Industrial PC

MiniStation 15

User's Manual

Version 1.0

February , 2004

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FCC (Federal communiction commission)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

The professional installation and the installer are being responsible to the 20cm apart from the human body.

ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

Trademarks Acknowledgments

Unpacking

After unpacking the CPU card, check and see if the following items are included and in good condition. If any of the items is missing or damaged, notify your dealer immediately.

Product Name	Function	Package
MiniStation	**MiniStation** with VGA, Ethernet and Audio Interface	**TBD (To Be Decided.)**

Make sure that all of the items listed above are present.

What To Do If There Is A Problem

If there are damaged or missing parts, contact your supplier and/or dealer immediately. Do not attempt to apply power to the board if there is damage to any of its components.

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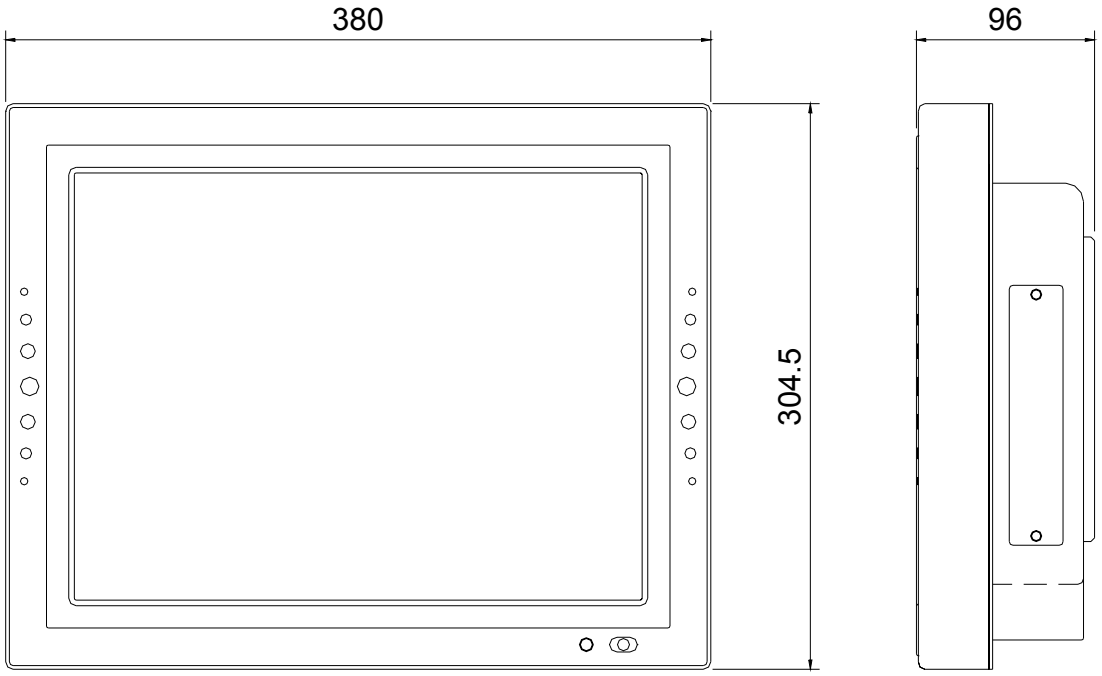
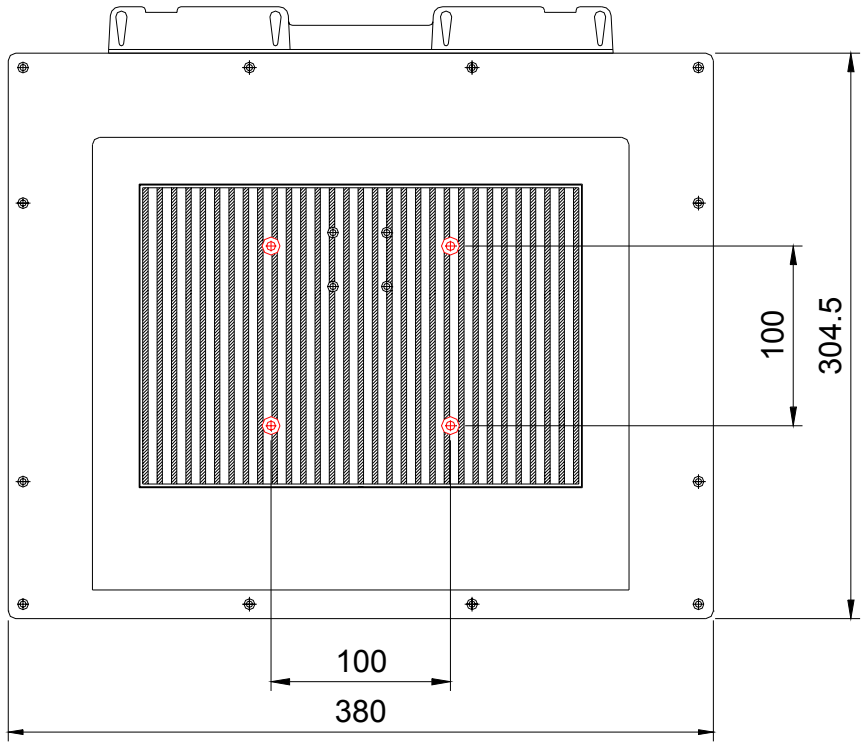
Chapter 1

Dimensional Sketch Drawings and External Interface Connector Names and Power Connector Specification

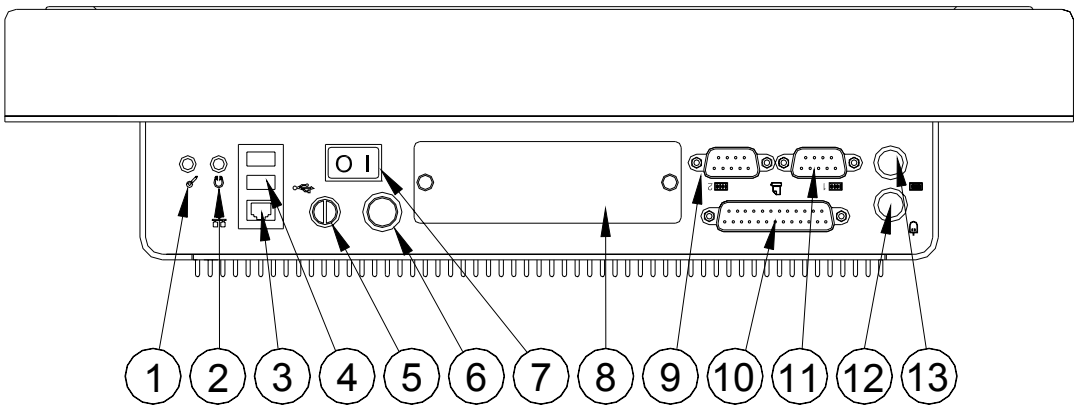
1.1 Front and side View



1.2 Rear View

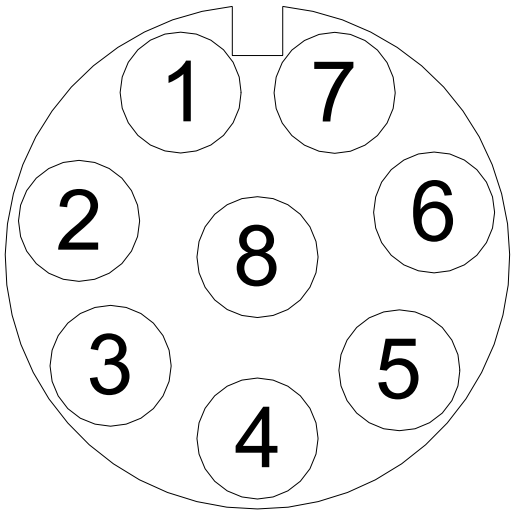


1.3 Bottom View



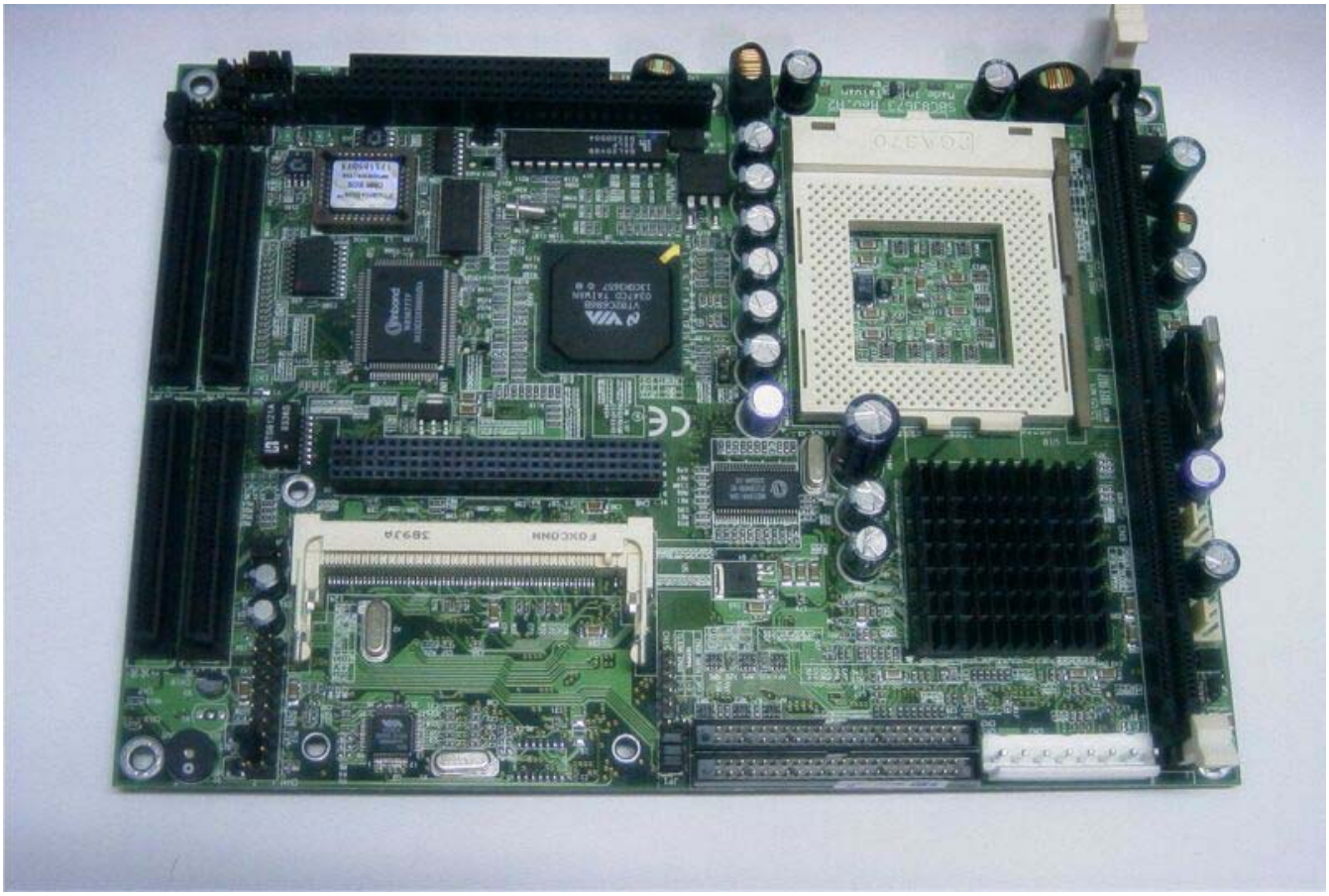
NO	Connector description	NO	Connector description
1	MIC	8	PCMCIA COVER
2	Audio out	9	COM2
3	LAN	10	LPT1
4	USB	11	COM1
5	FUSE	12	MOUSE
6	POWER IN	13	KEYBOARD
7	POWER SWITCH		

1.4 Power Connector Pin-Out Specification



NO	Connector description
1	AC IN (BK)
2,4	DC IN+
3	AC IN (WH)
5	F.G (GR)
6,7	DC IN-

Chapter 2
Introduction



The **MiniStation** is a Socket370-based Petit board with audio interface. Designed with the space-limited applications in mind, the **MiniStation** is practically the finest embedded 686 board that exists. Using a standardized format conforming to the size of a 5.25" HDD, **MiniStation** can adapt a wide variety of Socket370 microprocessors by simply configuring its onboard jumpers. To simplify system integration, it packs provisions such as super I/Os, digital I/Os, XVGA, LCD, Ethernet, solid state disk, all on a single board. Unique embedded features such as 4 serial ports (3 x RS-232, 1 x RS-232/422/485) with +5V/12V power capability and digital I/Os for UPS and simple automation control are exclusive design features that allow adoption of a extensive array of PC peripherals.

The industrial-grade construction of **MiniStation** allows your system to endure the continuous operation in hostile environments where stability and reliability are basic requirements. System dependability of **MiniStation** is enhanced by its built-in watchdog timer, a special industrial feature not commonly seen on other motherboards.

Designed for the professional embedded developers, the Socket370 embedded board **MiniStation** is virtually the ultimate one-step solution for embedded system applications.

2.1 Specifications

- **CPU:** Intel Celeron 566~PIII 1.2GHz
- **System Chipset:** Intel 443BX core logic controller
- **Processor Socket:** ZIF Socket370
- **Bus Clock:** 66/100/133 MHz
- **BIOS:**
  - Award BIOS, Y2K compliant
  - 2Mbit Flash ROM, DMI, Plug and Play
- **System Memory:**
  - One 168-pin DIMM socket
  - Maximum SDRAM of up to 512MB
- **L2 Cache:** integrated in CPU
- **Onboard IDE:**
  - IDE1 x 44-pin
  - PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33
  - LS-120 & ZIP bootable

- **Onboard Multi I/O:**
  - One floppy port supporting up to two devices (LS-120 & ZIP Bootable)
  - Two SPP/EPP/ECP parallel port; supports LS-120
  - Four 16550 UART-compatible serial ports with +5V/+12V power output in Pin 1 or Pin 9 via DIP jumper setting (TTL-level reserved in COM4)
    3 x RS-232
    1 x RS-232/422/485 and selectable via jumper setting
  - 1 x IrDA for wireless communication
- **Watchdog Timer:**
  - System reset or Non-Maskable Interrupt Software Programmable Time Interval and jumper selectable
  - 64 levels, 0.5-8/5-80/50-800/100~1600 seconds
- **Ethernet:**
  - Intel 82559 PCI Bus 10/100M Base-T
  - Wake On LAN (via ATX power supply)
  - Equipped with RJ-45 interface

- **USB Interface:** 2 USB ports with fuse protection and complies with USB Spec. Rev. 1.1A
- **Power Management:** ACPI (Advanced Configuration and Power Interface)

- **Hardware Monitoring:**
  - Winbond 83877TF
  - Monitoring for CPU/System temperatures, System Voltage and Chassis/CPU Fan speeds
- **Onboard Display:**
  - AGP interface controller with integrated 4MB SDRAM (optional up to 8MB)
  - VGA chipset: VIA S3 AGP-2x supporting CRT/LCD displays
- **Onboard Audio:**
  - ESS Solo-I 1938 32-bit PCI 2.1 AudioDrive controller
  - High quality ESFM™ Music Synthesizer
  - Dynamic range (SNR) over 80dB
  - Integrated Spatializer® 3D audio effects processor
  - 32-bit Sound Blaster™ and Sound Blaster™ Pro compatible
  - 16-bit stereo ADC and DAC
  - PC97/PC98 and WHQL specifications
  - Full-duplex operation for simultaneous record and playback
  - Internal MIC-in, Line-in and Speaker/Line-out interface reserved
- **Other Features:**
  - Win 95/98/2000/XP Software-off
- **Form Factor:** 5.25" form factor
- **Dimensions:** 203.20 x 146.05 mm^2

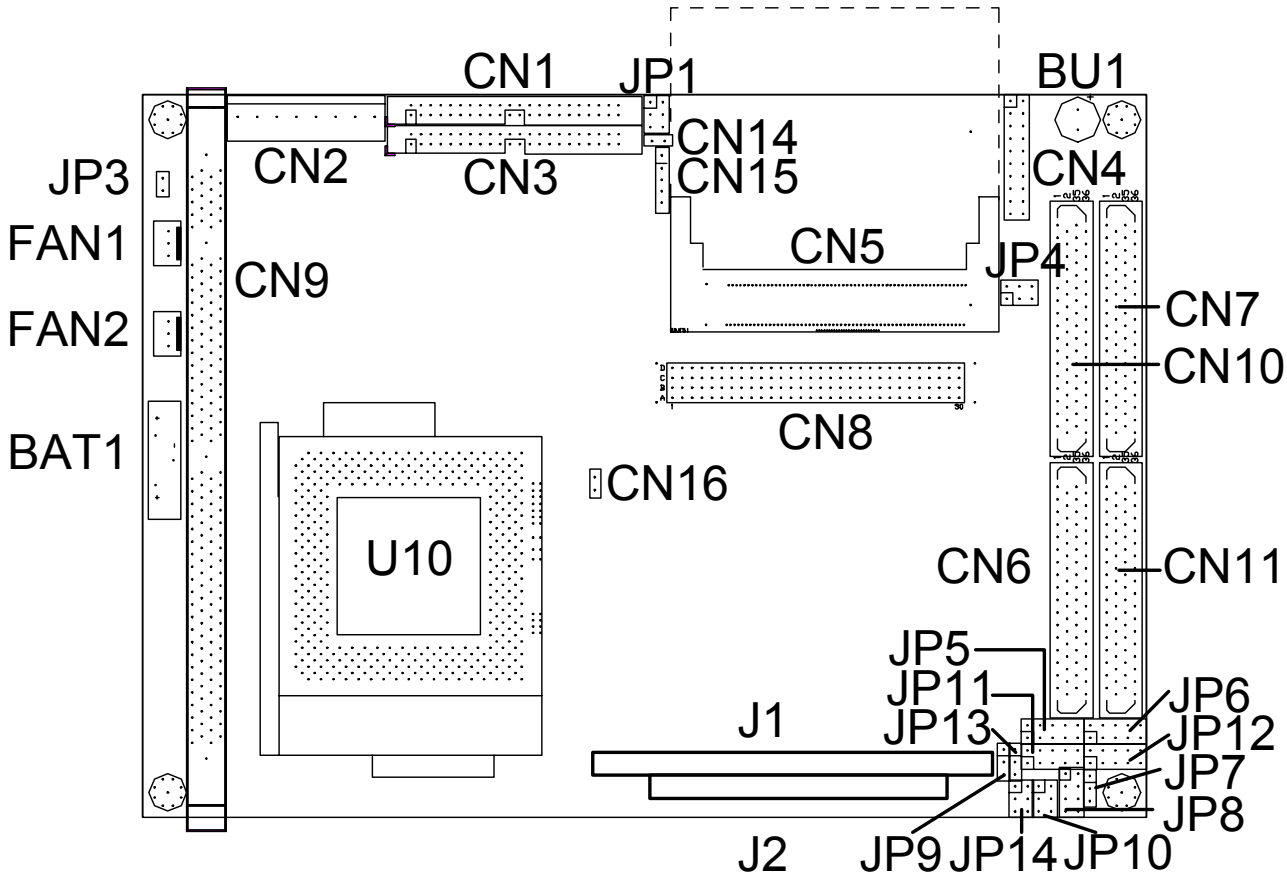
NOTE: *Specifications are subject to change without notice.*

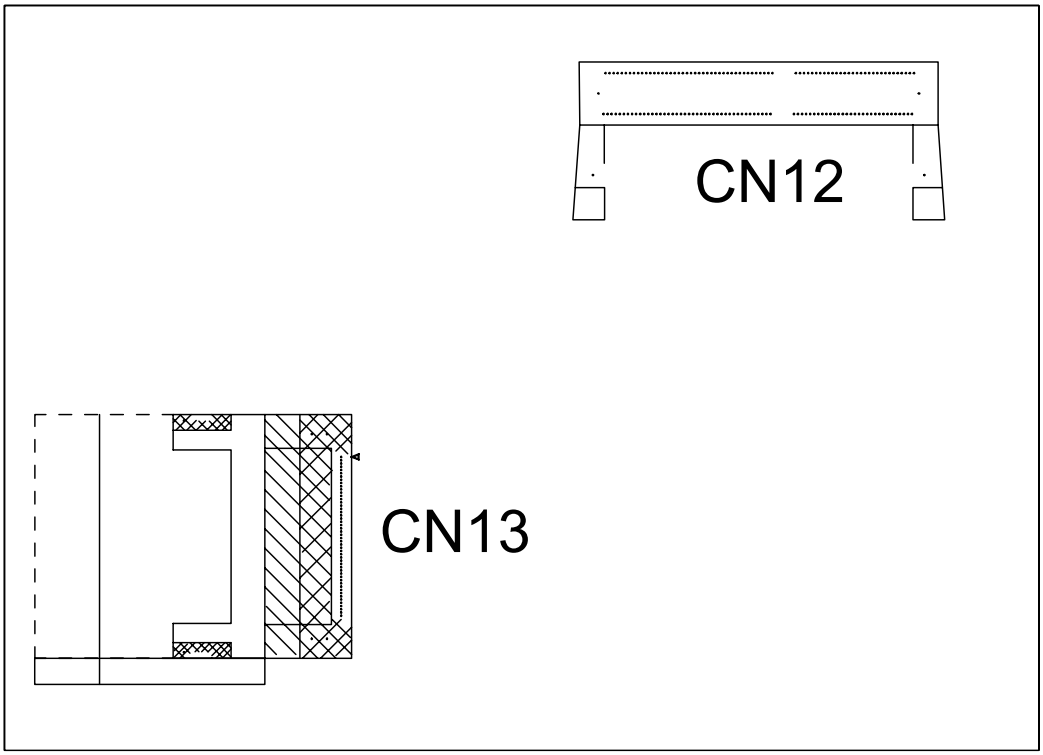
2.2 Utilities Supported

- Ethernet Utility
- VGA Drivers
- Audio Drivers

Chapter 3
Jumpers and Connectors

3.1 Placement





3.2 Jumper Settings

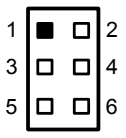
The **MiniStation** is configured to match the needs of your application with the proper jumper settings. The table below is a summary of all the jumpers and their corresponding functions onboard the **MiniStation**. The succeeding tables show the correct jumper settings for the onboard devices.

Jumper	Function	Setting
JP1	Onboard VGA Selection Default : Normal	Short 1-2 ; 3-4 ; 5-6
JP3	Reserve	Close
JP4	Audio Line Out / Speaker Out Selection Default : Line Out	Short 1-3 ; 2-4
JP5	Voltage or Signal Selection for COM2 Default : Signal	Short 7-9 ; 8-10
JP6	Voltage or Signal Selection for COM3 Default : Signal	Short 7-9 ; 8-10
JP7	Clear CMOS Jumper Default : Normal	Short 1-2
JP8	RS-232/422/485 Mode Select with COM4	Short 1-2

	Default : RS-232	
JP9	Compact Flash Voltage Selection Default : 5V	Short 1-2
JP10	RS-232/422/485 Mode Select with COM4 Default : RS-232	Short 3-5 ; 4-6
JP11	Voltage or Signal Selection for COM1 Default : Signal	Short 7-9 ; 8-10
JP12	Voltage or Signal Selection for COM4 Default : Signal	Short 7-9 ; 8-10
JP13	Watchdog Trigger Mode Selection Default : Disable	Open
JP14	RS-232/422/485 Mode Select with COM4 Default : RS-232	Short 3-5 ; 4-6

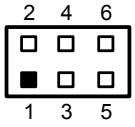
3.2.1 Onboard VGA Selection : JP1

Options	Settings
Normal	Short 1-2, 3-4, 5-6 (default)
Reserved	Open



3.2.2 Audio Line Out / Speaker Out Selection : JP4

Options	Settings
Line Out	Short 1-3, 2-4 (default)
Speaker Out	Short 3-5, 4-6

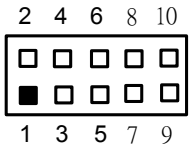


3.2.3 COM1~COM4 Mode: JP5,JP6,JP11,JP12

Voltage or Signal Selection for COM1~COM4 :

COM1 (CN11)	JP11
Pin 30=5V	Short 1-2
Pin 30=12V	Short 3-5 or 5-7
*Pin 30=DCD	Short 7-9
Pin 67=5V	Short 2-4
Pin 67=12V	Short 4-6 or 6-8
*Pin 67=RI	Short 8-10

COM2 (CN11)	JP5
Pin 25=5V	Short 1-3
Pin 25=12V	Short 3-5 or 5-7
*Pin 25=DCD	Short 7-9
Pin 62=5V	Short 2-4
Pin 62=12V	Short 4-6 or 6-8
*Pin 62=RI	Short 8-10



COM3 (CN11)	JP6
Pin 20=5V	Short 1-3
Pin 20=12V	Short 3-5 or 5-7
*Pin 20=DCD	Short 7-9
Pin 57=5V	Short 2-4
Pin 57=12V	Short 4-6 or 6-8
*Pin 57=RI	Short 8-10

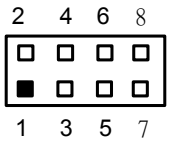
COM4 (CN11)	JP12
Pin 15=5V	Short 1-3
Pin 15=12V	Short 3-5 or 5-7
*Pin 15=DCD	Short 7-9
Pin 52=5V	Short 2-4
Pin 52=12V	Short 4-6 or 6-8
*Pin 52=RI	Short 8-10

3.2.4 COM4 Mode Select: JP8,JP10,JP14

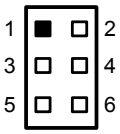
RS-232/422/485 Mode Select with COM4 :

COM4	JP8	JP10	JP14
RS-232 (default)	1-2	3-5, 4-6	3-5, 4-6
RS-422	3-4	1-3, 2-4	1-3, 2-4
RS-485	5-6, 7-8	1-3, 2-4	1-3, 2-4

JP8

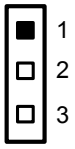


JP10, JP14



3.2.5 Compact Flash Voltage Selection : JP9

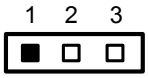
Options	Settings
5V	Short 1-2 (default)
3.3V	Short 3-4



3.2.6 Watchdog Trigger Mode Selection : JP13

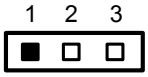
The watchdog timer is an indispensable feature of the **MiniStation**. It has a sensitive error detection function and a report function. When the CPU processing comes to a halt, the watchdog either generates a NMI or resets the CPU.

Options	Settings
NMI	Short 1-2
Reset	Short 2-3
Disable	Open(default)



3.2.7 CMOS Clear Jumper: JP7

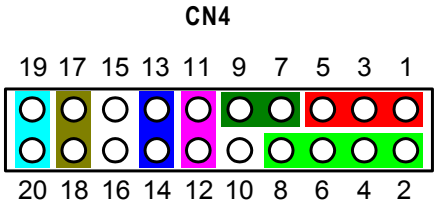
Options	Settings
Normal	Short 1-2(default)
Clear CMOS	Short 2-3



3.3 Connectors

Label	Connector's Function	Label	Connector's Function
CN1	44-pin IDE(Primary) Connector	CN10	SCSI Type General Output Connector
CN2	8-pin Power Connector	CN11	SCSI Type General Output Connector
CN3	44-pin IDE(Primary) Connector	CN12	LCD Interface Socket
CN4	Flat Panel Bezel Connector	CN13	Compact Flash Socket
CN5	Mini PCI Socket	CN14	External Battery Low Detect Connector
CN6	SCSI Type General Output Connector	CN15	IrDA Connector
CN7	SCSI Type General Output Connector	CN16	Temperature Detect Connector
CN8	PC/104 Plus Connector	J1	PC/104 Connector
CN9	168-pin SDRAM Socket	J2	PC/104 Connector

Flat Panel Bezel Connector



Power LED

This 3-pin connector, designated at ***Pins 1*** and ***5*** of ***CN4***, connects the system power LED indicator to its respective switch on the case. ***Pin 1*** is +, and ***pin 5*** is assigned as -. The Power LED lights up when the system is powered ON.

External Speaker and Internal Buzzer Connector

Pins 2, 4, 6, and ***8 of CN4*** connect to the case-mounted speaker unit or internal buzzer. ***Short pins 4-6*** when connecting the CPU card to an internal buzzer. When connecting an external speaker, set these jumpers to ***Open*** and install the speaker cable on ***pin 8*** (+) and ***pin 2*** (-).

External SMI Button Switch

This switch enables the connection between the **SBC83673VEA** based system and the installed hardware. ***Pins 11*** & ***12*** of ***CN4*** support the SMI switch function.

ATX Power On/Off Button

This 2-pin connector, designated at ***Pins 13*** & ***14*** of ***CN4***, connects the ATX power button of the front panel to the **SBC83673VEA** CPU board - allowing user to control the power on/off state of the ATX power supply. This jumper is only useful when installing an ATX power supply.

System Reset Switch

Pins 17 & ***18*** of ***CN4*** connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

HDD Activity LED

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed.. ***Pins 19*** & ***20 of CN4*** connect the hard disk drive and the front panel IDE channel2 LED. ***Pins 19*** is -, and ***pin 20*** is assigned as +.

Reserved pins

Pins 3,10,15 and 16 of CN4 are reserved pins.

Chapter 4
Hardware Description

4.1 Microprocessors

The **MiniStation** supports Intel Celeron and Pentium III CPUs. Systems based on these CPUs can be operated under UNIX, OS/2, Windows NT, Windows 95/98/2000/XP and MS-DOS environments. The system performance depends on the microprocessor installed onboard. When installing a new CPU, the jumpers and CPU Bus Clock setting may need to be adjusted. Make sure all settings are correct for the installed microprocessor to prevent any damage to the CPU.

4.2 CPU Bus Clock

The **MiniStation** supports CPU Bus speeds for 66/100/133 MHz. The CPU Bus Clock is generated by a clock generator and can be changed automatically.

4.3 BIOS

System BIOS used on the **MiniStation** is Award Plug and Play BIOS. The **MiniStation** contains a single 2Mbit Flash EPROM.

4.4 System Memory

The **MiniStation** industrial CPU card supports one 168-pin DIMM (Dual In-Line Memory Module) socket for a maximum memory of 512MB buffer SDRAMs. The memory module can come in sizes of 16MB, 32MB, 64MB, 128MB , 256MB , 512MB.

4.5 I/O Port Address Map

The Intel Pentium CPU communicates via I/O ports. It has a total of 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
120	Disable watchdog timer operation (read)
121	Enable watchdog timer operation (read)
122	Watchdog
123	Digital I/O
1F0-1F8	Fixed disk controller
200-207	Game port

250-25F	Winbond I/O #2
278-27F	Parallel port #2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel port #1
380-38F	SDLC #2
3A0-3AF	SDLC #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card

Continued . . . . .

Address	Devices
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)
3F0-3FF	Winbond I/O #1

4.6 Interrupt Controller

The **MiniStation** is a 100% PC compatible control board. It consists of 16 ISA interrupt request lines. Four out of the sixteen can either be ISA or PCI. The mapping list of the 16 interrupt request lines is shown on the following table.

NMI	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	Parallel port #2
IRQ6	Floppy disk controller
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	Reserved
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE Channel

4.7 IDE Interface Connector

The built-in 1 channel PCI bus enhanced IDE controller supports 2 IDE drives, master/slave mode and post write transaction mechanisms with 64-byte buffer, and master data transaction. **CN3** is a 44-pin primary IDE interface connector for standard 2.5" IDE device.

CN3: IDE Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	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	GND	20	NC	21	NC
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	NC	29	NC	30	GND-Default
31	Interrupt	32	NC	33	SA1
34	NC	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND	41	Vcc	42	Vcc
43	GND	44	NC		

4.8 Display Interface

4.8.1 Flat Panel/CRT Interface Controller

The built-in VIA S3 is a high-performance flat panel/super VGA display controller with onboard 4M bytes VGA RAM. It can also support CRT at a maximum resolution of up to 1280x1024 with 64K colors. The Lynx3DM supports color dual scan STN and TFT panel interface. For color TFT panel, Lynx3DM can support single pixel per clock of 9-bit, 12-bit, 18-bit, 24-bit, or double-pixel per clock of 24-bit, 36-bit, 48-bit interface up to 1280x1024 resolution. Lynx3DM can support two separate TFT LCDs.

4.8.2 Features

- Fully compatible with IBM™ VGA
- Flat panel and CRT monitor can be displayed simultaneously
- Onboard 4M bytes VGA RAM
- Supports panel resolution up to 1280x1024
- Supports non-interlaced CRT monitors with resolutions up to 1280x1024 64K colors
- Dual View support under Microsoft Windows 95, Windows NT, and Windows 98 ,Windows 2000
- SMARTMAP™ intelligent color to gray scale conversion enhances text legibility
- Integrated programmable linear address feature accelerates GUI performance
- Built-in 144 pins so-dimm connector for flat panel display.

4.8.3 VGA/Flat Panel Connectors

The **MiniStation** has three connectors that support CRT VGA and flat panel displays, individually or simultaneously. **CN12** is a SO-DIMM connector for flat panel connection. Configuration of the VGA interface is done via the software utility and no jumper setting is required.

CN12: SO-DIMM Connector for Flat Panel

Pin	Description	Pin	Description	Pin	Description
1	12V	2	12V	3	CMPS_IN
4	CMPS_OUT	5	LUMA_IN	6	LUMA_OUT
7	CRMA_IN	8	CRMA_OUT	9	VIDEO_GND
10	VIDEO_GND	11	BLUE_IN	12	BLUE_OUT
13	GREEN_IN	14	GREEN_OUT	15	RED_IN
16	RED_OUT	17	VCC3	18	VCC3
19	HSYNC_IN	20	VSYNC_IN	21	VP0
22	VP1	23	VP2	24	VP3
25	VP4	26	VP5	27	VP6
28	VP7	29	VP8	30	VP9
31	VP10	32	VP11	33	VCC3
34	VCC3	35	VP12	36	VP13
37	VP14	38	VP15	39	VRDY
40	VREF	41	HRET	42	VPCLK
43	VCLK	44	ENAVDD	45	VCON
46	LP	47	FLM	48	ENABKL
49	M	50	SHFCLK	51	VCC
52	VCC	53	P0	54	P1
55	P2	56	P3	57	P4
58	P5	59	P6	60	P7
61	P8	62	P9	63	P10
64	P11	65	P12	66	P13
67	P14	68	P15	69	VCC
70	VCC	71	P16	72	P17
73	P18	74	P19	75	P20

Continued . . . . .

Pin	Description	Pin	Description	Pin	Description
76	P21	77	P22	78	P23
79	P24	80	P25	81	P26
82	P27	83	P28	84	P29
85	P30	86	P31	87	VCC
88	VCC	89	P32	90	P33
91	P34	92	P35	93	P36
94	P37	95	P38	96	P39
97	P40	98	P41	99	P42
100	P43	101	P44	102	P45
103	P46	104	P47	105	VSS
106	VSS	107	DCLKB+(TXC+)	108	DCLKA+
109	DCLKB-(TXC-)	110	DCLKA-	111	DINB2+
112	DINA2+	113	DINB2-	114	DINA2-

115	VSS	116	VSS	117	DINB1+(TX2+)
118	DINA1+	119	DINB1-(TX2-)	120	DINA1-
121	DINB0+(TX1+)	122	DINA0+	123	DINB0-(TX1-)
124	DINA0-	125	VSS	126	VSS
127	IDE_LED-	128	IRTX	129	BUZZER_OUT
130	IRRX	131	5VSB	132	HIRRX
133	LANACT_LED	134	AUDIO GND	135	LAN100_LED-
136	VOLUP	137	ATX PWRBT-	138	VOLDW
139	H/W RESET-	140	MIC_IN	141	SMBDATA
142	SPKL_OUT/LOUT_L	143	SMBCLK	144	SPKR_OUT/LOUT_R

4.8.4 Flat Panel Connector Pin Description

Name	Description
P0~P47	Flat panel data output
ENABKL	Activity Indicator and Enable Backlight outputs
SHFCLK	Shift clock. Pixel clock for flat panel data
M	M signal for panel AC drive control
LP	Latch pulse. Flat panel equivalent of HSYNC
FLM	First line marker. Flat panel equivalent of VSYNC
+12VM	+12V power controlled by chipset
ENAVDD	Power sequencing controls for panel LCD Vcc

4.8.5 Flat Panel Interface Pins for Color DSTN and Color TFT LCD

	DSTN		TFT				
Pin	**16-bit**	**24-bit**	**9-bit**	**12-bit**	**18-bit**	**24-bit**	**12+12 bit**
LP	LP	LP	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC
FLM	FP	FP	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC
SHFCLK	XCK	XCK	CK	CK	CK	CK	CK
M			DE	DE	DE	DE	DE
ENAVDD	ENAVDD	ENAVDD	ENAVDD	ENAVDD	ENAVDD	ENAVDD	ENAVDD
ENABLK	ENABLK	ENABLK	ENABLK	ENABLK	ENABLK	ENABLK	ENABLK
P23		UD11				R7	RB3
P22		UD10				R6	RB2
P21		UD9			R5	R5	RB1
P20		UD8			R4	R4	RB0
P19	UD7	UD7		R3	R3	R3	RA3
P18	UD6	UD6	R2	R2	R2	R2	RA2
P17	UD5	UD5	R1	R1	R1	R1	RA1
P16	UD4	UD4	R0	R0	R0	R0	RA0
P15	UD3	UD3				G7	GB3
P14	UD2	UD2				G6	GB2
P13	UD1	UD1			G5	G5	GB1
P12	UD0	UD0			G4	G4	GB0
P11		LD11		G3	G3	G3	GA3
P10		LD10	G2	G2	G2	G2	GA2
P9		LD9	G1	G1	G1	G1	GA1
P8		LD8	G0	G0	G0	G0	GA0
P7	LD7	LD7				B7	BB3
P6	LD6	LD6				B6	BB2
P5	LD5	LD5			B5	B5	BB1
P4	LD4	LD4			B4	B4	BB0
P3	LD3	LD3		B3	B3	B3	BA3
P2	LD2	LD2	B2	B2	B2	B2	BA2
P1	LD1	LD1	B1	B1	B1	B1	BA1
P0	LD0	LD0	B0	B0	B0	B0	BA0

Pin Name	24+24 bit TFT	18+18 bit TFT	TFTs: FP1 + FP2
LP	HSYNC	HSYNC	FPI_HSYNC
FLM	VSYNC	VSYNC	FPI_VSYNC
SHFCLK	CK	CK	FPI_CK
M	DE	DE	FPI_DE
ENAVDD	ENAVDD	ENAVDD	ENAVDD
ENABLK	ENABLK	ENABLK	ENABLK
P47	RB7		FP2_R7
P46	RB6		FP2_R6
P45	RA7		FP2_R5
P44	RA6		FP2_R4
P43	GB7		FP2_R3
P42	GB6		FP2_R2
P41	GA7		FP2_R1
P40	GA6		FP2_R0
P39	BB7		FP2_G7
P38	BB6		FP2_G6
P37	BA7		FP2_G5
P36	BA6		FP2_G4
P35	RB5	RB5	FP2_G3
P34	RB4	RB4	FP2_G2
P33	RA5	RA5	FP2_G1
P32	RA4	RA4	FP2_G0
P31	GB5	GB5	FP2_B7
P30	GB4	GB4	FP2_B6
P29	GA5	GA5	FP2_B5
P28	GA4	GA4	FP2_B4
P27	BB5	BB5	FP2_B3
P26	BB4	BB4	FP2_B2
P25	BA5	BA5	FP2_B1
P24	BA4	BA4	FP2_B0

Continued . . . . .

Pin Name	24+24 bit TFT	18+18 bit TFT	TFTs: FP1 + FP2
P23	RB3	RB3	FP2_VSYNC
P22	RB2	RB2	FP2_HSYNC
P21	RB1	RB1	FP1_R5
P20	RB0	RB0	FP1_R4
P19	RA3	RA3	FP1-R3
P18	RA2	RA2	FP1_R2
P17	RA1	RA1	FP1_R1
P16	RA0	RA0	FP1_R0
P15	GB3	GB3	FP2_DE
P14	GB2	GB2	FP2_CK
P13	GB1	GB1	FP1_G5
P12	GB0	GB0	FP1_G4
P11	GA3	GA3	FP1_G3
P10	GA2	GA2	FP1_G2
P9	GA1	GA1	FP1_G1
P8	GA0	GA0	FP1_G0
P7	BB3	BB3	
P6	BB2	BB2	
P5	BB1	BB1	FP1_B5
P4	BB0	BB0	FP1_B4
P3	BA3	BA3	FP1_B3
P2	BA2	BA2	FP1_B2
P1	BA1	BA1	FP1_B1
P0	BA0	BA0	FP1_B0

4.9 Floppy Disk Controller

The **MiniStation** provides output connector (**CN6**) for support of a single floppy drives. The floppy drive could be any one of the following types: 3.5" 720KB or 1.44MB/2.88MB.

4.10 Parallel Port Interface

The **MiniStation** has two onboard parallel ports, LPT1 and LPT2. LPT1 has one general purpose connector (**CN6**). LPT2 has one general purpose connector (**CN7**). The onboard **PRN** of **MiniStation** is a multi-mode parallel port supporting:

- **Standard mode:** IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port
- **Enhanced mode:** Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
- **High speed mode:** Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address selection of the onboard parallel port, in LPT1 (378H), LPT2 (278H), or disabled, is configured within the BIOS CMOS setup utility.

4.11 Serial Port Interface

The **MiniStation** has four onboard serial ports, **COM1**, **COM2** and **COM3** are RS-232 and **COM4** is RS-232/422/485, jumper selectable. All four ports feature +5V/12V power capability on DCD and RI, depending on the jumper setting.

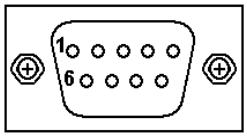
4.11.1 Serial Ports IRQ Selection

IRQ for **COM1** and **COM2** are selected on IRQ4 or IRQ3. Both ports can be enabled or disabled via BIOS setting. The IRQ for **COM3** and **COM4** is selected on 10 or 11 by BIOS setting.

4.11.2 Serial Ports +5V and +12V Power Selection

The four COM ports have +5V/+12V power capability on DCD and RI, depending on the jumper setting. (See Section 2.3.3). The RS-232 pin assignments are listed on the following table.

Pin	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)



The RS-422/485 pin assignments for **CN11** (COM4) are listed on the following table.

Pin #	Signal Name		
	RS-232	R2-422	RS-485
15	DCD	TX-	DATA-
49	DSR	No connector	No connector
16	RX	TX+	DATA+
50	RTS	No connector	No connector
17	TX	RX+	No connector
51	CTS	No connector	No connector
18	DTR	RX-	No connector
52	RI	No connector	No connector
19	GND	GND	GND
53	No connector	No connector	No connector

4.12 Digital I/Os

The **MiniStation** is equipped with a 4-channel digital I/O general purpose connector (**CN7**) that meets a system's customary automation control needs. The digital I/O can be configured to control the cash drawer, or to sense the warning signal of an Uninterrupted Power System (UPS), or to perform the store security control. The digital I/O is controlled via software programming.

4.12.1 Digital I/O Software Programming

The Digital I/O on the **MiniStation** is not an isolated type.

Output	**Address**	**Bit**
Out-0	123	0
Out-1	123	1
Out-2	123	2
Out-3	123	3

Example program;

Out 123h, 03h	Out-0, Out-1	Turn On
	Out-2, Out-3	Turn Off
Out 123h, 0Ah	Out-0, Out-2	Turn Off
	Out-1, Out-3	Turn On

Example program;
If INPUT 123 is
(1011), then INPUT-2 is "0"
If INPUT 123 is (1100), then INPUT-0 & 1 are "0"
** The INPUT signal has to be TTL signal

4.13 Real Time Clock and CMOS RAM

The **MiniStation** contains a MC146818 compatible Real Time Clock (RTC) and 128 bytes of CMOS RAM in the Dallas DS12887A, or its equivalent. The CMOS RAM stores the system configuration information entered via the SETUP program. A battery, with power lasting 10 years, keeps the stored information on the RTC and CMOS RAM active when system power is turned off.

4.13 Keyboard and PS/2 Mouse Connector

The **MiniStation** provides a keyboard and PS/2 mouse interface via a general purpose connector (**CN11**).

4.14 USB Connector

The Universal Serial Bus (USB) connector on **MiniStation** is used when installing peripherals supporting the USB interface. The **MiniStation** provides a USB interface via a general purpose connector (**CN11**).

4.15 Ethernet Connectors

The RJ-45 provides a RJ-45 interface via a general purpose connector (**CN10**). To connect the **MiniStation** to a 10-Base-T or 100-Base-T hub, just plug one end of the cable into the **CN10** and connect the other end (phone jack) of the cable to a 10/100-Base-T hub.

4.16 CPU and System Fan Connectors

FAN1 and **FAN2** are CPU and system fan connectors. Pentium microprocessors require a fan for heat dispensing. The fan connector on **MiniStation** provides power to the fan.

Pin	Description
1	Sensor
2	+12V
3	GND

4.17 PC/104 Connectors

The PC/104 is an industrial standard. It is a compact form factor with dimensions of 3.6" x 3.8" and is fully compatible with the ISA Bus. The PC/104 interface is able to adapt off-the-shelf PC/104 modules, such as sound module, fax modem module and multi-I/O module…etc.

J1: PC/104 Bus Pin Assignment

Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin #	Pin Name
1	IOCHCHK*	2	0V	3	SD7	4	RESETDRV
5	SD6	6	+5V	7	SD5	8	IRQ9
9	SD4	10	-5V	11	SD3	12	DRQ2
13	SD2	14	-12V	15	SD1	16	ENDXFR*
17	SD0	18	+12V	19	IOCHRDY	20	(KEY)
21	AEN	22	SMEMW*	23	SA19	24	SMEMR*
25	SA18	26	IOW*	27	SA17	28	IOR *
29	SA16	30	DACK3*	31	SA15	32	DRQ3
33	SA14	34	DACK1*	35	SA13	36	DRQ1
37	SA12	38	REFRESH*	39	SA11	40	SYSCLK
41	SA10	42	IRQ7	43	SA9	44	IRQ6
45	SA8	46	IRQ5	47	SA7	48	IRQ4
49	SA6	50	IRQ3	51	SA5	52	DACK2*
53	SA4	54	TC	55	SA3	56	SALE
57	SA2	58	+5V	59	SA1	60	OSC
61	SA0	62	0V	63	0V	64	0V

J2: PC/104 Bus Pin Assignments

Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name
1	0V	2	0V	3	MEMCS16*	4	SBHE*
5	IOCS16*	6	LA23	7	IRQ10	8	LA22
9	IRQ11	10	LA21	11	IRQ12	12	LA20
13	IRQ15	14	LA19	15	IRQ14	16	LA18
17	DACK0*	18	LA17	19	DRQ0	20	MEMR*
21	DACK5*	22	MEMW*	23	DRQ5	24	SD8
25	DACK6*	26	SD9	27	DRQ6	28	SD10
29	DACK7*	30	SD11	31	DRQ7	32	SD12
33	+5V	34	SD13	35	MASTER*	36	SD14
37	0V	38	SD15	39	0V	40	(KEY)

4.18 Axiom Bus Connector Pin Assignment

CN5: Axiom Bus Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	GND	2	SERR	3	CBE1
4	AD26	5	AD14	6	VCC3
7	AD12	8	PERR	9	GND
10	AD24	11	AD10	12	CBE3
13	AD15	14	VCC3	15	AD13
16	AD23	17	GND	18	AD21
19	AD11	20	AD22	21	PAR
22	VCC3	23	AD9	24	AD20
25	GND	26	AD19	27	CBE0
28	AD18	29	SBO	30	VCC3
31	SDONNE	32	CBE2	33	GND
34	AD16	35	AD8	36	AD17
37	AD7	38	VCC	39	AD6

Continued . . . . .

Pin	Description	Pin	Description	Pin	Description
40	FRAME	41	GND	42	IRDY
43	AD4	44	TRDY	45	AD5
46	VCC	47	AD3	48	DEVSEL
49	GND	50	STOP	51	AD2
52	PLOCK	53	AD1	54	VCC
55	AD0	56	AD25	57	GND
58	VCC	59	PCLK2	60	PCLK3
61	AD28	62	AD27	63	AD30
64	VCC	65	PME	66	AD29
67	GND	68	AD31	69	REQ2
70	REQ3	71	GNT2	72	VCC

73	PCIRST	74	GNT3	75	GND
76	INTA	77	INTB	78	INTC
79	INTD	80	VCC	81	GND
82	P1394P1-	83	P1394P0-	84	P1394P1+
85	P1394P0+	86	VCC	87	GND
88	IOCHRDY	89	RESERVED	90	RESERVED
91	RESERVED	92	+12V	93	GND
94	RESERVED	95	DDCDTA	96	RESERVED
97	DDCCLK	98	VCCSRAM	99	GPCS1
100	VCCSRAM	101	GPCS0	102	SA0
103	SMEMW	104	SA1	105	SMEMR
106	SA2	107	IOW	108	SA3
109	IOR	110	SA4	111	RSTDRV
112	SA5	113	MUTE	114	SA6
115	PWRGOOD-	116	VCC	117	PWRGOOD
118	SA7	119	IRQ	120	SA8
121	IRQ	122	SA9	123	BLANK
124	SA10	125	GND	126	SA11
127	SD0	128	SA12	129	SD1
130	SA13	131	SD2	132	SA14

Continued . . . . .

Pin	Description	Pin	Description	Pin	Description
133	SD3	134	SA15	135	SD4
136	AEN	137	SD5	138	SA16
139	SD6	140	SA17	141	SD7
142	SA18	143	GND	144	SA19

4.19 Audio And Game Port Connector

The **MiniStation** supports audio interface and game-port. **CN10** and **CN11** are general purpose connectors commonly used for the audio and game port.

4.20 Pin Assignments of Other Connectors

CN2: Power Connector Pin Assignment

Pin	Description	Pin	Description
1	+5V	5	ATX ON/OFF
2	GND	6	-12V
3	+12V	7	GND
4	5VSB	8	+5V

CN16: System Temperature Sensor Connector Pin Assignment

Pin	Description
1	Temperature sensor
2	GND

CN8: IrDA Connector Pin Assignment

Pin	Description
1	VCC
2	HIRRX
3	IRRX
4	GND
5	IRTX

CN10: General Purpose Connector Pin Assignment

Function: Video In/Out Interface			
Pin	Description	Pin	Description
1	CRMA_IN	35	LUMA_IN
2	CMPS_IN	36	VIDEO_GND
3	CRMA_OUT	37	LUMA_OUT
4	CMPS_OUT	38	VIDEO_GND
Function: VGA/CRT Interface			
Pin	Description	Pin	Description
5	Red	39	VIDEO_GND
6	Green	40	VIDEO_GND
7	Blue	41	VIDEO_GND
8	Horizontal Sync	42	Vertical Sync
9	DDC DAT	43	DDC CLK
10	GND	44	GND
Function: IEEE 1394 Interface			

Pin	Description	Pin	Description
11	P1394P0-	45	P1394P0+
12	P1394P1-	46	P1394P1+
13	GND	47	GND

Continued . . . . .

Function: Ethernet RJ-45 Interface			
Pin	Description	Pin	Description
14	Rx+ (Data reception positive)	48	Tx+ (Data transmission positive)
15	Rx- (Data Reception negative)	49	Tx- (Data transmission negative)
16	RJ-1 (for 100-Base-T only)	50	RJ-2 (for 100-Base-T only)
17	GND	51	GND
Function: LVDS Interface			
Pin	Description	Pin	Description
18	DCLKA+	52	DCLKA-
19	DCLKB-	53	DCLKB+
20	GND	54	GND
21	DINA2+	55	DINA2-
22	DINB2-	56	DINB2+
23	GND	57	GND
24	DINA1+	58	DINA1-
25	DINB1-	59	DINB1+
26	GND	60	GND
27	DINA0+	61	DINA0-
28	DINB0-	62	DINB0+
		63	GND
Function: Audio and Game Port Interface			
Pin	Description	Pin	Description
29	Audio_GND		
30	MIC_In	64	SPK_L / LOUT_L
31	MIC_Power	65	SPK_R / LOUT_R
32	NC	66	GND
33	LIN_L		
34	LIN_R		
Function: LAN LED Interface			
Pin	Description	Pin	Description
		67	Lan_100-
		68	Lan_Active

CN7: General Purpose Connector Pin Assignment

Function: IDE2 Interface			
Pin	Description	Pin	Description
1	Reset#	35	GND
2	Data 7	36	Data 8
3	Data 6	37	Data 9
4	Data 5	38	Data 10
5	Data 4	39	Data 11
6	Data 3	40	Data 12
7	Data 2	41	Data 13
8	Data 1	42	Data 14
9	Data 0	43	Data 15
10	GND	44	NC
11	DREQ#	45	GND
12	IOW#	46	GND
13	IOR#	47	GND
14	IOCHRDY	48	NC
15	DACK#	49	GND-Default
16	Interrupt	50	NC
17	SA1	51	NC
18	SA0	52	SA2
19	HDC CS0#	53	HDC CS1#
20	HDD Active#	54	NC
Function: LPT2 Parallel Port Interface			
Pin	Description	Pin	Description
21	Strobe#	55	Auto Form Feed#
22	Data 0	56	Error#
23	Data 1	57	Initialize#
24	Data 2	58	Printer Select In#
25	Data 3	59	Data 4
26	Data 5	60	Data 6
27	Data 7	61	Acknowledge#
28	Busy	62	Paper Empty#
29	Printer Select	63	GND

Continued . . . . .

Function: Digital I/Os Interface			
Pin	Description	Pin	Description
30	DIO Out 0	64	GND
31	DIO Out 1	65	DIO In 0
32	DIO Out 2	66	DIO In 1
33	DIO Out 3	67	DIO In 2
34	NC	68	DIO In 3

CN6: General Purpose Connector Pin Assignment

Function: IrDA Interface			
Pin	Description	Pin	Description
1	+5V	35	IRRX

2	HIRRX	36	IRTX
3	+12V	37	NC
4	+12V	38	GND
Function: LPT1 Parallel Port Interface			
Pin	Description	Pin	Description
5	Stobe#	39	Auto Form Feed#
6	Data 0	40	Error#
7	Data 1	41	Initialize#
8	Data 2	42	Printer Select In#
9	Data 3	43	GND
10	Data 4	44	GND
11	Data 5	45	GND
12	Data 6	46	GND
13	Data 7	47	GND
14	Acknowledge#	48	GND
15	Busy	49	GND
16	Paper Empty#	50	GND
17	Printer Select	51	GND

Continued . . . . .

Function: Floppy Disk Interface			
Pin	Description	Pin	Description
18	Reduce write current	52	GND
19	VCC	53	GND
20	VCC	54	NC
21	Index#	55	GND
22	Motor enable A#	56	GND
23	NC	57	GND
24	Drive select A#	58	GND
25	NC	59	GND
26	Direction#	60	GND
27	STEP#	61	GND
28	Write data#	62	GND
29	Write gate#	63	GND
30	Track 0#	64	GND
31	Write protect#	65	GND
32	Read data#	66	GND
33	Side 1 select#	67	GND
34	Disk change#	68	GND

CN11: General Purpose Connector Pin Assignment

Function: Audio and Game Port Interface			
Pin	Description	Pin	Description
1	MSO_12	35	SWD_14
2	MSI_15	36	JA_3
3	SWA_2	37	JB_6
4	SWB_7	38	JC_11
5	SWC_10	39	JD_13
6	GND	40	Audio_GND
Function: USB Interface			
Pin	Description	Pin	Description
7	USB0VCC	41	USB1VCC
8	USBP0-	42	USBP1-
9	USBP0+	43	USBP1+
10	USBGND	44	USBGND

Continued . . . . .

Function: Keyboard and Mouse Interface			
Pin	Description	Pin	Description
11	PS/2 mouse data	45	PS/2 mouse clock
12	+5V	46	GND
13	Keyboard data	47	Keyboard clock
14	+5V	48	GND
Function: COM4 Serial Port Interface			
Pin	Description	Pin	Description
15	Data Carrier Detect (DCD/+5V/+12V)	49	Data Set Ready (DSR)
16	Receive Data (RXD)	50	Request to Send (RTS)
17	Transmit Data (TXD)	51	Clear to Send (CTS)
18	Data Terminal Ready (DTR)	52	Ring Indicator (RI/+12V/+5V)
19	GND	53	NC

Function: COM3 Serial Port Interface			
Pin	Description	Pin	Description
20	Data Carrier Detect (DCD/+5V/+12V)	54	Data Set Ready (DSR)
21	Receive Data (RXD)	55	Request to Send (RTS)
22	Transmit Data (TXD)	56	Clear to Send (CTS)
23	Data Terminal Ready (DTR)	57	Ring Indicator (RI/+12V/+5V)
24	GND	58	NC
Function: COM2 Serial Port Interface			
Pin	Description	Pin	Description
25	Data Carrier Detect (DCD/+5V/+12V)	59	Data Set Ready (DSR)
26	Receive Data (RXD)	60	Request to Send (RTS)
27	Transmit Data (TXD)	61	Clear to Send (CTS)
28	Data Terminal Ready (DTR)	62	Ring Indicator (RI/+12V/+5V)
29	GND	63	NC
Function: COM1 Serial Port Interface			
Pin	Description	Pin	Description
30	Data Carrier Detect (DCD/+5V/+12V)	64	Data Set Ready (DSR)
31	Receive Data (RXD)	65	Request to Send (RTS)
32	Transmit Data (TXD)	66	Clear to Send (CTS)
33	Data Terminal Ready (DTR)	67	Ring Indicator (RI/+12V/+5V)
34	GND	68	NC

Chapter 5
Award BIOS Setup and Watchdog Utilities

The Award BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in a battery-backed RAM (CMOS RAM) that retains the Setup information each time the power is turned off.

5.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power On Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system and try again. This is possible by turning the system power to OFF then to ON, pressing the "RESET" button on the system case, or by simultaneously pressing <Ctrl>, <Alt>, and <Del> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will be prompted with the following:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

5.2 Control Keys

Up arrow	Moves cursor to the previous item
Down arrow	Moves cursor to the next item
Left arrow	Moves cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quits and deletes changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exits current page and returns to Main Menu
PgUp/"+" key	Increases the numeric value or makes changes
PgDn/"–" key	Decreases the numeric value or makes changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restores the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Loads the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Loads the Setup default , only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Saves all the CMOS changes, only for Main Menu

5.3 Getting Help

- **Main Menu**
  The on-line description of the highlighted setup function is displayed at the bottom of the screen.

- **Status Page Setup Menu/Option Page Setup Menu**
  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 <F1> or <Esc>.

5.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.

ROM PCI/ISA BIOS (2A69KA5C)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

Time, Date,Hard Disk Type...

- **Standard CMOS Setup**
  This setup option includes all the items in a standard compatible BIOS.
- **BIOS Features Setup**
  This setup page includes all the items of Award special enhanced features.
- **Chipset Features Setup**
  This setup option includes all the items of chipset special features.
- **Power Management Setup**
  This category determines the power consumption of the system after selecting its items. Default value is Disabled.

- **PnP/PCI Configuration**
  This category specifies the assignment of all IRQs and DMAs.
- **Load BIOS Defaults**
  BIOS defaults indicate the most appropriate values of the system parameter in which the system can operate at a minimum performance.
- **Load Setup Defaults**
  Chipset defaults indicate the values required by the system for maximum performance.
- **Integrated Peripherals**
  This page allows you to set up all the on board I/O controllers like IDE, SCSI, FDC, etc..
- **Supervisor / User Passwords**
  Changes, sets or disables password of Supervisor or User. It allows you to restrict access to the system and Setup, or just to Setup.
- **IDE HDD Auto Detection**
  Automatically configures hard disk parameters.
- **Save & Exit Setup**
  Saves CMOS value changes to CMOS and exits setup.
- **Exit Without Saving**
  Abandons all CMOS value changes and exits setup.

5.5 Standard CMOS Setup Menu

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 you want in each item.

ROM PCI/ISA BIOS (2A69KA5C)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Jun 7 2000
Time (hh:mm:ss) : 00:00:00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDE	SECTOR	MODE
Primary Master:	Auto	0	0	0	0	0	0	Auto
Primary Slave:	Auto	0	0	0	0	0	0	Auto
Secondary Master:	Auto	0	0	0	0	0	0	Auto
Secondary Slave:	Auto	0	0	0	0	0	0	Auto

Drive A : 1.44M , 3.5 in
Drive B : None

Video : EGA / VGA
Halt On : All Errors

Base Memory :	640K
Extended Memory :	14336K
Other Memory :	384K
Total Memory :	15360K

ESC : Quit ↑↓→← : Select Item PU / PD / + / - : Modify
F1 : Help (Shift) F2 : Change Color

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**
  The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **Primary Master/Primary Slave/Secondary Master/Secondary Slave**
  The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.
  Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.
  If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the controller of HDD interface is ESDI, select "Type 1".
  If the controller of HDD interface is SCSI, select "None".
  If the controller of HDD interface is CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A type/Drive B type**
  The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **Video**

  The category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup. You have two ways to boot up the system:

  1. When VGA as primary and monochrome as secondary, the selection for the video type is "VGA Mode".
  2. When monochrome as primary and VGA as secondary, the selection of the video type is "Monochrome Mode".

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

- **Error halt**

  The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error, the system will halt and you will be prompted.
All errors	The system boot will not stop for any error detected.
All, But Keyboard	System boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	System boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	System boot will not stop for a keyboard or disk error; it will stop for all other errors.

- **Memory**
  The category is display-only which is determined by POST (Power On Self Test) of the BIOS.
  - **Base Memory**
    The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.
  - **Extended Memory**
    The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.
  - **Other Memory**
    This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.
  - **Total Memory**
    System total memory is the sum of basic memory, extended memory, and other memory.

5.6 BIOS Features Setup Menu

ROM PCI/ISA BIOS (2A69KA5C)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC	: Enabled	D0000-D3FFF Shadow	: Disabled
Checking	: Enabled	D4000-D7FFF Shadow	: Disabled
Processor Number Feature	: Disabled	D8000-DBFFF Shadow	: Disabled
Quick Power On Self Test	: A,C,SCSI	DC000-DFFFF Shadow	: Disabled
Boot Sequence	: Disabled	******** SmartView Function ********	
Swap Floppy Drive	: Enabled	LCD Type : 640 x 480 TFT	
Boot Up Floppy Seek	: On	TFT Format: 24 Bits	
Boot Up NumLock Status	: Normal	DSTN Format: 24 Bits	
Gate A20 Option	: Disabled	Expansion(Full Screen) : Disabled	
Typematic Rate Setting	: 6	Display Type at POST/BOOT : LCD only	
Typematic Rate(Chars/Sec)	: 250		
Typematic Delay (Msec)	: Setup	ESC : Quit ↑ ↓ → ←: Select Item	
Security Option	: Disabled	F1 : Help PU/PD/+/- : Modify	
PCI/VGA Palette Snoop	: Non-OS2	F5 : Old Values (Shift) F2 : Color	
OS Select for DRAM >64MB	: No	F6 : Load BIOS Defaults	
Report No FDD For WIN 95		F7 : Load Setup Defaults	

- **Virus Warning**
  This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is *"Disabled"*.

> ***! WARNING !***
> *Disk boot sector is to be modified*
> *Type "Y" to accept write or "N" to abort write*
> *Award Software, Inc.*

Enabled	Activates automatically when the system boots up causing a warning message to appear when there is an attempt to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when attempts to access the boot sector or hard disk partition table are made.

NOTE: *This function is only available with DOS and other operating systems that do not trap INT13.*

- **CPU Internal Cache/External Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs with no built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **CPU L2 Cache ECC Checking**
  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is ***Enabled***.

- **Quick Power On Self Test**
  This option speeds up Power On Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **Boot Sequence**
  The original IBM PCs load the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, the BIOS now offers 11 different boot sequence options of three drives each. In addition to the traditional drives A and C, options include IDE hard drives D, E, and F; plus a SCSI hard drive and a CD-ROM drive. This category determines from which drive the computer searches first for the disk operating system (i.e., DOS). Default value is *"A,C,SCSI"*.

A,C,SCSI	System searches for the operating system from the floppy disk drive. If it fails, it will search from the hard disk drive. If operating system is still not found, it'll seek from the SCSI device.
C,A,SCSI	System searches for the operating system from the hard disk drive first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.
C,CDROM,A	System searches for the operating system from the hard disk drive first. If it fails, it will search from the IDE CDROM drive. If operating system is still not found, it'll seek from the floppy disk drive.
CDROM,C,A	System searches for the operating system from the IDE CDROM drive first. If it fails, it will search from the hard disk drive. If operating system is still not found, it'll seek from the floppy disk drive.
D,A,SCSI	System searches for the operating system from the second IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.
E,A,SCSI	System searches for the operating system from the third IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.
F,A,SCSI	System searches for the operating system from the fourth IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.
SCSI,A,C	System searches for the operating system from the SCSI device first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the first IDE HDD.
SCSI,C,A	System searches for the operating system from the SCSI device first. If it fails, it will search from the first IDE HDD. If operating system is still not found, it'll seek from the floppy disk drive.
C only	System only searches for the operating system from the first IDE HDD.
LS/ZIP,C	System searches for the operating system from the 120MB LS floppy or the 100MB ZIP drive first. If it fails, it'll search from the first IDE HDD.

- **Swap Floppy Drive**
  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled*.

- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**
  This option enables and disables the numberlock function of the keypad. The default value is *"On"*.

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**
  This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	The system will not boot and access to Setup will be denied if the incorrect password is 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 you will be asked to enter password. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

- **Assign IRQ for VGA**
  Enables or disables VGA's IRQ assignment. The options available are *Enabled* and *Disabled*.

- **OS Select for DRAM >64**
  This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2. The default value is *"Non-OS2"*.

- **Report No FDD For Win 95**
  This option allows Windows 95 to share IRQ6 (assigned to a floppy disk drive) with other peripherals in case the drive is not existing. The default setting is *"No"*.

- **Video BIOS Shadow**
  Video shadowing increases the video speed by copying the video BIOS into RAM. However, it is still optional depending on the chipset design. The default value of this option is *"Enabled"*.

Enabled	Video BIOS shadowing is enabled
Disabled	Video BIOS shadowing is disabled

- **C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**
  These options determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit. The default value for all is *"Disabled"*.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

NOTE: *1. For C8000-DFFFF option-ROM on PCI BIOS – BIOS automatically enables the shadow RAM. User does not have to select the item.*
2. IDE second channel control:
***Enable:** enables secondary IDE port and BIOS will assign IRQ15 for this port.*
***Disable:** disables secondary IDE port and IRQ15 is available for other device(s). The item is optional only for PCI BIOS.*
3. Some sound cards have an onboard CD-ROM controller that uses IDE Secondary Port. To avoid PCI IDE conflict, disable the IDE secondary channel control so that the CD-ROM may work.

5.6.1 Onboard VGA Functions

The following options allow the overriding of the VGA BIOS settings integrated in the core chipset of **MiniStation**. Take note that the settings on the following will not take effect when a VGA peripheral card is connected to the system.

- **LCD Type**
  Although the system chipset already supports VGA and LCD alike, BIOS Features Setup still expands this feature further with the option to set any of the 15 LCD types. The available options are:
  - VGA Default
  - 640 X 480 TFT
  - 800 X 600 TFT
  - 1024 X 768 TFT
  - 1280 X 1024 TFT
  - 640 X 480 DSTN
  - 800 X 600 DSTN
  - 1024 X 768 DSTN
- **TFT Format:**
  - 9 Bit
  - 12 Bit
  - 18 Bit
  - 24 Bit
  - 12+12 Bit
  - 18+18 Bit
  - 24+24 Bit
- **DSTN FORMAT:**
  - 16 Bit
  - 24 Bit

- **Expansion (Full Screen)**
  This option allows you to enlarge application screens to full screen scale onto your display. However this option is not inversely compatible, rendering no change when applications screens have resolutions larger than the display resolution. The available options are Enabled and Disabled.

- **Display Type at POST/BOOT**
  This item configures the viewing area for the POST sequence. When configured to the *incorrect display setting* or *Both*, it blankets the POST sequence from being viewed. If you select *Default*, this option is useless and follows the VGA BIOS settings. The available options are Default, LCD/CRT, LCD Only, LCD/Both, Both, CRT Only, CRT/LCD, and CRT/Both.

5.7 Chipset Features Setup Menu

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

ROM PCI/ISA BIOS (2A69KA5C)
CHIPSET FEATURES SETUP
AWARD SOFTWARE INC.

SDRAM RAS-to-CAS Delay	: 3	CPU Warning Temperature	: Disabled
SDRAM RAS Precharge Time	: 3	Current System Temp.	:
SDRAM CAS latency Time	: 3	Current CPU Temperature	:
SDRAM Precharge Control	: Disabled	Current CPUFAN1 Speed	:
DRAM Data Integrity Mode	: Non-ECC	Current CPUFAN2 Speed	:
System BIOS Cacheable	: Disabled	Vcore:	VTTP :
Video BIOS Cacheable	: Disabled	VCC3 :	+5 V :
Video RAM Cacheable	: Disabled	+12 V :	-12 V :
8 Bit I/O Recovery Time	: 3		
16 Bit I/O Recovery Time	: 2		
Memory Hole at 15M-16M	: Disabled		
Passive Release	: Enabled		
Delayed Transaction	: Disabled		
AGP Aperture Size (MB)	: 4	ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values (Shift)	F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

- **SDRAM RAS-to-CAS Delay**
  You can select RAS-to-CAS delay in HCLKs of 2 or 3. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

- **SDRAM RAS Precharge Time**
  When synchronous DRAM is installed, the number of clock cycles of RAS precharge time depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The available choices are *2* and *3*.

- **SDRAM CAS latency Time**
  You can select CAS latency time in HCLKs 2, 3, or Auto. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

- **DRAM Data Integrity Mode**
  This option sets the data itegrity mode of the DRAM installed in the system. The default setting is *"Non-ECC"*.

- **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 default value is *"Disabled"*.
- **Video BIOS Cacheable**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.
- **Video RAM Cacheable**
  Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.
- **8/16 Bit I/O Recovery Time**
  The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.
  These two fields let you add recovery time (in bus clock cycles) for 16/8 -bit I/O. The default values are *"1"* for 8 Bit I/O Recovery Time and *"1"* for 16 Bit I/O Recovery Time.
- **Memory Hole at 15M-16M**
  You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The default value is *"Disabled"*.
- **Passive Release**
  When enabled, CPU to PCI accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.
- **Delayed Transaction**
  The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. The options available are *Enabled* and *Disabled*.
- **AGP Aperture Size (MB)**
  The field sets aperture size of the graphics. 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 options available are 4M, 8M, 16M, 32M, 64M, 128M and 256M.
- **CPU Warning Temperature**
  This option lets you set the CPU temperature limit where the system will produce a warning indicating CPU temperature has already exceeded. The default value is *"Disabled"*.
- **Current System/CPU Temperature**
  These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperature to ensure the system is stable.
- **Current FAN1/FAN2 Speed**
  These optional and read-only fields show he current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **Vcore/VTTP/VCC3/+5V/+12V/-12V**
  These optional and read-only fields show the current voltages in the voltage regulators and power supply as monitored by the hardware monitoring IC.

5.8 Power Management Setup

The Power Management Setup screen appears like this:

ROM PCI/ISA BIOS (2A69KA5C)
POWER MANAGEMENT SETUP

AWARD SOFTWARE, INC.

ACPI function	: Disabled	** Reload Global Timer Events **	
Power Management	: User Define	IRQ[3-7,9-15],NMI	: Disabled
PM Control by APM	: Yes	Primary IDE 0	: Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 1	: Disabled
Video Off After	: Standby	Secondary IDE 0	: Disabled
Modem Use IRQ	: 3	Secondary IDE 1	: Disabled
Doze Mode	: Disable	Floppy Disk	: Disabled
Standby Mode	: Disable	Serial Port	: Enabled
Suspend Mode	: Disable	Parallel Port	: Disabled
HDD Power Down	: Disable		
Throttle Duty Cycle	: 62.5%		
PCI/VGA Act-Monitor	: Disabled		
Soft-Off by PWR-BTTN	: Instant-Off		
PowerOn by Ring	: Enabled		
IRQ 8 Break Suspend	: Disabled	ESC: Quit ↑↓→←: Select Item	
		F1 : Help PU / PD / + / - : Modify	
		F5 : Old Values (Shift)F2 : Color	
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The options available are Enabled, Disabled.

- **Power Management**
  This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

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

- **PM Control by APM**

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

No	System BIOS will ignore APM when power managing the system
Yes	System BIOS will wait for APM's prompt before it enters any PM mode (i.e., DOZE, STANDBY or SUSPEND). **Note:** If APM is installed or if there is a task running, even when the timer has timed out, the APM will not prompt the BIOS to put the system into any power saving mode!

NOTE: *If APM is not installed, this option has no effect.*

- **Video Off Method**

  Determines the manner in which the monitor is blanked.

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

- **Video Off After**

  As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank off. The default value is *"Standby"*.

NA	System BIOS will never turn off the screen
Suspend	Screen off when system is in SUSPEND mode
Standby	Screen off when system is in STANDBY mode
Doze	Screen off when system is in DOZE mode

NOTE: *Green monitors detect the V/H SYNC signals to turn off its electron gun*

- **Modem Use IRQ**

3, 4, 5, 7, 9, 10, 11, NA	For external modem, 3 or 4 will be used for card type modem. It is up to card definition. Default is 3.

- **Doze Mode**

  After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all

other devices still operate at full speed. The default value is *"Disabled"*.

Disabled	System will never enter doze mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering DOZE mode.

- **Standby Mode**
  After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed. The default value is *"Disabled"*.

Disabled	System will never enter STANDBY mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering STANDBY mode. If any item defined in (J) is enabled & active, STANDBY timer will be reloaded

- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **HDD Power Down**
  After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active. The default value is *"Disabled"*.

Disabled	HDD's motor will not power OFF.
1/2/3/4/5/6/7/8/9/10/ 11/12/13/14/15 Min	Defines the continuous HDD idle time before the HDD enters power saving mode (motor OFF)

- **Throttle Duty Cycle**
  When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs. The default value is *"62.5%"*.

- **PCI/VGA Act-Monitor**
  When Enabled, any video activity restarts the global timer for Standby mode. The default value is *"Enabled"*.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds.

	Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **PowerOn by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.
- **IRQ 8 Break Suspend**
  You can turn on or off monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode. The default value is *"Disabled"*.
- **Reload Global Timer Events**
  When *Enabled*, an event occurring on each device listed below restarts the global time for Standby mode.

- **IRQ3 -7, 9-15, NMI** The default value is *"Disabled"*.
  Primary IDE 0 The default value is *"Disabled"*.
  Primary IDE 1 The default value is *"Disabled"*.
  Secondary IDE 0 The default value is *"Disabled"*.
  Secondary IDE 1 The default value is *"Disabled"*.
  Floppy Disk The default value is *"Disabled"*.
  Serial Port The default value is *"Enabled"*.
  Parallel Port The default value is *"Disabled"*.

5.9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, 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.

ROM PCI/ISA BIOS (2A69KA5C)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PNP OS Installed	: No	Assign IRQ For VGA	: Enabled
Resources Controlled By	: Manual		
Reset Configuration Data	: Enabled	Used MEM base addr	: N/A
IRQ-3	assigned to : Legacy ISA	Assign IRQ For USB	: Enabled
IRQ-4	assigned to : Legacy ISA		
IRQ-5	assigned to : PCI/ISA PnP	Onboard LAN BootROM	: Disabled
IRQ-7	assigned to : Legacy ISA		
IRQ-9	assigned to : PCI/ISA PnP		
IRQ-10	assigned to : Legacy ISA		
IRQ-11	assigned to : Legacy ISA		
IRQ-12	assigned to : PCI/ISA PnP		
IRQ-14	assigned to : PCI/ISA PnP		
IRQ-15	assigned to : PCI/ISA PnP		
DMA-0	assigned to : PCI/ISA PnP		
DMA-1	assigned to : PCI/ISA PnP	ESC: Quit ↑↓→←: Select Item	
DMA-3	assigned to : PCI/ISA PnP	F1 : Help PU / PD / + / - : Modify	
DMA-5	assigned to : PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color	
DMA-6	assigned to : PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7	assigned to : PCI/ISA PnP	F7 : Load Setup Defaults	

- **PNP OS Installed**
  Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is *"No"*.

- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

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

- **IRQ n Assigned to**
  When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default values for all IRQ n are *"PCI/ISA PnP"* for IRQ 5/9/12/14/15 and *"Legacy ISA"* for IRQ 3/4/7/10/11.

- **DMA n Assigned to**
  When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default values for all DMA n are *"PCI/ISA PnP"*.

- **Used MEM base addr**
  Select a base address for the memory area used by any peripheral that requires high memory. The default setting is "*N/A"*.

- **Assign IRQ for USB**
  This item allows you to assign IRQ for the USB interface. The default value is *"Enabled"*.

- **OnBoard Ethernet BootROM**
  The BIOS of SBC8361 includes Boot ROM for Novell. This item allows user to enable or disable such function.

5.10 Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

ROM PCI/ISA BIOS (2A69KA5C)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

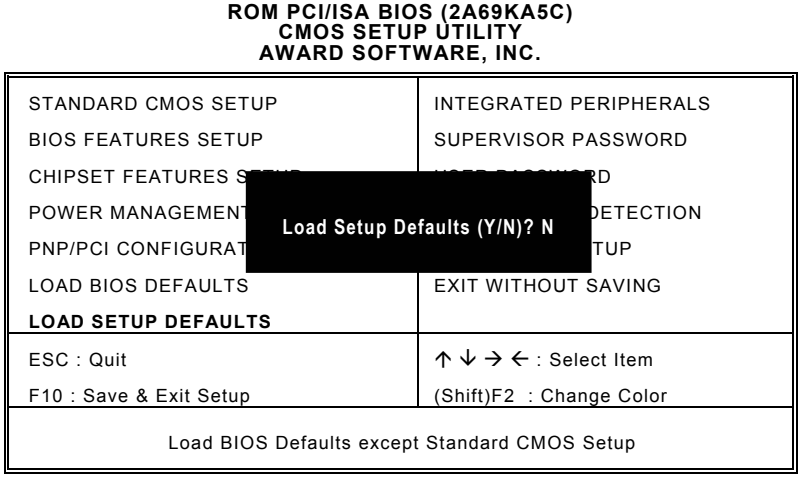
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES S	RD
POWER MANAGEMENT	DETECTION
PNP/PCI CONFIGURATION	TUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

Load BIOS Defaults (Y/N)? N

To load BIOS defaults value to CMOS SRAM, enter "Y". If not, enter "N".

5.11 Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

5.12 Integrated Peripherals

ROM PCI/ISA BIOS (2A69KA5C)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	UART Mode Select	: Normal
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto	Onboard Parallel Port 1	: 378/IRQ7
IDE Primary Master UDMA	: Auto	Parallel Port Mode	: SPP
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto	Onboard Serial Port 3	: 3E8H
On-Chip Primiary PCI IDE	: Enabled	Serial Port 3 Use IRQ	: IRQ10
On-Chip Secondary PCI IDE	: Enabled	Onboard Serial Port 4	: 2E8H
USB Keyboard Support	: Disabled	Serial Port 4 Use IRQ	: IRQ11
Init Display First	: PCI/ISA	Onboard Parallel Port 2	: 278/IRQ5
		Parallel Port 2 Mode	: SPP
POWER ON Function	: BUTTON ONLY		
		ESC: Quit	↑↓→←: Select Item
		F1 : Help	PU / PD / + / - : Modify
Onboard FDC Controller	: Enabled	F5 : Old Values	(Shift)F2 : Color
Onboard Serial Port 1	: 3F8/IRQ4	F6 : Load BIOS Defaults	
Onboard Serial Port 2	: 2F8/IRQ3	F7 : Load Setup Defaults	

The four items related to the WDT describe the set up of the Watchdog Timer (WDT), please refer to the Appendix for details.

- **IDE HDD Block Mode**
  Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your 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 default value is *"User Define"*.

- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you 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 default value is *"Auto"*.

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

- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.
  NOTE: *Choosing Disabled for these options will automatically remove the IDE Primary Master/Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

- **USB Keyboard Support**
  Select Enabled if your system contains a USB controller and you have a USB keyboard. The default value is *"Disabled"*.

- **Init Display First**
  This item allows you to decide to active whether PCI/ISA or Onboard first. The options available are *PCI/ISA*, and *Onboard.*

- **POWER ON Function**
  This option allows users to select the type of power ON sequence for the system to follow. The default value is *"Button-Only"*.

BUTTON-ONLY	Follows the conventional way of turning OFF system power (via power button).
Password	Upon selecting this option, the KB POWER ON Password line appears. Press <Enter> and you'll be prompted to enter and confirm a password of your choice. After setting the password, succeeding attempts to power ON the system will result to null. For system to activate, user must input the password via keyboard then press <Enter>.
Hot KEY	This option is very similar with that of Password. Hot-key combinations range from Ctrl-F1 to Ctrl-F12. User may define this combination from the Hot key Power ON option.

Continued . . . . .

Mouse Left	This allows system to POWER ON by clicking the left mouse button. To enable, user must reboot and allow system to finish booting up otherwise the setting will not take effect.
Mouse Right	This allows system to POWER ON by clicking the right mouse button. To enable this setting, user must reboot and allow system to finish the boot up process otherwise the setting will not take effect.

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

- **Onboard Serial Port 1/2/3/4**
  Select an address and corresponding interrupt for the first and second serial ports. The default values are *"3F8/IRQ4"* for Onboard Serial Port 1, *"2F8/IRQ3"* for Onboard Serial Port 2, *"3E8H/IRQ10"* for Onboard Serial Port 3, and *"2E8H/IRQ11"* for Onboard Serial Port 4.

- **UART Mode Select**
  The second serial port offers these infrared interface modes:

  1. IrDA
  2. ASKIR IrDA-compliant serial infrared port
  3. Standard (default value)

  NOTE: *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmittion delay will appear.

- **Onboard Parallel Port**
  Select a logical LPT port name and matching address for the physical parallel (printer) port. The default value is *"378/IRQ7"*.

  NOTE: *Choosing Disabled for this option will remove the Parallel Port Mode option on the menu.*

- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The default value is *"ECP+EPP"*.
  NOTE: *Selecting EPP on this option will allow selection to the EPP Mode (EPP1.7, EPP1.9)*
  ECP mode selection will provide option for ECP Mode Use DMA.
  Choosing ECP+EPP modes will provide selections for both EPP Mode Select and ECP Mode Use DMA.
- **ECP Mode Use DMA**
  Select a DMA channel for the port.
- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.

5.13 Supervisor/User Password Setting

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

1. **supervisor password:** can enter and change the options of the setup menus.
2. **user password:** just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

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

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

5.14 IDE HDD Auto Detection

The Enhance IDE feature is included in all Award BIOS. The following is a brief description of this feature.

1. Setup Changes

<I> Auto-detection

BIOS setup will display all possible modes supported by the HDD including NORMAL, LBA & LARGE.

If HDD does not support LBA modes, no 'LBA' option will be shown.

Users can select a mode appropriate for them.

ROM/PCI/ISA BOPS (2XXXXXXX)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE

Primary Master :

Select Primary Master Option (N = Skip) : N

OPTION	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
1 (Y)	516	1120	16	65535	1119	59	NORMAL
2	516	524	32	0	1119	63	LBA
3	516	560	32	65535	1119	59	LARGE

<II> Standard CMOS Setup

	CYLS	Heads	Precomp	Landzone	Sector	Mode
Primary Master :User(516MB)	1120	16	65535	1119	59	NORMAL
Primary Slave :None (203MB)	684	16	65535	685	38	----------
Secondary Master :	None	0	0	0	0	0 0
Secondary Slave :	None	0	0	0	0	0 0

When HDD type is in 'user' type, the "MODE" option will be open for user to select HDD mode.

2. HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE

- NORMAL mode

  Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

  The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

	no. Cylinder	(1024)
x	no. Head	(16)
x	no. Sector	(63)
x	no. per sector	(512)
		528 Megabytes

If user sets his HDD to NORMAL mode, the maximum accessible HDD size will be 528MB even though its physical size may be greater than that!

- **LBA (Logical Block Addressing) mode**

  A new HDD accessing method to overcome the 528MB bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

  During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

  The maximum HDD size supported by LBA mode is 8.4GB which is obtained by the following formula:

	no. Cylinder	(1024)
x	no. Head	(255)
x	no. Sector	(63)
x	bytes per sector	(512)
		814 Gigabytes

- **LARGE mode**

  Extended HDD access mode supported by Award Software.

  Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user does not want LBA). The Award BIOS provides another alternative to support these kinds of HDD!

  Example of LARGE mode:

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

  BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address!

  Maximum HDD size:

	no. Cylinder	(1024)
x	no. Head	(32)
x	no. Sector	(63)
x	bytes per sector	(512)
		1 Gigabytes

3. Remarks

To support LBA or LARGE mode of HDDs, there must be some software involved. All these software are located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System that replaces the whole INT 13h.

5.15 Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The utility automatically looks for the necessary information of the drive you selected. This utility also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Hard Disk Low Level Format Utility	BAD TRACKS TABLE NO. CYLS HEAD
SELECT DRIVE BAD TRACK LIST PREFORMAT	
Current select drive is : C DRIVE: C CYLINDER : 0 HEAD: 0	

	Size	CYLS	Head	Precomp	Landz	Sector	Mode
Primary Master:	0	0	0	0	0	0	AUTO
Primary Slave:	0	0	0	0	0	0	AUTO

Up/Down - Select item Enter - Accept ESC-Exit/Abort

- **Control Keys**
  Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press <Enter> to accept the selection. Press <Esc> to abort the selection or exit the utility.
- **Select Drive**
  Select from installed hard disk drive C or D. Listed at the bottom of the screen is the drive automatically detected by the utility.
- **Bad Track List**
  - **Auto scan bad track**
    The utility will automatically scan bad tracks and list the bad tracks on the window at the right side of the screen.
  - **Add bad track**
    Directly type in the information of the known bad tracks on the window at the right side of the screen.
  - **Modify bad track**
    Modify the information of the added bad tracks in the window at the right side of the screen.
  - **Delete bad track**
    Delete the added bad tracks on the window at the right side of the screen.
  - **Clear bad track table**
    Clear the whole bad track list on the window at the right side of the screen.
- **Preformat**
  - **Interleave**
    Select the interleave number of the hard disk drive you wish to perform low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.
  - **Auto scan bad track**
    This allows the utility to scan first then format by each track.
  - **Start**
    Press <Y> to start low level format.

5.16 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.

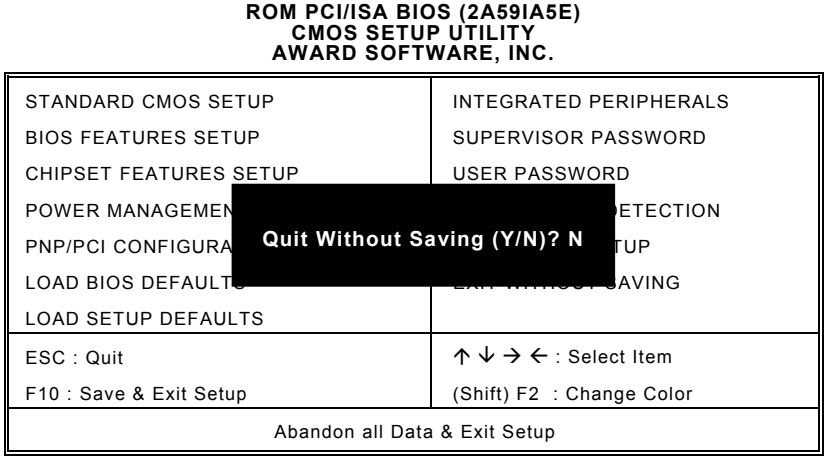
ROM PCI/ISA BIOS (2A59IA5E)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT	ECTION
PNP/PCI CONFIGURAT	
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Save Data to CMOS & Exit Setup	

Save to CMOS and Exit(y/N)? N

5.17 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



5.18 Power-On Boot

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or press the "RESET" button on the system case. You may also restart by simultaneously pressing the <Ctrl>, <Alt>, and <Delete> keys. Upon restarting the system, immediately press <Insert> to load the BIOS default CMOS values for boot up.

5.19 Watchdog Function

The **MiniStation** CPU card uses version 2.0 of the watchdog timer. This onboard WDT generates either a system reset or non-maskable interrupt (NMI), depending on the settings made on jumper **JP8** of **MiniStation**. Follow the steps below to enable and program the watchdog function of **MiniStation**.

Start

↓

Un-Lock WDT : OUT 120H 0AH ; enter WDT function
OUT 120H 0BH ; enable WDT function

↓

Set multiple (1~4) : OUT 120 0NH ; N=1,2,3 or 4

↓

Set base timer (0~F) : OUT 121 0MH ; M=0,1,2,...F

↓

WDT counting

↓

re-set timer : OUT 121 0MH ; M=0,1,2,...F

↓

IF No re-set timer : WDT time-out, generate RESET or NMI

↓

IF to disable WDT : OUT 120 00H ; Can be disable at any time

M	N			
	1	2	3	4
0	0.5 sec.	5 secs.	50 secs.	100 secs.
1	1 sec.	10 secs.	100 secs.	200 secs.
2	1.5 secs.	15 secs.	150 secs.	300 secs.
3	2 secs.	20 secs.	200 secs.	400 secs.
4	2.5 secs.	25 secs.	250 secs.	500 secs.
5	3 secs.	30 secs.	300 secs.	600 secs.
6	3.5 secs.	35 secs.	350 secs.	700 secs.
7	4 secs.	40 secs.	400 secs.	800 secs.
8	4.5 secs.	45 secs.	450 secs.	900 secs.
9	5 secs.	50 secs.	500 secs.	1000 secs.
A	5.5 secs.	55 secs.	550 secs.	1100 secs.
B	6 secs.	60 secs.	600 secs.	1200 secs.
C	6.5 secs.	65 secs.	650 secs.	1300 secs.
D	7 secs.	70 secs.	700 secs.	1400 secs.
E	7.5 secs.	75 secs.	750 secs.	1500 secs.
F	8 secs.	80 secs.	800 secs.	1600 secs.

Chapter 6
Ethernet Introduction

6.1 Introduction

The Ethernet device onboard the **MiniStation** incorporates the Intel 82559 Ethernet chipset. Connector **CN10** onboard the **MiniStation** serves as the interface between the RJ-45 and the MiniStation -based system. Refer to Section 3.20 for the pin assignment of **CN10**.

6.2 Features

- 10MB/s and 100MB/s operations
- Supports 10MB/s and 100MB/s N-Way auto negotiation
- Supports Wake On LAN
- Full duplex capability
- Full compliance with PCI Revision 2.1
- PCI Bus Master data transfers

6.3 Drivers Supported

Bundled with popular software drivers, the **MiniStation** Ethernet interface allows great flexibility to work with all major networking operating systems including Novell NetWare v3.x/ v4.x, Microsoft LAN Manager, Windows 3.1/95/98/NT3.51/NT4.0, IBM LAN Server, or other ODI and NDIS drivers.

6.4 Other Information

Please refer to the Info directory in the Ethernet Disk for more information.

Chapter 7
PCMCIA Card

7.1 Hardware Installation

7.1.1 Jumpers setting

There are two slots on single *PCMCIA Card Drive*. These jumpers are named JP1 and JP2.

Table 1 : Jumper setting

PCMCIA Card Drive	Slot NO
The 1st PCMCIA Card Drive	(Default) 0,1

Note: Since there is only one *PCMCIA Card Drive* in the MiniStation , there is no need to change the default jumper setting.

For boot ROM address selection, please refer to jumper setting of JP3 in following tables.

Pin Assignment (JP3)

2	4	6	8	10	12	14	16	18	20	22	24
1	3	5	7	9	11	13	15	17	19	21	23

Enable/Disable Boot ROM

15-16	Enable/Disable
S	Enable
O	Disable (Default)

Select Size of Boot ROM

17-18	19-20	21-22	23-24	Boot ROM Size
S	O	O	S	16k bytes
O	S	S	O	8k bytes (Default)

Address Map for 8k bytes size of Boot ROM

1-2	3-4	5-6	7-8	9-10	11-12	13-14	Base Address
S	S	S	S	S	O	O	C000-C1FF
O	S	S	S	S	O	O	C200-C3FF
S	O	S	S	S	O	O	C400-C5FF
O	O	S	S	S	O	O	C600-C7FF
S	S	O	S	S	O	O	C800-C9FF
O	S	O	S	S	O	O	CA00-CBFF
S	O	O	S	S	O	O	CC00-CDFF (Default)
O	O	O	S	S	O	O	CE00-CFFF
S	S	S	O	S	O	O	D000-D1FF
O	S	S	O	S	O	O	D200-D1FF
S	O	S	O	S	O	O	D400-D3FF

O	O	S	O	S	O	O	D600-D7FF
S	S	O	O	S	O	O	D800-D9FF
O	S	O	O	S	O	O	DA00-DBFF
S	O	O	O	O	O	O	DC00-DDFF
O	O	O	O	S	O	O	DE00-DFFF
S	S	S	S	O	O	O	E000-E1FF
O	S	S	S	O	O	O	E200-E3FF
S	O	S	S	O	O	O	E400-E5FF
O	O	S	S	O	O	O	E600-E7FF
S	S	O	S	O	O	O	E800-E9FF
O	S	O	S	O	O	O	EA00-EBFF
S	O	O	S	O	O	O	EC00-EDFF
O	O	O	S	O	O	O	EE00-EFFF

"S"----means Short "O"----means Open

7.2 Software Installation

The *PCMCIA Card Drive* includes a DOS PCMCIA services library **CardSoft**, manufactured by **SystemSoft**.

It also comes with **CardView**, a PCMCIA control & maintenance utility for Microsoft Windows. It works together with Cardsoft allowing you to configure and control our PCMCIA cards easily while in Windows. But Window 95/98 does not require CardSoft and CardView.

7.2.1 Installation for Windows 95 and 98

Windows 95/98 contains the built-in support utility driver for this PCMCIA Card Drive and do not require the supplied drive diskette for the DOS.

Though the utility driver is already installed in a hard drive in the MiniStation, you may need to re-install yourself.

To install the necessary utilities from the Windows 95/98 in a CD-ROM drive directly, the CN4 connector in the main board can be used. An IDE type CD-ROM drive is to be connected to the CN4 which is the second IDE connector port on the main board and the necessary utility software is to be loaded into a hard drive.

Or you probably need to install the Windows and operating system yourself.

When you install your hardware at the first time, please follow the below procedure :

1. Follow the Windows operation procedure as below :
   START → SETTINGS →CONTROL PANEL, and double click on **ADD NEW HARDWARE.**
   Then **Add New Hardware prompt** is displayed.
2. Double Click on **PCMCIA socket**, the **manufactures & model prompt** is displayed. Then double click on PCIC or **compatible PCMCIA controller**. the **Resource type & Setting prompt** is displayed.
3. Click on **Next** and then click on **Finish,** then **System Settings Change prompt** is displayed.
4. Click on **Yes** to rebooting Windows systems. Then the utility driver installation into a hard drive is completed.

For more information, refers to the manual of Window 95/98 or its on line help.

7.2.2 Installation for DOS & Windows 3.1X:

During the installation procedure, if one of the following memory managers is defected. a warning screen similar to the one shown below is displayed. and the appropriate DEVICE line changes prompt for your memory manager are also shown on the screen

EMM386 QEMM 386MAX

```
The CardSoft 3.1 Install Utility has detected the presence of the
ENN386 memory manager. In order for CardSoft 3.1 to
function properly, the certain ranges of memory need to be excluded
from this memory manager. If you wish to ensure proper functionality
of the CardSort 3.1 drives we suggest you to add the switch
x=D000-DFFF. After this installation is complete, please edit
the lines in your CONFIG.SYS file to appear as below

DEVICE=C:\DOS\EMM386.EXE NOEMS X=D000-DFFF

Press [Exc] to quit, any other key to continue.....
```

If you see the screen (or a similar screen). write town the displayed DEVICE line. When the installation has completed, change the memory device line in your CONFIG.SYS file to match the one displayed on this screen. To edit or display your CONFIG.SYS file, type command **Edit config-sys** at the DOS prompt. If you are using the **EMM386** memory manager. look for a line similar to the following (If you don not see a line like this. then you are not using **EMM386** on your system)

device=emm386.exe

To exclude the address range D000-DFFF change this line as shown here (this is what is displayed on the installation screen if EMM386 is defected)

device=emm386.exe **noems x=d000-dfff**

If you are using a memory manager other than those listed, refer to the manual that you received with the memory manager for instructions on how to exclude an address range. The installation procedure are following.

1. Start you computer. Insert the CardSort & CardView diskette into drive A: or B:
2. If you are a Windows 3.1 user, start up Windows now. From the Program **Manager,** select **File,** the **Run,** and type in A:\INSTALL or B:\INSTALL when asked for a filename and press Enter. If you are a DOS user, type A:\INSTALL or B:\INSTALL from the DOS prompt and press Enter.
3. Following the instructions that appear on your screen. If you have problems or questions, refer to the CardSoft User's Guide in the supplied diskette for help.
4. If you are a Windows user, you'll probably want to install CardView after the CardSoft installation is complete. To install CardView, start up Windows, from the Program Manager, select **File**, then **Run,** and type A:\SETUP or B:\SETUP when asked for a filename. When the CardView program

appears, follow the directions on your PC's screen.

For more software installation information, please refer to the three technical documents in the \DOC subdirectory on the supplied diskette.

The said three files are :

CSUG-DOC.EXE-----CardSoft User's Guide

CVUG-DOC.EXE-----CardView User's Guide

CSTR-DOC.EXE-----CardSoft Technical Reference

The above files are to be decompressed to Windows-Word-format files by executing these files under DOS environment. Normally you may not need them unless you got problem when you use PC cards

7.3 Using PC Cards

This section describes how to use your PC cards for DOS or Windows 3.1x.

For Windows 95/98, please refer to the manual of Windows 95/98.

7.3.1 Before Using PC cards

Before using you PC card, you had better to verify you installation. Please check the following step by step.

Verify you CONFIG. SYS file: After software installation your CONFIG.SYS file will include command lines shown at the right side box.

The lines 5 to 9 and the lines 12 to 13 are included only when the supplied software disk contains optional Flash File System II (FFS2) or FTL.
For using Flash card, FFS2 or FTL are required.

Make Sure CardSoft are successfully loaded : After verifying your CONFIG.SYS file, reboot system and then make sure there are no error (beep) during the process of loading these device drivers.

```
DEVICE=C:\CARDSOFT\SSVADEM.EXE
DEVICE=C:\CARDSOFT\CS.EXE
DEVICE=C:\CARDSOFT\CSALLOC.EXE
DEVICE=C:\CARDSOFT\ATADRV.EXE
DEVICE=C:\CARDSOFT\MTAA.EXE
DEVICE=C:\CARDSOFT\MTAB.EXE
DEVICE=C:\CARDSOFT\MTI1.EXE
DEVICE=C:\CARDSOFT\MTI2P.EXE
DEVICE=C:\CARDSOFT\MTATM.EXE
DEVICE=C:\CARDSOFT\MTSRAM.EXE
DEVICE=C:\CARDSOFT\MTDDRV.EXE
DEVICE=C:\CARDSOFT\SSMSFLSH.SYS
DEVICE=C:\CARDSOFT\FTL.EXE
DEVICE=C:\CARDSOFT\CARDID.EXE
```

Check resource for CardSoft : The CSALLOC utility scans the system for available memory(MEM), I/O Port(IOP) and Interrupt Request Line(IRQ) resource which can be used by your PC cards. To see what resource your PC card can use from the C:\CardSoft directory, type CSALLOC/d and press Enter. A listing similar to the following is displayed.

```
MEM=D000-DFFF
IQ=108-1EF, 1F8-377, 380-3EF, 970-977, B70-B77, D70-D77, F70-F77
IRQ=3, 5, A-C, E, F
```

None of the 3 lines above can be absent

7.3.2 Card Insertion & System Beeps

When you insert a card, your system emits a beep code to let you know whether or not the CardSoft software was able to recognize and configure the card. These beep codes are:

Medium tone followed by high tone beep: The PC card was recognized and successfully configured when inserted.

Single low tone beep: The PC card was recognized. but not successfully configured when inserted. When you hear a single low tone, it means the card will not work, and you may have to change your system configuration or CardSoft configuration to get the Card to work. Please refer to the section *Using PC cards and Trouble Shooting* at the end of this User's Guide.

Also, when you remove a card you should hear a high tone followed by a medium tone. This indicates that CardSoft is aware that the card has been removed.

7.3.3 Using ATA card

Just as your system's hard disk has a **drive letter** (C:) assigned to it, you can find out which drive letters have been reserved for your ATA cards by using CARDINFQ. To do so, insert the ATA card into a PCMCIA slot. Then, from the C:\cardsoft directory type CARDINFO /V and press Enter. A listing similar to the following is displayed.

Slot 0:
[Card Information]
Card Type = "ATA Disk" (Drive D:) ← Drive letter is listed here
Manufacturer = <Vendor Name>
Product Name = <Vendor Product Name>

If necessary, just as with your system's hard disk, you can use DOS command **FORMAT** to format your ATA cards. All standard DOS commands will work with your ATA cards.

7.3.4 Using SRAM cards

At system startup, a series of messages scrolls up the screen as different software and hardware drives are automatically installed. One of these message tells you which drive letter is the first drive letter that your SRAM cards will be assigned. You can press the PAUSE key to stop the messages from scrolling so that you can read them. To continue the system startup. you then have to press the PRINT SCREEN key. As the system is starting, alternately press the PAUSE and PRINT SCREEN keys until you see the following:

Microsoft CardDRV for SystemSoft Card Services Version 0.01.08 (26 April 1994)
Copyright (C) Microsoft Corp 1989-1993. All rights reserved.
Card Services Interface Copyright 1993-1994 SystemSoft Corp.
All Rights Reserved.

The Device Drive system installed 02 drive(s) : D: -E:

As in above example, drive letter F is reserved for slot 0 & drive letter G is reserved for slot 1. And then, if necessary, you can use these drive letter & DOS command **Format** to format your **SRAM** cards just like format your floppy diskette, All standard DOS commands will work your SRAM cards.

7.3.5 Using FLASH cards

For using Flash cards, an optional Flash File System II or FTL are required. Please refer to section **Before Using PC cards/Verify your CONFIF.SYS file** in this User's Guide. The drive letter of Flash cards are the same as SRAM card. To **format** your Flash cards, you need to run a supporting utility MCFORMAT then a function manual will be displayed. Two functions are enough for you, they are **Erase** (3rd function) and **Create and Format** (1st function). Erase first and then Format. All of DOS commands will work with Flash cards which are formatted as FTL. For Flash cards which are formatted as FFS II, all of DOS commands will work with them except the CHKDSK & FORMAT commands.

7.3.6 Using LAN cards

After LAN card was recognized, but can not successfully be configured with the card insert beep (one beep), you may have to use a client driver (supported by your LAN card vendor) to configure your LAN

card again. (Please consult the client driver's guide to configure correctly.). As your LAN card being configured successfully (Two beeps), from CardSoft directory, type in CARDINFO/V and press Enter, a listing similar to be following is displayed:

Slot 0:
[Card Information]
Care Type = "Ethernet"
Manufacturer = <Vendor Product Name>
Product Name = <Vendor Product Name>
[Configuration info]
necessary for running Network software.
Configuring client handle is A65C
Memory+I/O interface. Vcc 50, Vpp1 50, Vpp2 50
Config base 0100. Config value:
Option value:60
Status value:60
Copy value:00
First I/O range 300-30F, 8-bit ←
Second I/O range 310-31F, 16-bit←
Assigned IRQ is 5 (enabled)←

Option value:62
Status value:08
I/O range 3E8-3EF, 8-bit ←
Assigned IRQ is 5 (enabled)←

In this sample, your Fax/Modem card is configured with COM3 & IRQ5, then the COM port and IRQ assignment of your communication software, such as Bit/COM etc, must agree with these configured COM port & IRQ, else your communication program will not work. Normally your PC has resident COM ports and IRQs for other devices, such as Mouse. They are COM1/IRQ4 and COM2/IRQ3. Unless your PC does not have these resident COM ports. CardSoft will not configure your Fax/Modem card with these COM ports & IRQs to avoid conflicting with other device in your PC.

7.3.7 Using Other PC cards

If your PC card was recognized but not successfully configured after a card insertion (one beep), you may have to use a different driver supplied by your PC card vendor to configure your PC card. (Please consult the PC card vendor's driver guide to know how to configure.) As you PC card being configured (two beeps) from CardSoft directory, type CARDINFO/ V and press Enter. A listing similar to what is in the last section will show you what I/O range (one or two ranges) & IRQ values your PC card is configured with.

Then the I/O range & IRQ assignment of the supplied software driver of you PC card must agree with the configured I/O range & IRQ. If not, your PC card will not work properly.

7.4 Trouble Shooting

7.4.1 Installation

If you see a prompt guide as shown at right-hand during software installation
That means your PC card driver is not correctly installed or the jumper setting is not default value or the default value (I/O address) is also used by other Adapter card.

Or the PC card board is defective. If you have to use a value other than default you will see the prompt guide as shown at right-hand during software installation. Please select Intel 82365SL Socket service and continue the installation.

Intel 82365SL Socket Services
Databook Socket Services
Cirrus Socket Services
Vadem Socket Services
VLSI Socket Services
Intel 82365LP Socket Services
IBM 720 Socket Services
VIA VT83C465/469 Socket Services
Not Install Socket Services

During system booting, if you see one of the two following messages:

*** Installation Failed VT83C469 PCMCIA Adapter not found

That means there is a conflict with other PCMCIA software other than CardSoft or your PC card Adapter is defective.

7.4.2 ATA card

Two beeps but DIR error----------Your ATA card might not have been formatted Please format it.
Two beeps but can not be formatted---------Your ATA card might not been partitioned. For this from CardSoft directory key in ATAINIT <drive letter>and press Enter then follow the instruction shown step by step.
Two beeps but can not be partitioned--------Your ATA card might be defective.
One beeps----------CardSoft does not support your ATA card of your ATA card is defective

7.4.3 SRAM card

Two beeps but DIR error----------Your SRAM card might have not been formatted or incorrect CardSoft installation
Two beeps but can not be formatted------Your SRAM card is defective or incorrect CardSoft installation
One beeps---------- Your SRAM card is defective or incorrect CardSoft installation

7.4.4 FLASH card

Two beeps but DIR error----------Your SRAM card might have not been formatted or incorrect CardSoft installation
Two beeps but can not be formatted------Your SRAM card is defective or incorrect CardSoft installation
One beeps----------FLASH memory chip on your FLASH card is not supported by CardSoft or your FLASH card is defective or incorrect CardSoft installation CardSoft only support the Flash cards which are built with INTEL series 1 (or compatible) INTEL series 2 AMD type A. AMD type B or ATMEL Flash memory

7.4.5 LAN card

Two beeps but there are no configured I/O range or IRQ----------Please refer to section Using CSALLOC at Chapter 2 of CardSoft User's Guide
Two beeps but the configured COM port or IRQ are not suit for your Network software----------Please refer to section Using CSALLOC at Chapter 2 and Customizing your System at Chapter 5 in CardSoft User's Guide.

Two beeps and the configured I/O range & IRQ agree with the I/O range & IRQ assignment of your network software, but network software does not work fine-------The configured I/O range or IRQ might conflict with which other device use in your PC. Please refer to section Using CSALLOC at Chapter 2 and Customizing your System at Chapter 5 in CardSoft User's Guide.
The client drive supported by LAN card vendor configure fail---- Please refer to section Using CSALLOC at Chapter 2 and Customizing your System at Chapter 5 in CardSoft User's Guide, check if there is system resource for the client driver to configure your LAN card

7.4.6 Other card

Please refer to trouble shooting of LAN card

NOTE: For those who need special utilities for Reading/Writing memory card(SRAM or FLASH) or more information about the function of Booting from memory card, please refer to README.TXT which is located in the UTILITY subdirectory on supplied diskette from a distributor of the MiniStation.

Chapter 8.

Wireless LAN card

8.1 Wireless LAN card Installation

If you want to use a wireless network, you should install a wireless LAN card in each Ministation composing a network. There is already an installed wireless LAN card in a Ministation you purchased, so you do not need to install any other card.

(A wireless LAN card is an option when you purchase a Ministation)

(Caution) It is advisable to use wireless LAN equipment in an open area. Networking may not work best under the condition of many walls or obstacles

8.2 Wireless network driver installation

When a network connection is completed, you should install a wireless network driver. Though the driver is installed when purchased, it needs to be installed when the Window is re-installed.

1) When you start a wireless LAN card-installed computer, **Found New Hardware Wizard** window shows up. Choose **Install from a list or specific location (Advanced)**, and click **Next**.

2) After selecting **Search removable media** or **Include this location in the search**, click **Search**. After

selecting a driver location, click **Next**.

3) If **Hardware Installation** window appears, click **Continue** and keep installation going. If **Add/Edit Configuration Profile** window appears after the copy is completed, click **Cancel** to continue the driver installation.

4) When the installation is completed, click **End**.

8.3 Access to Wireless network

(Access in Windows XP)

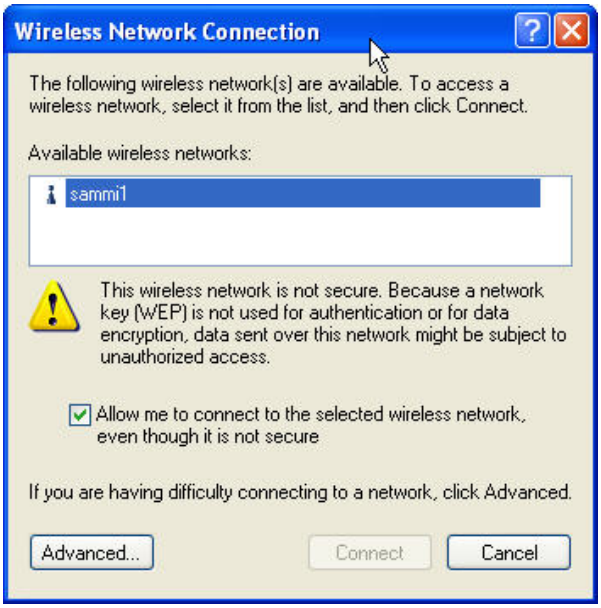
To access a Peer-to-Peer network

You can access the network after completing a network setting in each computer to network.

▶ **Setting up a network condition in one computer between two computers**

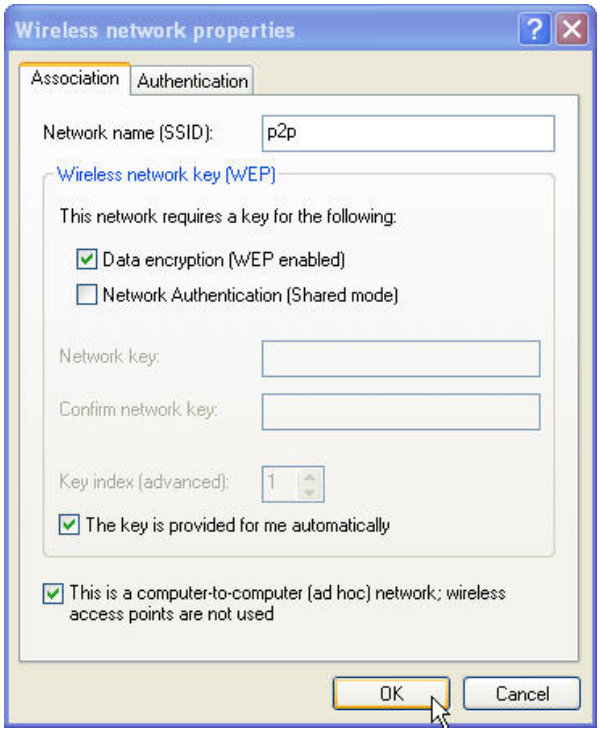
1) When the wireless LAN card driver installation is completed, **Wireless Network Connection** icon shows up in Task Bar. Click the icon with the right button on the touch-pad, and click **Available Wireless Networks** list

2) Click **Advanced**.



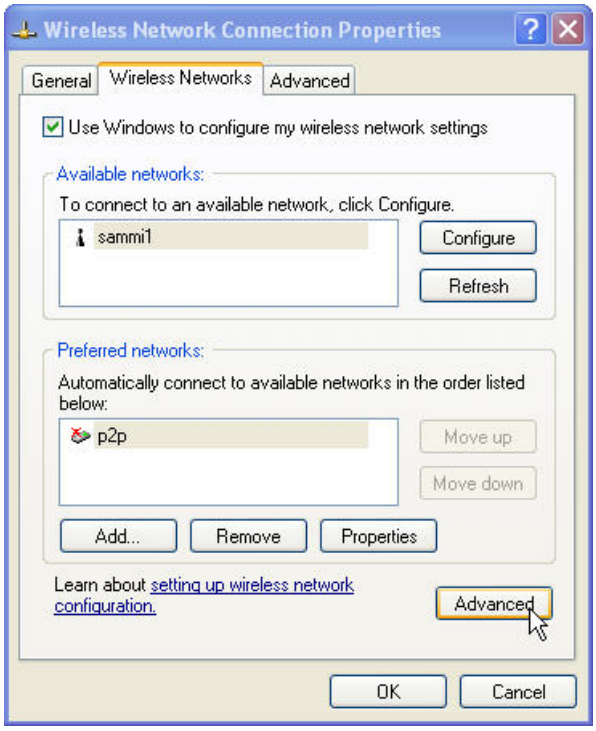
3) Click **Add** in the Standard network setting of the wireless network tab.

4) Select the item **This is a peer-to-peer [ad hoc] network; wireless access points are not used**. After inputting a network name, click **OK**. For example, input a name "p2p" as a network name.



(Caution) The computers to do a wireless peer-to-peer network must be used with the same network name(SSID) to do a wireless network.

5) Check that **p2p** is added in the basic setting network, and then click **Advanced**.



6) In the Advanced window, select the item **Only a peer-to-peer [ad hoc] network** and **Automatically connect to a non-standard network**, and then click Close. A wireless network setting is completed. Now it is available to access a computer-to-computer network.

▶ **To access a network in the other computer between two computers**

1) Click the **Wireless Network Connection** icon in Task Bar with the right button of the touch-pad, and then click **Available wireless networks** list.

2) Select a network name (ex: **p2p**) in the available networks, and then click **Connect**. The computer is connected to the other computer that uses the same network name.

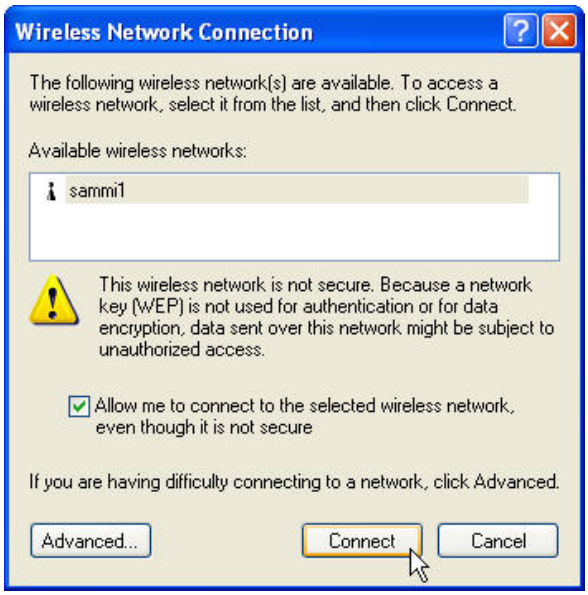
To access a network group connected with AP(Access Point)

You can access it without a condition setting

(Caution) The same way of access is required under the condition of an installed Residential Gateway.

1) After connecting wireless LAN equipment, install a driver. And then, the **Wireless network connection** icon appears in Task Bar. Click the icon with the right button of the touch-pad, and click the list of **available wireless networks**

2) Select **a network name (access point)** you want to access from the list of **available wireless networks**, and then click **Connect**. After a while, it is connected to an AP-connected network group.



(Caution) To check out the network access status,

drag the mouse to the wireless network connection icon on Task Bar. Then, the access status appears. If encryption is set to the AP you want to access select the network name under encryption. Then a network key can be activated. If you input a network key to the selected AP, it is available to use a wireless network securely. Consult a person in charge of wireless network management for a network key to AP. (Setting up an AP encryption is managed by an AP management program)

(To access a network in other OS tablet PCs)

In order to use a wireless LAN card in other OS s except Windows XP, install a wire less LAN Client manager program, and then set up a network condition.

Wireless LAN Client Manager Program Installation

1) After clicking **Start>Run,** click **Search** , and select a program location. Click **Confirm**.

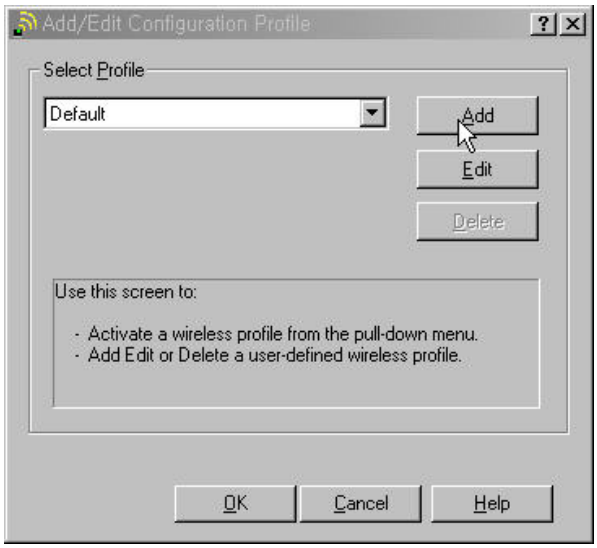
2) Complete the installation according to the guide of the screen.

Setting up a network condition

1) Click the **Client manager** icon on Task Bar to run a manager program.
(Click **Start > Program > Wireless > Client Manager**.)

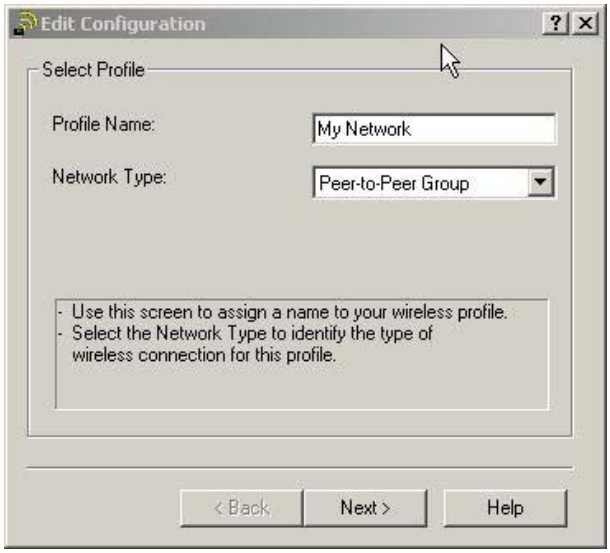
2) In the menu of **Actions,** select **Add/Edit Configuration Profile** item, and then click **Add**

3) In the window of **Add/Edit Configuration Profile** item**,** click **Add**.

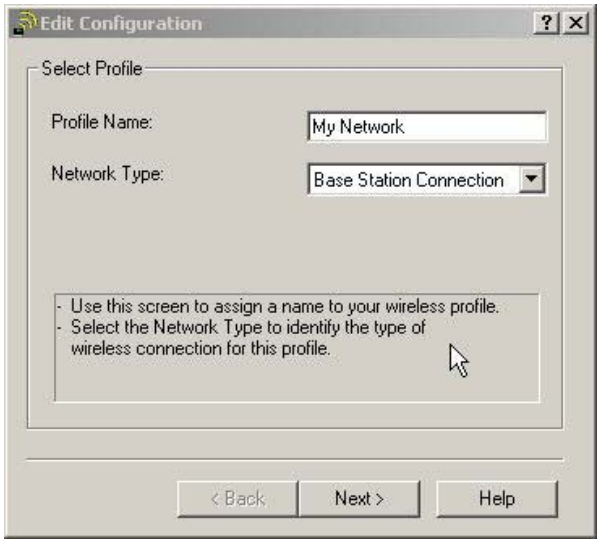


4) In Network Type item, choose a type of wireless networks you will use. Click **Next**.

➔ **To access a computer-to-computer network,** select Network type as **PTP(Peer-to-Peer) Group**, and input a network name to use in Profile Name item. For example, input **My Network** in Profile name, and click **Next**.



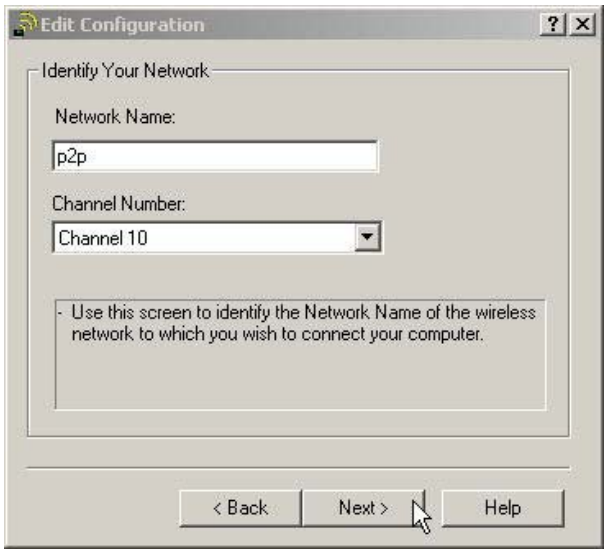
➔ **To access an AP(Access Point)-connected network group,** select **Base station connection** in Network Type, and click **Next**.



(For reference) ***To access a Residential Gateway network****, select* ***Working as Base station*** *in Network Type.*

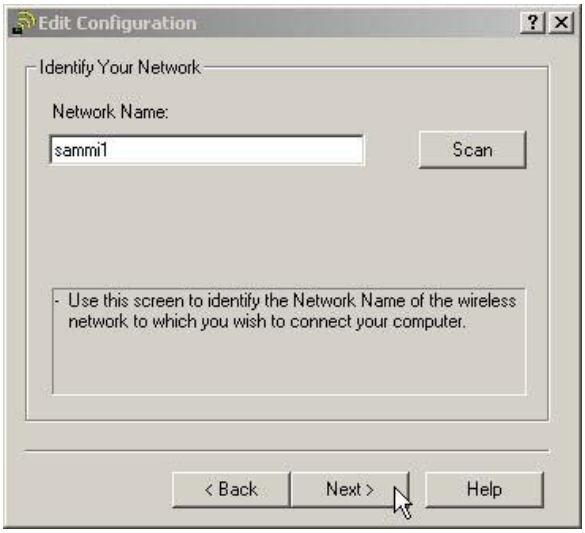
5) Input an available network name in Network Name item, and click **Next**

➔ **To access a computer-to-computer network,** input **a network name (p2p)** in Network Name, and select a channel you will use. Click **Next**.



➔ **To access an AP (Access Point)-connected network group,** input a network name in Network

Name item, and then click **Next**.



(For reference) ***In case of not knowing an AP network name of a wireless LAN****, push Scan button. Search Available Access Points, and select one of the lists. When you click OK, the name you chose is added.*

(Consult your network manager for an accurate name of a wireless network.)

6) If you want to set up a security key, select **Enable Data Security**, and click **Next**.

(For reference) ***It is recommended to set up a security key.***

A security key should use the same key value with a computer or an AP on a network. (Consult your network manager for setting up an AP security key value.)

7) Choose **Off** to use basic power at its maximum, or choose **On** to use basic power at its minimum, and click Next.

(For reference) This item does not show up when you access a Peer-to-Peer Group.

8) When you renew a new IP as setting up, choose the item **IP Address when selecting this profile**, and click **End**. When you use the basic setting, click **End**.

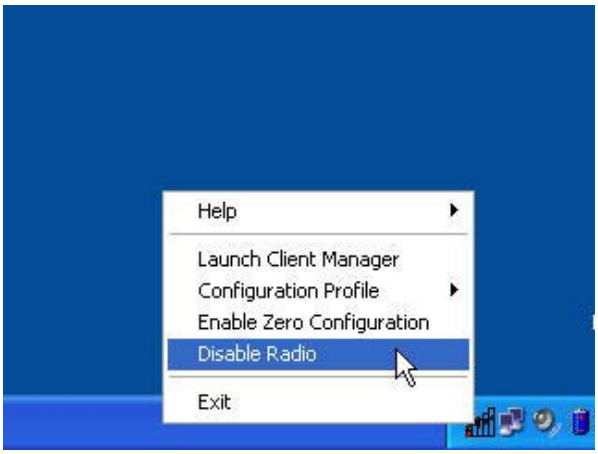
9) Click **OK** in the window Add/Edit Configuration Profile. The setting is completed.

8.4 Power Management

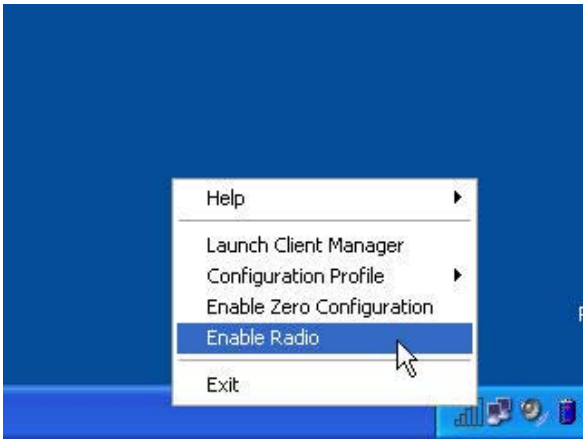
In case of a tablet PC, it is advisable to minimize the use of batteries because it is a portable PC. So, it is recommended to change the wireless LAN card into "not to use" when you do not use a wireless LAN. The way to change the mode is as follows.

1) Click the right button of the mouse on the **Client Manager (** **)** icon on the Task Bar, and make a pop-up window act.

2) Click **Disable Radio** on the pop-up window to save power..



3) On the contrary, click **Enable Radio** to use a wireless network again.



Chapter 9. Bluetooth

9.1 Introduction

" Bluetooth " is one of Wireless Technologies. The aim of Bluetooth technology is tended to a low cost, low power, and short-range radio product. The idea to develop Bluetooth is for replacing physical cable connection in amount of mobile or portable devices.

Any two Bluetooth devices made as a Master-Slave structure creates a Bluetooth piconet network. A single Bluetooth piconet has one Master and at most seven active Slaves. The Bluetooth connection is only established between the Master and a Slave in a single piconet. Any two Slaves in a single piconet cannot create a Bluetooth connection.

9.2 Bluetooth Dongle installation

To use a Bluetooth wireless radio, it is required to install a Bluetooth dongle on each Ministation that consists of a network and to set up a dongle driver.

Your purchased Ministation provides 2 USB ports. Insert a provided Bluetooth dongle into any one port inside of Ministation. (A Bluetooth dongle is an option when Ministation is purchased.)

When Ministation with Bluetooth is purchased, a Bluetooth driver is already installed. But when you install the Window again, or you do not buy HDD, install the driver by yourself.

(Caution) It is advisable to use a Bluetooth in an open area. Networking may not work best under the condition of many walls or obstacles.

9.3 Install Level One Bluetooth Software

Insert the Bluetooth Software CD into CD-ROM drive. If the Auto-Run function of CD-ROM is enabled(in Windows, the default setting of this funcion is usually enabled), installation program will start automatically. If not, you can utilize the Windows Explorer to browse Cd content and run Setup.exe manually.

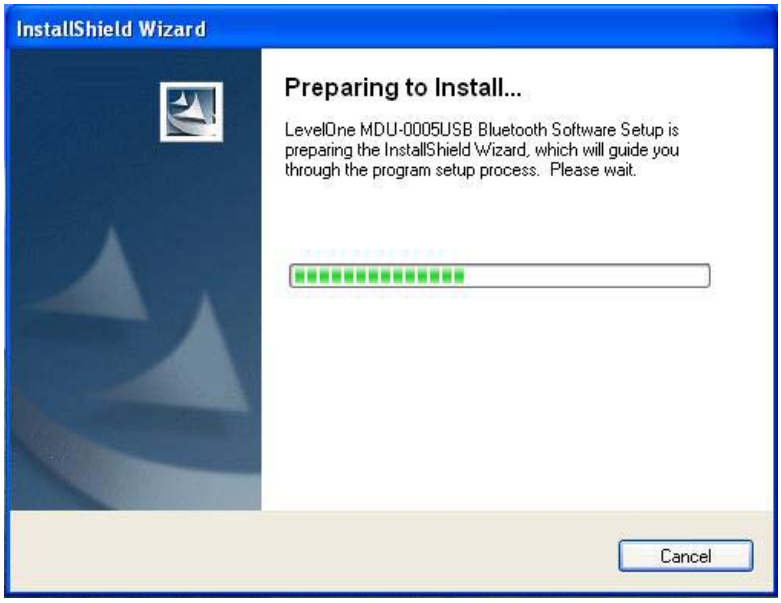


Figure 2-1 : Preparing to Install LevelOne Bluetooth Software

When ensuing windows appears, please click Next button to continue the software installation.

Then in the License Agreement window, check the item I accept the terms in the license agreement and click Next button to continue.

Figure 2-2: License Agreement Window

The software default destination folder is located at C:\Program Files\LevelOne MDU-0005USB\ . If you want to change the folder, click Chang… button then select one you prefer. If everything is ready and done, please click Next button.

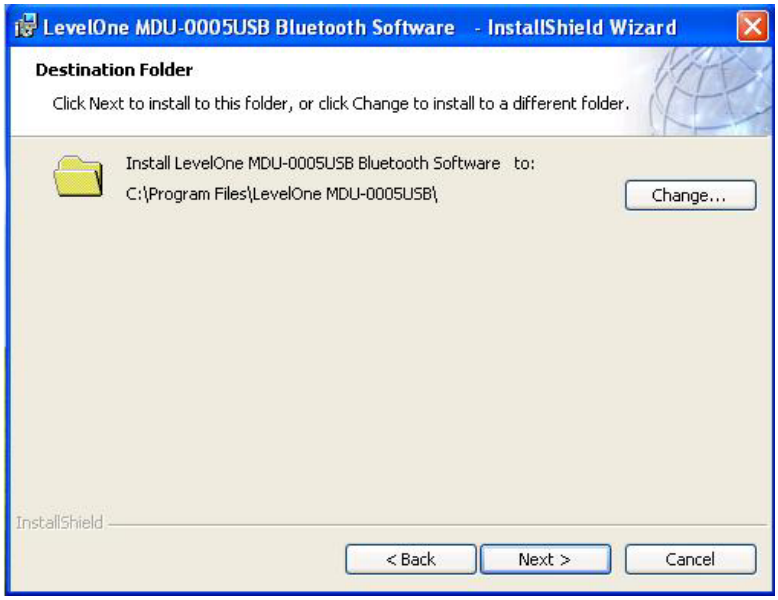


Figure 2-3: Destination folder selection.

Then click Install button to begin the installation.

The software installation is processing now.

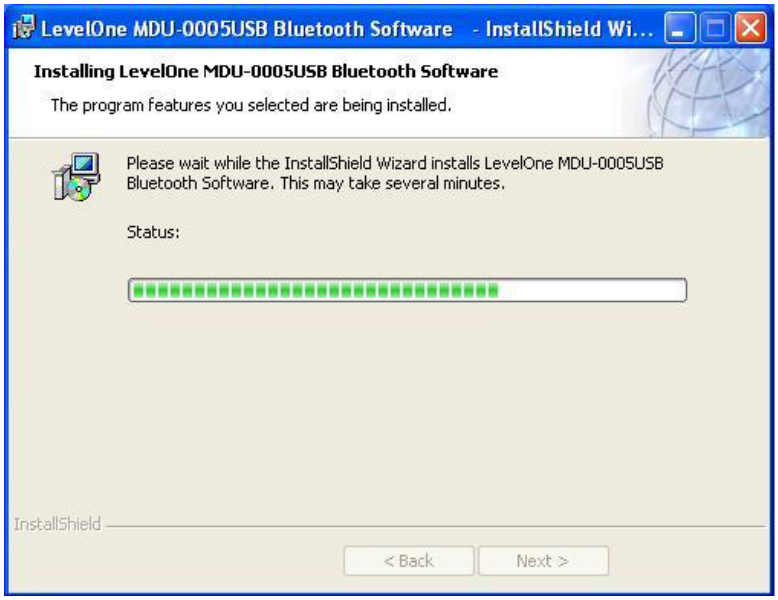


Figure 2-4: Installation running window

Note : During the processing of the Bluetooth Software installation under Windows 98SE or Windows 2000, it is possible to meet Microsoft Digital Sigrature issues such as Bluetooth Null Modem, LevelOne Bluetooth Modem, LevelOne Bluetooth Fax Modem, and Unknown software package. Please confirm them manually by pressing OK button in these poo-up windows.

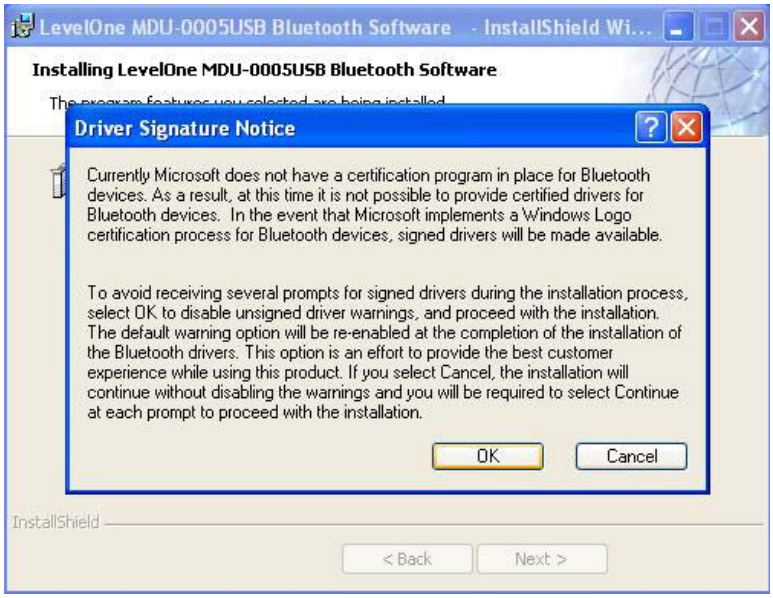


Figure 2-5 : Digital Signature dialog box

When the "Bluetooth device not found" window pops out, plug Bluetooth USB adapter into laptop or PC and click "OK".

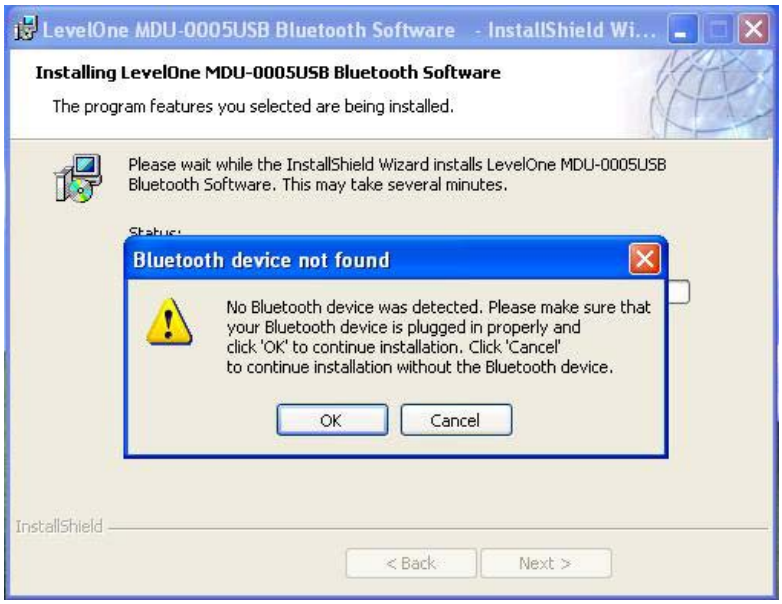


Figure 2-6: Bluetooth Device Insertion dialog box

Please reboot your system after the software installatio is finished

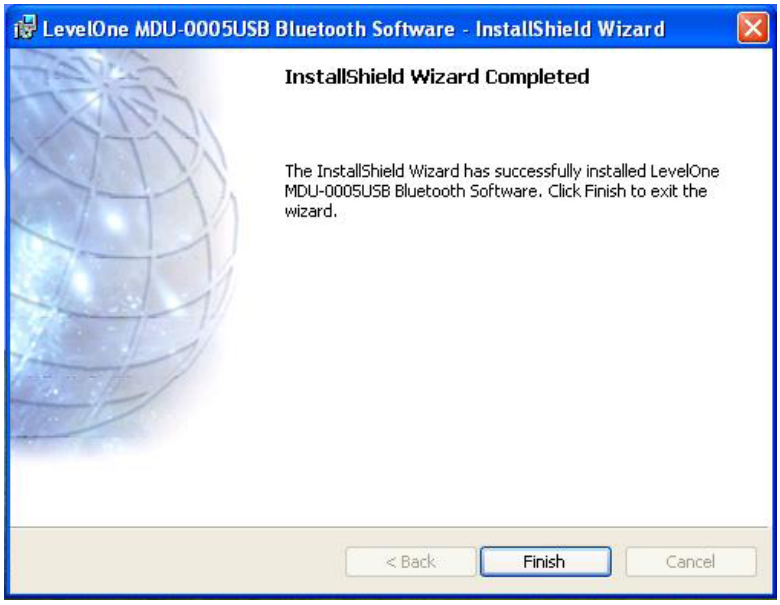


Figure 2-7: Installation finished window

After rebooting, when you log in Windows operating system there will be two new Bluetooth icons appearing on the desktop and the Windows System Tray respectively.