processing comes to a stand-still 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.(About 10% of deviation may happen)
 - outportb(0x443, 30); // set watchdog to 30 seconds*
2. To set the time-out event:
 - output data to **port 0x444**,
 - 0: reset system
 - 1, 2, 3: IRQ 10, 15, 11 respectively
 - 4: NMI
 - e.g.
 - outportb(0x444, 0); // 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, 0); // set time-out event to reset-system
outportb(0x443x 10 ); // set time-out interval to 10 seconds
customer_job(); // execute your job here, be sure your
// job will finished within 10 seconds
outportb(0x443, 0); // refresh watchdog timer, otherwise
// the system will reset after time-out
outputb(0x443, 20); // set time-out interval to 20 seconds
another_job(); // another job finished in 20 seconds
outportb(0x443, 0) // disable watchdog timer
...
...
```

