

NOVA-7898

**Socket 370 Based Embedded Board with
Gigabit, 10/100Mbps Ethernet, VGA, Audio**

PCB Version 2.0

Manual Version 1.0

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1. Introduction

Welcome to the NOVA-7898 Socket 370 Intel® Celeron® and Pentium III® (FC-PGA) with Multimedia & Multi-LAN Ethernet Embedded Little Board. , which comes with high performance Pentium® III, or economical Celeron Processor with the Intel advanced chipset 815E. This product is designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, the NOVA-7898 provides on chip VGA, which provides up to 1600x1200 resolution and shares the main memory.

An advanced high performance super I/O chip – W83627 is used in the NOVA-7898 board. Which provide two UARTs that are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architectures.

NOVA-7898 supports up to six network controllers in all. There are two onboard controllers, Intel 82801BA integrated LAN controller and Intel 82559 controller. Other network controllers are connected through the two special PCI connectors – PC11 and PC12, and specially designed modules are provided to be inserted into these connectors. PC11 can support dual Gigabit LAN module or dual 10/100BASE-TX LAN module, but PC12 can only support dual 10/100BASE-TX LAN module.

NOVA-7898 uses the advanced INTEL 815E Chipset, which supports up to 133MHz FSB CPU and 133MHz SDRAM memory modules.

1.1 Specifications:

CPU	Supports socket 370 based CPU, such as Celeron® Processor, 700MHz –1.2GHz or above and Pentium® III(FC-PGA) Processor, 1.26GHz or above
DMA Channels	7
Interrupt Levels	15
Chipset	Intel 815E
Memory	Two 168 pin DIMM sockets. Maximum memory capability up to 512MB/133MHz
Ultra ATA/33/66/100 IDE Interface	<ul style="list-style-type: none">● Two PCI enhanced IDE channels (4 IDE devices).● The south bridge ICH2 supports Ultra ATA/33/66/100 IDE interface.● In order to support Ultra ATA66/100 Hard disk, a specific cable (maximum length of 45 cm) is available
Floppy disk drive interface	Supports one single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
Serial ports	<ul style="list-style-type: none">● Two high-speed 16C550 compatible UARTs with 16-byte FIFO buffer.● Maximum data transfer speed up to 115Kbps.
Parallel Port	<ul style="list-style-type: none">● One IEEE1284 compatible Bi-directional ports.● Supports SPP/ECP/EPP.
IrDA	Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) Interface.
USB	Supports two USB 1.1 compatible ports.
Audio	Onboard AC'97Codec supports two channel Left/Right Line IN, and Left/Right Speaker Out, MIC IN, CD IN.

Watchdog timer	<ul style="list-style-type: none"> ● Software programmable – enable/disabled. ● Timer interval is 1 ~ 255 second. ● System Reset will be generated while time out.
VGA Controller	<ul style="list-style-type: none"> ● Embedded VGA controller ● Screen Resolution: up to 1600x1200 in 256 Colors at 85Hz Refresh.
Intel 82801BA embedded LAN and 82559 PCI LAN Controller	<ul style="list-style-type: none"> ● IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX. ● Fast back-to-back transmission support with minimum interframe spacing. ● Connected to the user LAN through RJ45 connector.
Keyboard Controller	8042 compatible for keyboard and PS/2 mouse
Power Consumption	5V/9A and 12V/0.1A, as running by PIII 933MHz and 256MB
Operating Temperature	0° ~ 55° C (CPU needs Cooler)

1.2 Package Content

In addition to this *User's Manual*, the NOVA-7898 package includes the following items:

- NOVA-7898 socket 370 bases Single Board Computer
- One FDD cable
- One HDD cable
- One VGA cable
- One LPT cable
- One RS-232 serial ports Cable
- One AUDIO ports Cable
- One Keyboard/Mouse Cable

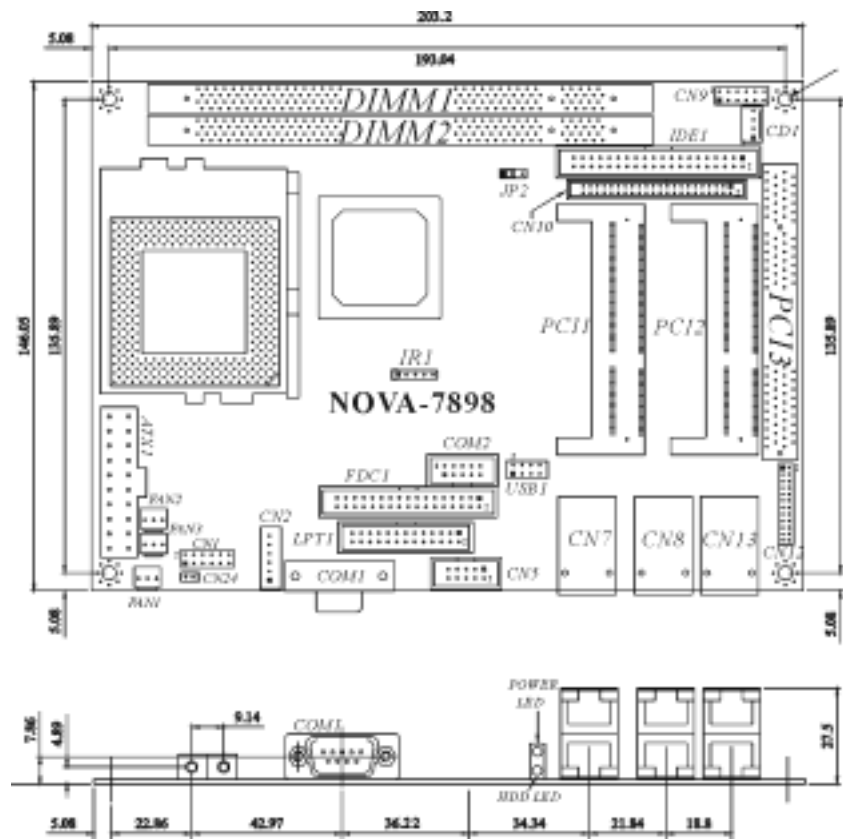
2. Installation

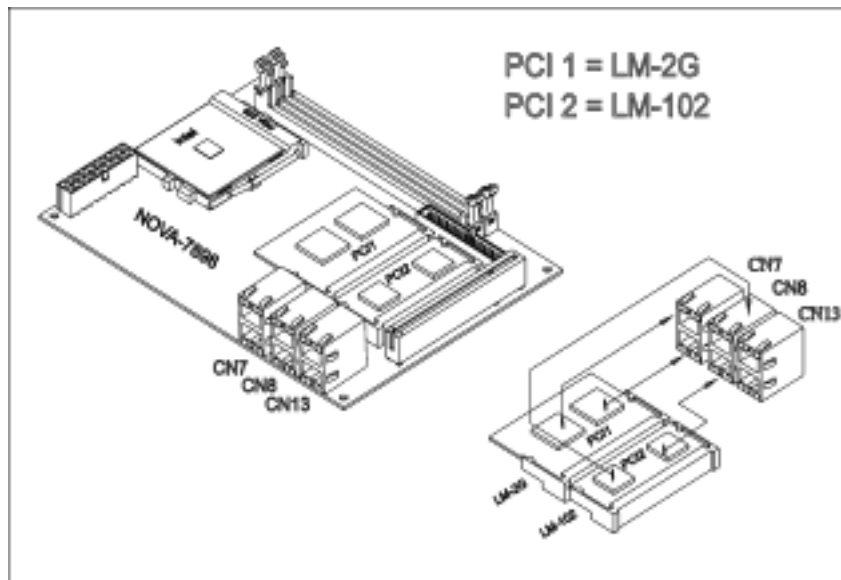
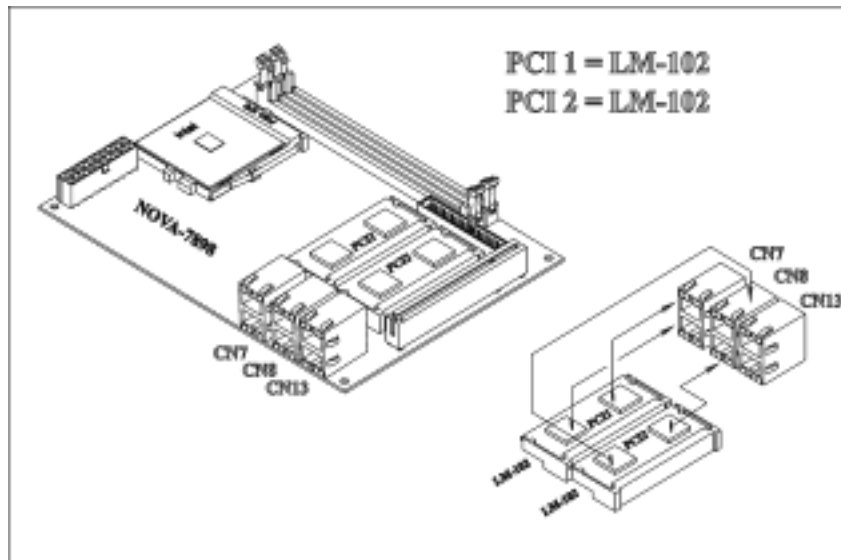
This chapter describes how to install the NOVA-7898. At first, the lathe user of NOVA-7898 is shown, then the unpacking information that the user should be careful with is described. After that comes jumpers and switches settings for the NOVA-7898's configuration, such as CPU type selection, system clock setting, watch dog timer and other such information.

2.1 NOVA-7898's Lathe user

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NOVA-7898's Lathe user





2.2 Clear CMOS Setup

The CMOS RAM holds the board's configuration data, which had to be set by means of system BIOS. In case the user want to clear the CMOS RAM, for example, if the user forgets the password and needs to clear the CMOS setting then set password again.), the user need to close the JP2 for about 3 seconds, then open it again. For normal operation, JP2 must be open at all times.

- **JP2: Clear CMOS Setup**

JP2	DESCRIPTION
1-2	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

3. Connection

This chapter describes how to connect peripherals, switches and indicators to the NOVA-7898 board. Connectors on NOVA-7898 are listed in the following table:

Table of Connectors

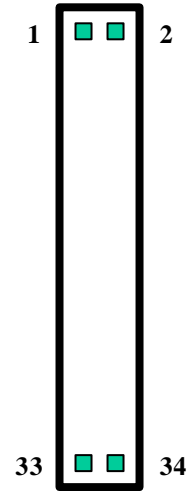
LABEL	DESCRIPTION
ATX1	ATX Power Connector
CD1	CD-IN Connector
CN1	External Switch and Indicators
CN2	DIN Connector for Keyboard/Mouse
CN5	VGA Connector
CN7	LAN Connector for PCI 1
CN8	LAN Connector for PCI 2
CN9	Audio Connector
CN10	Secondary IDE Connector
CN12	LAN LED Connector
CN13	LAN Connector for Onboard LAN
CN24	ATX Power On/Off Button Connector
COM1	Serial Port 1
COM2	Serial Port 2
FAN1 ~ 3	Fan Connectors
FDC1	FDD Connector
IDE1	Primary IDE Connector
IR1	IrDA Connector
LPT1	Parallel Port Connector
PCI1	SOCKET PCI Slot
PCI2	SOCKET PCI Slot
PCI3	Standard PCI Slot
USB1	USB Connector

3.1 Floppy Disk Drive Connector

NOVA-7898 board is equipped with a 34-pin daisy-chain driver connector cable.

FDC1 : FDC CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

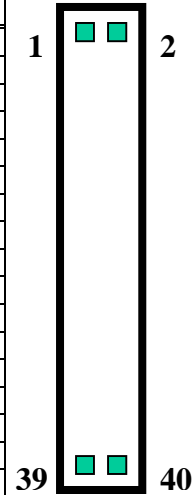


3.2 Ultra ATA33/66/100 IDE Disk Drive Connector

The user can attach two IDE(Integrated Device Electronics) hard disk drives onto the NOVA-7898 IDE controller.

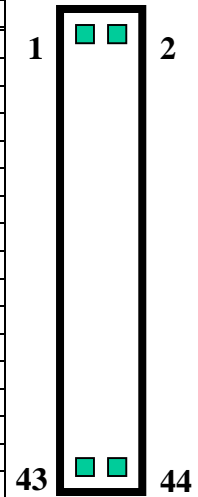
IDE 1 : Primary IDE Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
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	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND



CN10 (IDE 2) : Secondary IDE Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
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	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V	42	+5V
43	GROUND	44	NC

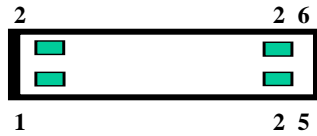


3.3 Parallel Port

This port is usually connected to a printer. The NOVA-7898 includes an on-board parallel port that can be accessed through a 26-pin flat-cable connector as well as supports the following three modes –SPP, EPP and ECP.

LPT1 : Parallel Port Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

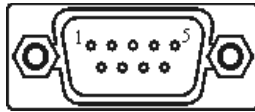


3.4 Serial Ports

The NOVA-7898 offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO in each serial port.

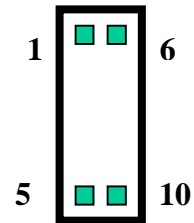
COM1 : D_SUB 9-PIN Connector

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)



COM2 : 10-pin Connector

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)
10	NC



3.5 Keyboard Connector

The NOVA-7898 provides 6-PIN Header keyboard/mouse connector.

CN2 : 6-pin Mini-DIN Keyboard/Mouse Connector

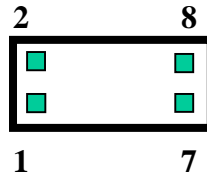
PIN NO.	DESCRIPTION
1	+5V STBY
2	MOUSE DATA
3	MOUSE CLOCK
4	KEYBOARD DATA
5	KEYBOARD CLOCK
6	GROUND

3.6 USB Port Connector

The NOVA-7898 provides Two USB ports.

USB1 : USB 8-PIN HEADER

1.	VCC
2.	GROUND
3.	DATA0-
4.	DATA1+
5.	DATA0+
6.	DATA1-
7.	GROUND
8.	VCC



3.7 IrDA Infrared Interface Port

The NOVA-7898 has a built-in IrDA port that supports Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. When using the IrDA port, the user have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM 2. Then the normal RS-232 COM 2 will be disabled.

IR1 : IrDA connector

PIN NO.	DESCRIPTION
1	VCC5V
2	N/C
3	IR-RX
4	Ground
5	IR-TX

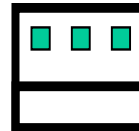


3.8 Fan Connector

The NOVA-7898 provides CPU cooling fan connector and system fan connector. CPU connectors can supply 12V/500mA The Fan's rotation is in full speed.

FAN1~FAN3 : Fan Connector

PIN NO.	DESCRIPTION
1	Sensor
2	12V
3	Ground



3 2 1

3.9 LAN RJ45 Connector

NOVA-7898 is equipped with two built-in 10/100Mbps Ethernet Controllers. The user can connect it to LAN through RJ45 LAN connector. The pin assignments is as listed in the following tables:

CN13(UP) : Intel 82562ET LAN RJ45 Connector

CN13(DOWN) : Intel 82559 LAN RJ45 Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C

CN8(UP/DOWN) : SOCKET PCI RJ45 LAN Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C

CN7(UP/DOWN) : SOCKET PCI RJ45 LAN Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TXA+ (TX+)	5.	TXC-(N/C)
2	TXA-(TX-)	6.	TXB-(RX-)
3.	TXB+(RX+)	7.	TXD+(N/C)
4.	TXC+(N/C)	8.	TXD-(N/C)

PS:

**LM-102N : Dual Intel 82559 10/100BASE-TX LAN
MODULE**

**LM-102R : Dual RTL8100 10/100BASE-TX LAN
MODULE**

LM-2G : Dual Broadcom Gigabit LAN MODULE

CN12 : LAN LED Connector

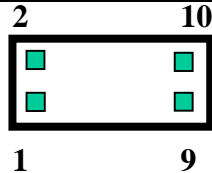
CN7 (UP)	1	ACT+	2.	ACT-
	3	LINK+	4.	LINK-
CN7 (DOWN)	5.	ACT+	6.	ACT-
	7.	LINK+	8.	LINK-
CN8 (UP)	9	ACT+	10	ACT-
	11	LINK+	12	LINK-
CN8 (DOWN)	13	ACT+	14	ACT-
	15	LINK+	16	LINK-
CN13 (UP)	17	ACT+	18	ACT-
	19	LINK+	20	LINK-
CN13 (DOWN)	21	ACT+	22	ACT-
	23	LINK+	24	LINK-

3.10 VGA Connector

NOVA-7898 built-in 15-pin VGA connector can be used to connected to user's CRT monitor directly.

CN5 : 15-pin Female Connector

1	RED	2	DDCCLK
3	GREEN	4	DDC DAT
5	BLUE	6	GROUND
7	HSYNC	8	GROUND
9	VSYNC	10	GROUND



3.11 Audio Connectors

The AC'97 compliant CODEC support several audio functions. The connector is described as below.

CN9 : AUDIO CONNECTOR

1.	LEFT SPEAKER OUT SIGNAL (<i>WITH AMPLIFIER</i>)
2.	RIGHT SPEAKER OUT SIGNAL (<i>WITH AMPLIFIER</i>)
3.	GROUND(<i>FOR SPK CONNECTOR</i>)
4.	GROUND
5.	NC
6.	NC
7.	LEFT LINE IN SIGNAL
8.	RIGHT LINE IN SIGNAL
9.	GROUND(<i>FOR LINE IN CONNECTOR</i>)
10.	GROUND(<i>NO USE</i>)
11.	MIC IN
12.	GROUND(<i>FOR MIC IN CONNECTOR</i>)

CD1 : CD-IN

1.	CD LEFT SIGNAL
2.	GROUND
3.	GROUND
4.	CD RIGHT SIGNAL



1 2 3 4

3.12 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling user's CPU board. All the functions are in the CN1 connector.

CN1 : Multi Panel

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	POWER-LED +	2	SPEAKER +
3.	N/C	4	N/C
5.	POWER-LED -	6	N/C
7.	KEYLOCK+	8	SPEAKER -
9.	KEYLOCK-	10	RESET SW PIN1
11.	GROUND	12	RESET SW PIN2
13	HDD LED+	14	HDD LED -

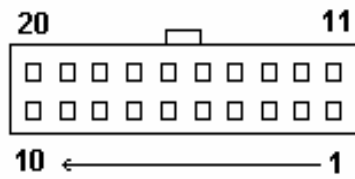
ATX Power On/Off Button Connector(CN24)

PIN NO.	DESCRIPTION
1	BUTTON PIN1
2	BUTTON PIN2

3.13 ATX Power Connector

The NOVA-7898 have one ATX power connector for power supply.

ATX1 : ATX Power Supply Connector



ATX1 is a 20-pin ATX Power Supply Connector. Please refer to the following table for the pin assignments.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PSON#	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	Power good
19	+5V	9	+5VSB
20	+5V	10	+12V

3.14 PCI Slots

The NOVA-7898 have two SOCKET PCI slots for PCI module and one standard PCI slot for common PCI card.

PCI 1, PCI 2 : SOCKET PCI Slots

PCI 3: Standard PCI Slot

PCI1 and PCI2 are special defined PCI slots. The pin assignment is listed in the following table. ***Do not insert incompatible PCI module into these slots, or the module could be damaged inadvertently.***

PCI 1/PCI 2

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TRDP3_1 / NC	2	TRDM0
3	TRDM3_1 / NC	4	TRDP0
5	NC	6	NC
7	TRDP2_1 / NC	8	TRDM1
9	TRDM2_1/ NC	10	TRDP1
11	NC	12	NC
13	TRDP1_1	14	TRDM2 / NC
15	TRDM1_1	16	TRDP2 / NC
17	TANS HIGH_1	18	TANS_HIGH
19	TRDP0_1	20	TRDM3
21	TRDM0_1	22	TRDP3
23	GROUND	24	GROUND
25	LANACT#_1	26	LINK#
27	LINK#_1	28	LANACT#
29	5VCCL_2	30	GROUND
31	L_HSYNC_2	32	L_BLUE_2
33	L_VSYNC_2	34	L_GREEN_2
35	5VCDA_2	36	L_RED_2

37	PIRQ#C/PIRQ#A	38	GROUND
39	GROUND	40	PIRQ#D/PIRQ#B
41	PIRQ#A/PIRQ#C	42	PIRQ#B/PIRQ#D
43	PCI_RST#	44	GROUND
45	VCC5DUAL	46	REQ64#1
47	PCI_PME#	48	+5V
49	AD31	50	GROUND
51	AD30	52	PCLK_2 / PCLK4
53	AD29	54	NC
55	AD28	56	PCLK_3 / PCLK5
57	AD26	58	V3SB
59	AD27	60	V3SB
61	NC	62	V3SB
63	+3.3V	64	PREQ#2 / PREQ#4
65	AD24	66	C_BE#3
67	AD25	68	+3.3V
69	GROUND	70	SMBCLK
71	AD23	72	SMBDATA
73	AD21	74	PGNT#1 / PGNT#3
75	+3.3V	76	PREQ#1 / PREQ#3
77	AD19	78	GROUND
79	GROUND	80	AD18 / AD20
81	AD16	82	+3.3V
83	GROUND	84	AD22
85	+3.3V	86	GROUND
87	AD17	88	AD20
89	FRAME#	90	AD18

91	IRDY#	92	+3.3V
93	GROUND	94	AD17 / AD19
95	TRDY#	96	C_BE#2
97	DEVSEL#	98	GROUND
99	+3.3V	100	PGNT#2 / PGNT#4
101	STOP#	102	+3.3V
103	GROUND	104	VGA_EN#
105	PLOCK#	106	GROUND
107	PERR#	108	SMLINK0
109	SMLINK1	110	C_BE#0
111	GROUND	112	AD8
113	SERR#	114	GROUND
115	C_BE#1	116	AD7
117	+5V	118	AD6
119	PAR	120	AD5
121	AD15	122	+5V
123	GROUND	124	AD4
125	AD14	126	GROUND
127	AD13	128	AD3
129	AD11	130	AD2
131	+5V	132	GROUND
133	AD12	134	AD0
135	+5V	136	GROUND
137	AD10	138	ACK64#
139	AD9	140	+5V
141	+12V	142	AD1
143	GROUND	144	GROUND

4. Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program built into the BIOS. It will give users a step-by-step guidance to configure the system. The user-defined configuration is then stored in battery-backed CMOS RAM so that it retains the Setup information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when the computer has been turned on. While the BIOS is in control, the Setup program can be activated in one of the following two ways:

1. By pressing immediately after switching the system on, or
2. By pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test):

Press DEL to enter SETUP.

If the message disappears before the user can respond to it and the user still wish to enter Setup, please restart the system by turning off the power first then switch it back on or simply pressing the "RESET" button on the system case to reboot the system. The alternative way to restart the system is by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If the user do not press these keys at the right timing and the system does not boot, an error message will be displayed and the user will again be prompted to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, the user can use the arrow keys to highlight items, then press <Enter> to select the item. Use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item the user desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main Menu

Once the user enters the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows the user to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

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Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit ↑↓←→ : Select Item	
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type....	

Note: A brief description of each highlighted selection appears at the bottom of the screen.

4.4.1 Setup Items

The main menu includes the following main setup categories. Please note that some systems may not include all of the following entries.

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the advanced features available on the user's system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to specify the settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to specify the settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if the system supports PnP / PCI. See section 4.10 for the details.

PC Health Status

Use this menu to display CPU/System Temperature and FAN speed

Frequency/Voltage Control

Use this menu to specify the settings for frequency/voltage control. See section 4.11 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for the system to operate. See section 4.12 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 4.12 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.13 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.14 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.14 for the details.

4.5 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value the user want in each item.

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Standard CMOS Features

Date:	Mon, Feb 8 2000	Item Help
Time:	16:19:20	
➤ IDE Primary Master	HD Model Name	Menu Level
➤ IDE Primary Slave	<Press Enter> None	➤
➤ IDE Secondary Master	<Press Enter> None	Change the day, month, year and century
➤ IDE Secondary Slave	<Press Enter> None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All,But Keyboard	
Based Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in the system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which the user want the BIOS to stop the POST process and notify the user
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 2 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Figure 2 shows the IDE primary master sub menu.

CMOS Setup Utility – Copyright © 1984-2000 Award Software
IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master Access Mode	Auto	Menu Level >>
Capacity	15362 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	29765	
Head	16	
Precomp	0	
Landing Zone	29764	
Sector	63	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets the user set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let the user select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display the system disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 3 Hard disk selections

4.6 Advanced BIOS Features

This section allows the user to configure the user system for basic operation. The user has the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

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Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Menu Level >
Process Number feature	Enabled	
Quick Power On Self Test	Disabled	Allows the user to
First Boot device	Floppy	choose the VIRUS
Second Boot device	HDD-0	warning feature for
Third Boot device	LS120	IDE Hard Disk boot
Boot other device	Enabled	sector protection. If
Swap Floppy Drive	Disabled	this function is
Boot Up Floppy Seek	Enabled	enabled and
Boot Up NumLock Status	On	someone attempt to
Gate A20 Option	Fast	write data into this
Typematic Rate Setting	Disabled	area, BIOS will show
Typematic Rate (Chars/Sec)	6	a warning message
Typematic Delay (Msec)	250	on screen and alarm
Security Option	Setup	beep
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Virus Warning

Allows the user to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and the alarm beep will go off.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

CPU L2 Cache ECC Checking

This item allows the user to enable/disable CPU L2 Cache ECC checking.

The Choice: Enabled, Disabled.

Processor Number Feature

This item allows the user to enable/disable support KLAMATH.

The Choice: Enabled, Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after the user power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third/Other Boot Device

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

The Choice:

Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, the user can swap the logical drive name assignments.

The Choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up.
Disabling speeds boot up.

The Choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The Choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

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 the user 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

Select whether the password is required every time the system boots or only when the user enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then the user will be asked to enter password. Do not type anything and just press <Enter> and this it will disable security. Once the security is disabled, the system will boot and the Setup page can be accessed freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The Choice: Non-OS2, OS2.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not.

The Choice: Yes, No.

4.7 Advanced Chipset Features

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Advanced Chipset Features

SDRAM CAS Latency Time	3	Item Help
SDRAM Cycle Time Tras/Trc	7/9	
SDRAM RAS-to-CAS Delay	3	Menu Level ➤
SDRAM RAS Precharge Time	3	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable	Disabled	
CPU Latency Timer	Disabled	
Delay Transaction	Enabled	
AGP Graphics Aperture Size	64MB	
System Memory Frequency	Auto	
On-Chip VGA	Enable	
Flash BIOS	Disable	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

This section allows the user to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. Please note that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data has been lost. Such a scenario might well occur if the system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3

SDRAM Cycle Time *Tras*/*Trc*

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

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

The Choice: 2, 3.

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; and *Slow* gives more stable performance.
- This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

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 Choice: Enabled, Disabled.

Video BIOS Cacheable

Select *Enabled* allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

CPU Latency Timer

Enabled: CPU cycle will only be Deferred after it has been in a "Snoop Stall" for 31 clocks and another ADS# has arrived.

Disabled: CPU cycle will only be Deferred immediately after the GMCH receives another ADS#.

The Choice: Enabled, Disabled.

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.

The Choice: Enabled, Disabled.

On-Chip VGA

Select the on-chip *Enabled* or *Disabled*.

Flash BIOS

The NOVA-7898 has an BIOS write-protect selection.

Enabled: The user can use flash utility to update BIOS.

Disabled: BIOS can't update by software.

4.8 Integrated Peripherals

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Integrated Peripherals

		Item Help
On-Chip Primary PCI IDE	Enabled	
On-Chip Secondary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	Menu Level
IDE Primary Slave PIO	Auto	➤
IDE Secondary Master PIO	Auto	If the IDE hard
IDE Secondary Slave PIO	Auto	drive supports
IDE Primary Master UDMA	Auto	block mode
IDE Primary Slave UDMA	Auto	select Enabled
IDE Secondary Master UDMA	Auto	for automatic
IDE Secondary Slave UDMA	Auto	detection of
USB Controller	Disabled	the optimal
USB Keyboard Support	Disabled	number of
AC97 Audio	Auto	block
IDE HDD Block Mode	Enabled	read/write per
Onboard FDC Controller	Enabled	sector the drive
Onboard Serial Port 1	3F8/IRQ4	can support
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
Watch Timer Unit Select	Second	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

There are some item in bottom of scroll.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface that supports two IDE channels. Select *Enabled* to activate each channel separately.

The Choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let the user set a PIO mode (0-4) 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 Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if the 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 the hard drive and the system software both support Ultra DMA-33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

USB Controller

Select *Enabled* if the system contains a Universal Serial Bus (USB) controller and the user have USB peripherals.

The Choice: Enabled, Disabled.

USB Keyboard Support

Select *Enabled* if the system contains a Universal Serial Bus (USB) controller and the user have a USB keyboard.

The Choice: Enabled, Disabled.

AC97 Audio

This item allows the user to decide to enable/disable the 810E chipset family to support AC97 Audio.

The Choice: Auto, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If the IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The Choice: Enabled, Disabled

Onboard FDC Controller

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

The Choice: Enabled, Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The Choice:

3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto

UART Mode Select

Select a serial port 2 operation mode.

The Choice: Normal, IrDA, ASKIR, SCR

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

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

Parallel Port Mode

Select a parallel operation mode.

The Choice: SPP, EPP, ECP, ECP+EPP

Watchdog Timer Unit Select

Select the WatchDog Timer unit.

The Choice: Second, Minute

4.9 Power Management Setup

The Power Management Setup allows the user to configure the user system to most effectively save energy while user defined environment.

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Power Management Setup

Power Management	User Define	Item Help
Video Off Method	DPMS	
Video Off In Suspend	Yes	Menu Level >
Suspend Type	Stop Grant	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-off by PWR-BTTN	Instant-off	
Wake-up by PCI card	Disabled	
Power On by Ring	Enabled	
CPU Thermal-Throttling	50.0%	
Resume by Alarm	Disabled	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD,COM,LPT Port	Disabled	
PCI, PIRQ[A-D]#	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Power Management

This category allows the user 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

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
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 the user to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. 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

This determines the manner in which the monitor is blanked.

The Choice: Yes, No.

SuspendType

Select the Suspend Type.

The Choice: PWRON Suspend, Stop Grant.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The Choice:

1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The Choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disabled.

Wake-up by PCI card

Enable support wake on LAN (WOL) function.

PM 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] #

4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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PnP/PCI Configurations

Reset Configuration Data Disabled		Item Help
Resources Controlled By x IRQ Resources	Auto(ESCD) Press Enter	----- Menu Level >
PCI/VGA Palette Snoop	Disabled	Default is Disabled. Select Enabled to reset Extended System Configuration Data(ESCD) when the user exit Setup if the user have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Reset Configuration Data

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

The Choice: Enabled, Disabled .

Resource 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 the user are using a Plug and Play operating system such as Windows®95. If the user 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 Choice: Auto(ESCD), Manual.

IRQ Resources

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

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows the user to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

The Choices: Enabled, Disabled.

4.11 Frequency/Voltage Control

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Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	-----
CPU Host/PCI Clock	Default	Menu Level >
CPU Clock Ratio	X 4	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit
F1:General Help
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

Auto Detect DIMM/PCI Clk

This item allows the user to enable/disable auto detect DIMM/PCI Clock.

The Choice: Enabled, Disabled.

Spread Spectrum

This item allows the user to enable/disable the spread spectrum modulate.

The Choice: Enabled, Disabled.

CPU Host / PCI Clock

This item allows the user to select CPU Host and PCI clock.

The Choice:

Default,130/33,133/33,137/34,140/35,145/36,150/38(M)

CPU Clock Ratio

This item allows the user to select CPU clock ratio.

The Choice:

4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12.

4.12 Defaults Menu

Selecting "Defaults" from the main menu shows the user two options which are described below

Load Fail-Safe Defaults

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

Load Fail-Safe Defaults (Y/N) ? **N**

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

Load Optimized Defaults

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

Load Optimized Defaults (Y/N) ? **N**

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

4.13 Supervisor/User Password Setting

The user can set either supervisor or user password, or both of them. The differences between are:

Supervisor Password : for entering and changing the settings of the system

User Password : for just entering the system but do not have the right to change any settings of the system.

If this function is enabled, the following message will appear at the center of the screen to guide the user to create a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. The user will be asked to confirm the password. Type the password again and press <Enter>.

Note: The user may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when the user are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and the user can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, the user will be prompted to enter it every time the user try to enter Setup. This prevents an unauthorized person from changing any part of the system configuration.

Additionally, when a password is enabled, the user can also require the BIOS to request a password every time the system is rebooted. This would prevent unauthorized use of the computer.

The user determines when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.14 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

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

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? **Y**

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

Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH	
<u>Sub-function:</u>	
AL – 2	: Set the Watchdog Timer's period
BL	: Time-out value(the time unit--second or minute, is dependent on the item "Watchdog Timer unit selected in BIOS setup).

The user have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. When the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if the user set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

Note: when exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:
    MOV    AX, 6F02H    ;setting the time-out value
    MOV    BL, 30      ;time-out value is 48 seconds
    INT    15H
;
; ADD THE USERR APPLICATION PROGRAM HERE
;
    CMP    EXIT_AP, 1  ;is the userr application over?
    JNE    W_LOOP      ;No, restart the userr application

    MOV    AX, 6F02H   ;disable Watchdog Timer
    MOV    BL, 0
    INT    15H
;
; EXIT
;
```

Appendix B. Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 Timer
060-06F	8042 (Keyboard Controller)
070-07F	Real time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F2	Core Logic Programming Configuration
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2 (LPT3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT2)
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System Memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	Intel 82559 LAN
IRQ3	COM2	IRQ11	Intel 82562ET LAN
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	AC'97 CODEC	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix C. How to Upgrade a New BIOS

The user can install an upgrade BIOS for the NOVA-7898 that the user can download from the manufacturer's web site (www.e-icp.com.tw). New BIOS may provide support for new peripherals ,improvements in performance or fixes to addressed known bugs.

BIOS Update Procedure:

PS :(Into the Advanced Chipset Features item then change the values of flash BIOS to Enabled.)

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A: /s" That will format the floppy and transfer the needed system files to it.

NOTES:

A. This procedure will erase any prior data on that floppy, so please Proceed accordingly.
B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.
C. Please leave the diskette UN-write protected for the balance of this procedure.

2. Download the BIOS upgrade file and awdf flash.exe utility from a ICP web site to a temp directory on the hard drive, or directly to the floppy the user made in step 1..

3. Copy (BIOS file and awdf flash.exe)two files to the boot floppy.

4. Reboot the system to the DOS command prompt using the boot diskette the user just made.

5. At the DOS command prompt type , "awdf flash filename.xxx", where filename.xxx is the file name of the BIOS file . Hit enter.

6. The user's first option, in sequence, will be to save the old BIOS. We recommend that the user do that in case, for whatever reason, the user decide the user don't wish to use the new version once it is installed.

NOTES:

- A. If the user decide to save the old BIOS, PLEASE make sure the user do NOT save it to the same file name as the new BIOS - if the user use the same BIOS name the old file will be written over the new file with NO warning prompt. A simple file name to save the old BIOS to is OLDBIOS.BIN.
- B. If the user do NOT decide to save the old BIOS, PLEASE at least write down the version number of the old BIOS and store that information with user's important computer documents. Enter N (for "no") and skip to step 9.

7. To save the old BIOS, hit Y (for "yes")

8. Enter a name for the OLD BIOS file and hit enter.

NOTE: PLEASE be sure the user do NOT save the old BIOS file to the same file name as the new BIOS - if the user use the same BIOS name, the old file will write over the new BIOS file WITHOUT a warning prompt. A simple file name for saving the old BIOS to is OLDBIOS.BIN.

9. User's second option, in sequence, will be whether the user want to flash the BIOS. Enter Y (for "yes").

NOTE: This is the critical step. Once the user kit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be bar progressing across the screen while the flashing is progressing.

10. When the flashing process is complete, the user will be asked to reset or power off the system. Remove the floppy diskette from the floppy drive and either hit the reset button or the power button.

11. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. BIOS upgrade is now complete.

Recovering User's Old BIOS:

1. Assuming the user have the floppy made during the upgrade procedure noted above, boot the system with that diskette in the floppy drive. If the user do not have floppy made during the upgrade procedure noted above, the user will need to repeat steps 1 though 3 (above) for the version of the BIOS the user wish to recover to.

2. Complete steps 4, 5, 6B, 9, 10, and 11 (above) substituting the name of the BIOS the user wish to recover for the upgrade BIOS at step 5.

Install screen :

