IB500

Half-Size Socket 7 CPU Card
With Optional VGA/LAN/SCSI

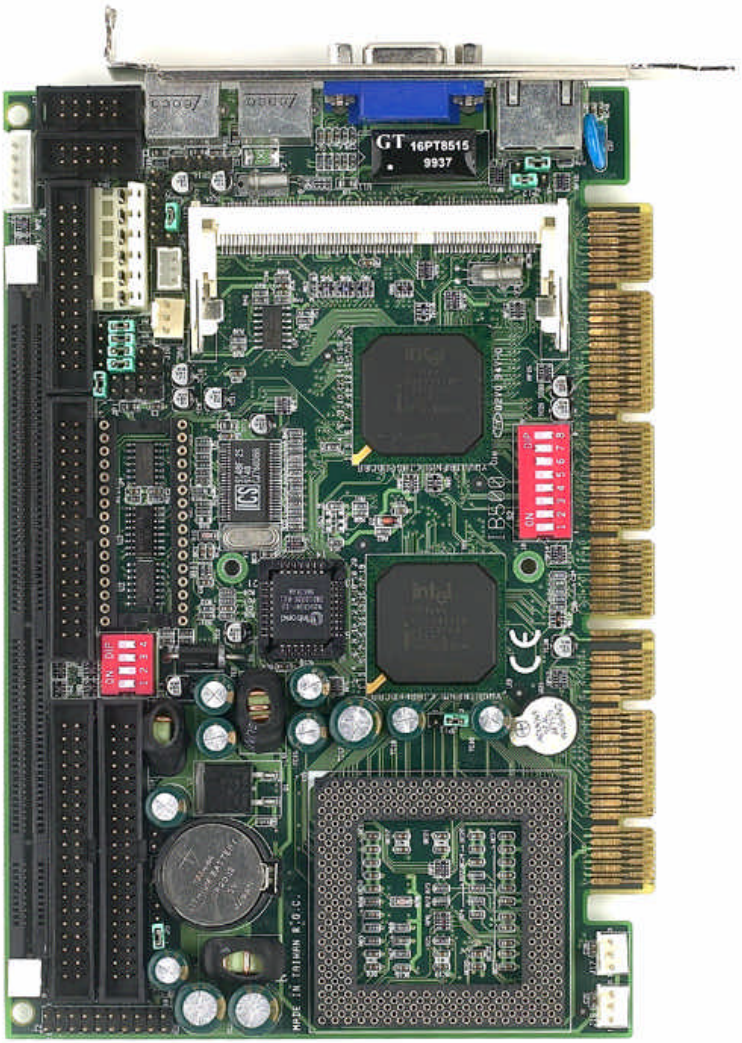
USER'S MANUAL

Version 1.0A

Acknowledgments

Award is a registered trademark of Award Software International, Inc.
PS/2 is a trademark of International Business Machines Corporation.
Intel and Pentium are registered trademarks of Intel Corporation.
Microsoft Windows is a registered trademark of Microsoft Corporation.
Winbond is a registered trademark of Winbond Electronics Corporation.
All other product names or trademarks are properties of their respective owners.

Table of Contents



A Picture of the IB500 CPU Card

Introduction

Product Description

IB500 is a high-performance PISA-compliant CPU card that comes with a MicroPCI Socket that supports MicroPCI daughter cards with VGA, VGA/LAN, LAN, and SCSI functions. It is based on the Intel 430TX PCIset and features a Socket 7 architecture that supports Socket 7 level processors with frequencies up to 400MHz using a front side bus of 60MHz or 66MHz.

System memory is provided by one 168-pin DIMM socket that accommodates up to 256MB SDRAM. The on board Award BIOS facilitates easy system configuration and peripheral setup. Other advanced features include *DiskOnChip flash disk support*, watchdog timer, USB and IrDA interface.

DiskOnChip flash disks are storage devices that has no moving parts and emulates FDD/HDD with Flash/RAM/ROM offering reliable data/program storage and long life span. They are reliable and suitable for industrial or other harsh environments characterized by motion, shock, vibration, adverse temperature, dust and humidity. Other features include faster data access, longer MTBF, lower power consumption, cost effective for small capacity and small form factor.

Checklist

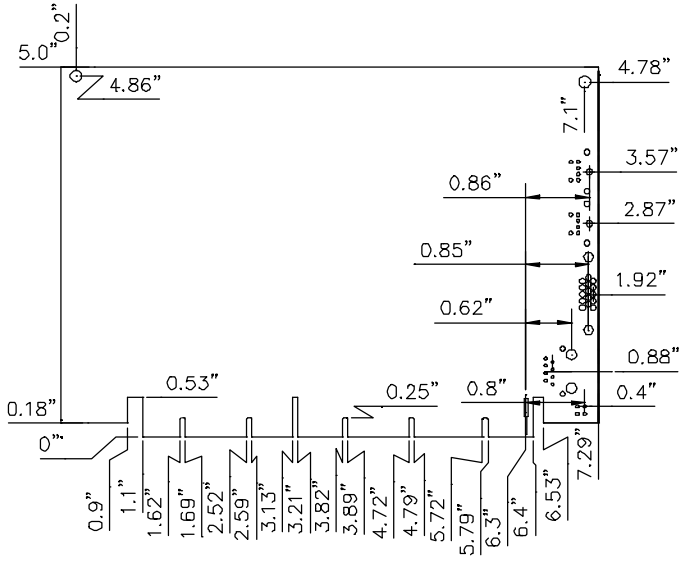
Your IB500 package should include the items listed below.

- The IB500 CPU Card
- This User's Manual
- 1 IDE Ribbon Cable
- 1 Floppy Ribbon Connector
- 2 Serial Port Ribbon Cables and 1 Parallel Port attached to a Mounting Bracket
- 1 CD containing the following:
  - Intel PCI IDE Driver and Flash Memory Utility
  - VGA Drivers
  - Ethernet Drivers
  - Initio INIC1060 SCSI Drivers

Specifications

Processor Supported	Socket 7 processors with CPU frequency up to 400MHz 60MHz/66MHz Front Side Bus
Chipset	Intel 430TX PCIset
BIOS	Award BIOS Supports DMI, PnP
System Memory	1x DIMM socket support up to 256MB capacity
Multi I/O Chipset	Winbond W83977EF (keyboard controller is built-in)
I/O Features	1x FDD (up to 2.88MB, 3 Mode, LS120) 1x Parallel Port (EPP, ECP Port) 2x Serial Ports (1x RS232 and 1x RS232/422/485) 1x IrDA TX/RX Headers
Bus Master IDE	2x IDE interfaces for up to 4 devices; supports PIO Mode 3/4 or Ultra DMA/33 IDE HDD, and ATAPI CD-ROM
VGA (option)	Using ***IBD69*** MicroPCI VGA card or ***IBD99*** MicroPCI VGA/LAN Combo card that features: CHIPS 69000 PCI VGA accelerator CRT & LCD panel support 2MB integrated memory
Ethernet (option)	Using ***IBD59*** MicroPCI LAN card or ***IBD99*** MicroPCI VGA/LAN Combo card that features: Intel 82559 Fast Ethernet controller 10/100Mbps data transfer speeds, WakeOnLAN support Using ***IBL39*** MicroPCI LAN card that features: Realtek RTL8139 Fast Ethernet controller 10/100Mbps data transfer speeds, WakeOnLAN support
SCSI (option)	Using ***IBD60*** MicroPCI LAN SCSI card featuring: Initio INIC1060 Ultra 2 SCSI controller Built-in Ultra2 SCSI connector
Hardware Monitoring	Winbond W83781D IC Monitors CPU/system temperature and voltages
SSD Interface	Supports M-Systems 2MB~144MB DiskOnChip flash disk
Other Features	Watchdog timer
Power Consumption	+5V 8A (max) +/-12V 200mA (max)
Form Factor	Half Size, PISA compliant
Dimensions	186mm x 129mm (7.32” x 5.0”)

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the IB500 in order to set up a workable system. The topics covered are:

Installing the CPU

The IB500 CPU Card supports a Socket 7 processor socket that comes with a lever to secure the processor. Raise this lever to approximately 90° to allow the insertion of the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with that of the socket. Once the processor has slid into the socket, return the lever to the lock position.

After you have installed the processor into the socket, check if the jumpers for the CPU type and speed are correct. Refer to the section on *Setting the Jumpers*.

Ensure that the CPU heat sink and the CPU's top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.

MicroPCI Daughter Card Installation

The IB500 CPU card is integrated with one **MicroPCI socket** that uses a 144-pin connector. The socket can accommodate the VGA, Ethernet or SCSI MicroPCI daughter cards.

To insert the MicroPCI daughter cards, position it at 30° to the PCB and gently push it into the MicroPCI connector. The card will not fit when inserted at an angle of 45° or 15°. Once inserted, slowly press the card towards the PCB until it locks on both sides to the clips of the connector. Screw the card to the PCB to secure the installation.

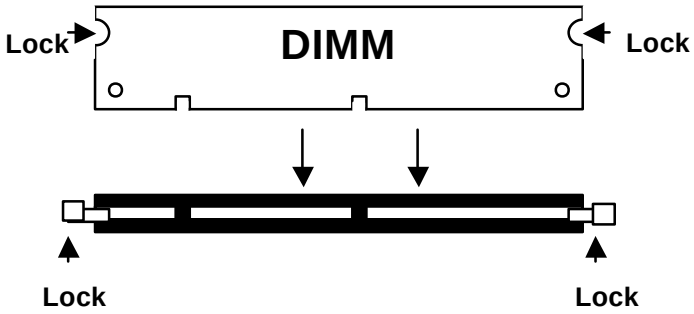
Installing the Memory (DIMM)

The IB500 CPU Card supports one 168-pin DIMM socket that accommodates a maximum memory of 256MB in SDRAM type. The memory module capacities supported are 32MB, 64MB, 128MB and 256MB.

Installing and Removing DIMMs

To install the DIMM, locate the memory slot on the CPU card and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DIMM, press the clips with both hands.

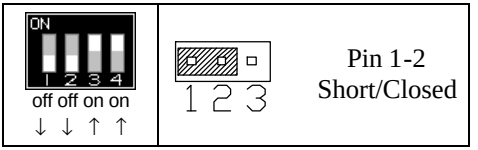


Top View of DIMM Socket

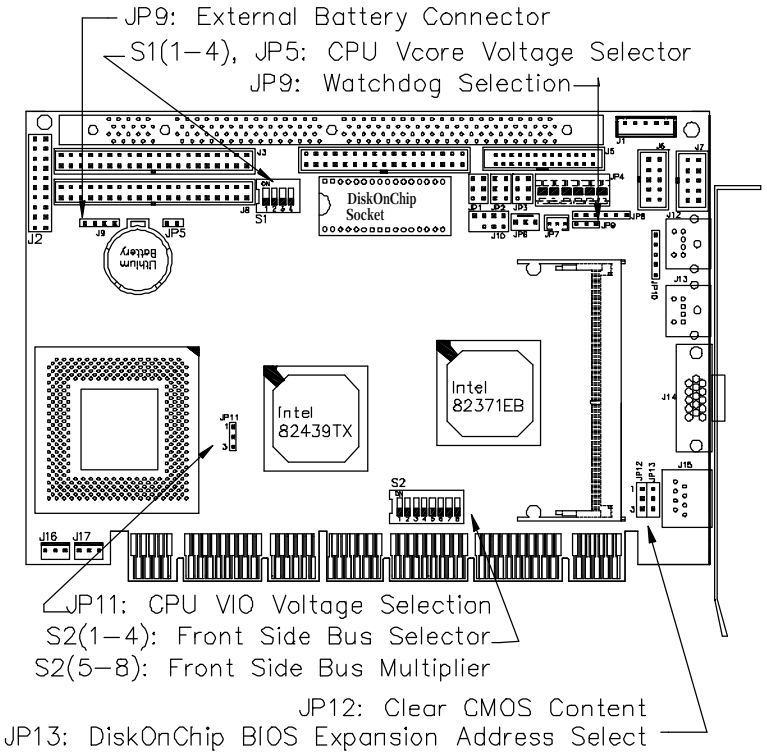
Setting the Jumpers

Jumpers on IB500 are used to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB500 and their respective functions.

The following conventions are used in this section:



Jumper Locations on IB500

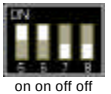
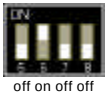
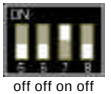


S2(1-4): Front Side Bus Selector

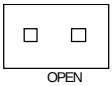
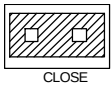
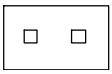
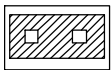
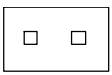
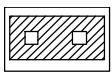
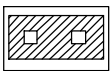
The table below shows the switch settings for the CPU front side bus.

Front Side Bus	S2(1-4)	Front Side Bus	S2(1-4)
60MHz	 on on off off	66MHz	 off off off off

S2(5-8): Front Side Bus Multiplier

Multiplier	S2(5-8)	Multiplier	S2(5-8)
1.5x / 3.5x	 off off off off	4	 on off on off
2x / 6x	 on off off off	4.5x	 on on on off
2.5x	 on on off off	5x	 off on on off
3x	 off on off off	5.5x	 off off on off

S1(1-4), JP5: CPU Vcore Voltage Selector

Vcore	S1(1-4)	JP5	Vcore	S1(1-4)	JP5
3.5V	 on on on on	 OPEN	2.0V	 off on on on	 CLOSE
2.8V	 off off off on	 OPEN	1.95V	 on off on on	 CLOSE
2.2V	 off on off off	 OPEN	1.90V	 off off on on	 CLOSE
2.05V	 on on on on	 CLOSE			

FREQUENCY SETTINGS FOR INTEL PROCESSORS

CPU FREQ.	Bus Clock Multiplier	Switch Setting
P54C-90	60MHz 1.5x	 on on off off off off off off
P54C-100	66MHz 1.5x	 off off off off off off off off
P54C-120	60MHz 2x	 on on off off on off off off
P54C-133	66MHz 2x	 off off off off on off off off
P54C-150	60MHz 2.5x	 on on off off on on off off
P54C/P55C-166	66MHz 2.5x	 off off off off on on off off
P54C/P55C-200	66MHz 3x	 off off off off off on off off
P55C-233	66MHz 3.5x	 off off off off off off off on
Tillamook* (233MHz)	66MHz 3.5x	 off off off off off off off on
Tillamook* (266MHz)	66MHz 4x	 off off off off on off on off

**** Tillamook has a CPU Vcore voltage of 1.95V.***

FREQUENCY SETTINGS FOR AMD PROCESSORS

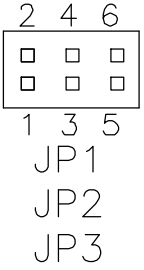
CPU FREQ.	FSB Multiplier	Switch Setting
K6-200	66MHz 3x	 off off off off on off off
K6-233	66MHz 3.5x	 off off off off off off off
K6-266 K6/2-266	66MHz 4x	 off off off on on on off
K6-300 K6/2-300	66MHz 4.5x	 off off off on on on off
K6/2-333	66MHz 5x	 off off off off on on off
K6/2-366	66MHz 5.5x	 off off off off off on off
K6/2-400	66MHz 6x	 off off off on off off off

FREQUENCY SETTINGS FOR CYRIX PROCESSORS

CPU FREQ.	FSB Multiplier	Switch Setting
P150+ (120MHz)	60MHz 2x	 on on off off on off off off
P166+ (133MHz)	66MHz 2x	 off off off off on off off off
PR166 (150MHz)	60MHz 2.5x	 on on off off on on off off
PR200 (166MHz)	66MHz 2.5x	 off off off off on on off off
PR233 (200MHz)	66MHz 3x	 off off off off off on off off
PR266 (233MHz)	66MHz 3.5x	 off off off off off off off off

JP1, JP2, JP3: RS232/422/485 (COM2) Selection

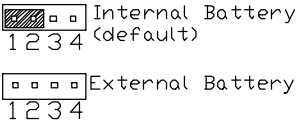
COM1 is fixed for RS-232 use only.
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM2 selection.



COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP1: 1-2 JP2: 3-5 & 4-6 JP3: 3-5 & 4-6	JP1: 3-4 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4	JP1: 5-6 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4

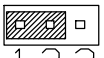
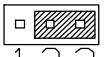
J9: External Battery Connector

This 4-pin connector allows the user to connect an external battery to maintain the information stored in the CMOS RAM in case the built-in battery malfunctions.

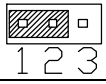
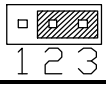


Pin #	Signal Name
1	Ground
2	Battery GND
3	N.C.
4	Vcc

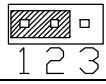
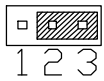
JP9: Watchdog Selection

JP9	Setting	Function
	Pin 1-2 Short/Closed	NMI
	Pin 2-3 Short/Closed	Reset

JP12: Clear CMOS Content

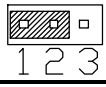
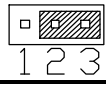
JP12	Setting	Function
	Pin 1-2 Short/Closed	Normal Operation
	Pin 2-3 Short/Closed	Clear CMOS Content

JP13: DiskOnChip Address Select

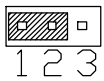
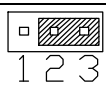
JP13	Address
	D0000-D7FFF
	D8000-DFFFF (default)

JP2: LCD Power Setting (IBD99/69)

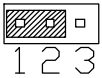
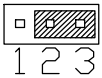
The IBD99/69 C&T 69000 VGA MicroPCI daughter card supports 5V and 3.3V power. Use JP2 to select the power setting.

3.3V Setting	5V Setting
	

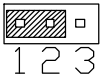
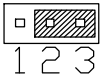
JP3: Onboard LAN Enable/Disable (IBD99)

JP3	Setting	LAN Function
	Pin 1-2 Short/Closed	Enabled
	Pin 2-3 Short/Closed	Disabled

JP4: Onboard C&T VGA Enable/Disable (IBD99)

JP4	Setting	VGA Function
	Pin 1-2 Short/Closed	Enabled
	Pin 2-3 Short/Closed	Disabled

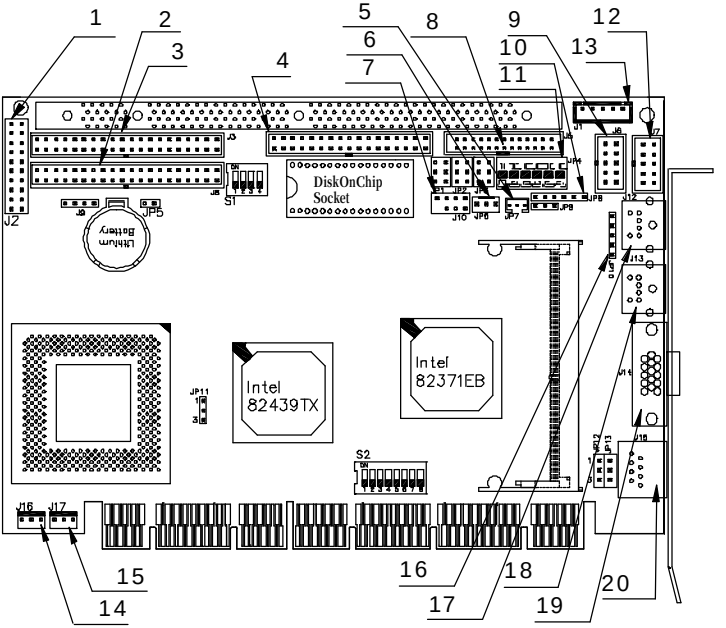
JP11: CPU VIO Voltage Selection

JP11	Setting	Voltage
	Pin 1-2 Short/Closed	2.5V, for Intel low-power consumption CPU
	Pin 2-3 Short/Closed	3.3V (default)

Connectors on IB500

The connectors on IB500 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB500 and their respective functions.

Connector Locations on IB500



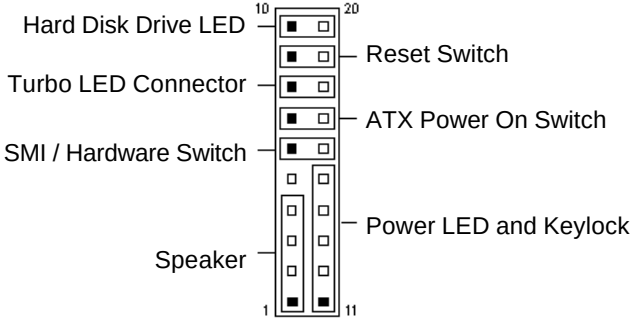
1 J2: System Function Connector
2 J8: Secondary EIDE Connector
3 J3: Primary EIDE Connector
4 J4: Floppy Drive Connector
5 JP7: Wake On LAN Connector
6 JP6: External ATX Power Connector
7 J10: USB Connector
8 J5: Parallel Port Connector
9 J6: COM1 Serial Port
10 JP8: IrDA Connector
11 JP4: P8 AT Power Connector
12 J7: COM2 Serial Port
13 J1: External Keyboard Connector
14 J16: CPU Fan Power Connector
15 J17: System Fan Power Connector
16 JP10: PS/2 Mouse External Connector
17 J12: PS/2 Keyboard Connector
18 J13: PS/2 Mouse Connector
19 J14: VGA CRT Connector
20 J15: RJ45 Connector

J1: External Keyboard Connector

Pin #	Signal Name
1	Keyboard clock
2	Keyboard data
3	NC
4	GND
5	Vcc

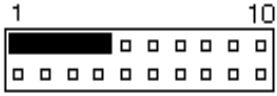
J2: System Function Connector

J2 provides connectors for system indicators that provide light indication of the computer activities and switches to change system status. J2 is a 20-pin header that provides interfaces for the following functions.



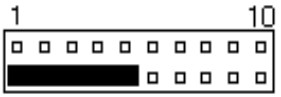
Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



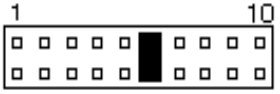
Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED and Keylock: Pins 11 - 15
The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.



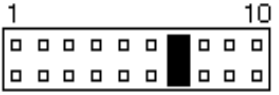
Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	Keylock
15	Ground

SMI/Hardware Switch: Pins 6 and 16
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.

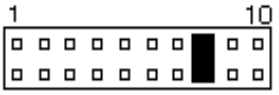


Pin #	Signal Name
6	Sleep
16	Ground

ATX Power ON Switch: Pins 7 and 17
This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

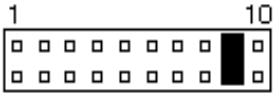


Turbo LED Connector: Pins 8 and 18
There is no turbo/deturbo function on the CPU card. The Turbo LED on the control panel will always be On when attached to this connector.

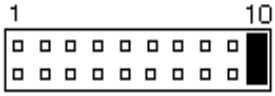


Pin #	Signal Name
8	5V
18	Ground

Reset Switch: Pins 9 and 19
The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.



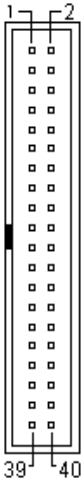
Hard Disk Drive LED Connector: Pins 10 and 20
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	Ground
20	5V

J3, J8: EIDE Connectors

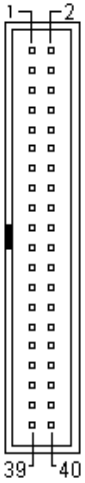
J3: Primary IDE Connector



J3

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

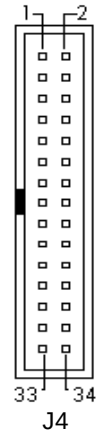
J8: Secondary IDE Connector



J8

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ1	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
IRQ15	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

J4: Floppy Drive Connector



J4

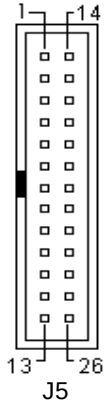
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

JP4: P8 AT Power Connector

Pin #	Signal Name
1	N.C.
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground

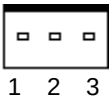
J5: Parallel Port Connector

The following table describes the pin out assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

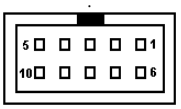
JP6: External ATX Power Connector



Pin #	Signal Name
1	5VSB (Standby +5V)
2	PS-ON (soft on/of)
3	Ground

J6, J7: COM1, COM2 Serial Port

J6 and J7, both 10-pin headers, are the onboard serial port connectors of the IB500. The following table shows the pin assignments of these connectors.



J6: COM1
J7: COM2

Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	NC

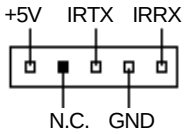
JP7: Wake On LAN Connector

JP7 is a 3-pin header for the Wake On LAN function on the CPU card. The following table shows the pin out assignments of this connector. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 200mA.

Pin #	Signal Name
1	+5VSB
2	Ground
3	Wake on LAN

JP8: IrDA Connector

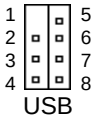
JP8 is used for an IrDA connector for wireless communication.



Pin #	Signal Name
1	+5V
2	No connect
3	Ir TX
4	Ground
5	Ir RX

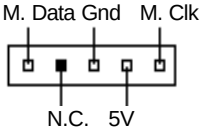
J10: USB Connector

The following table shows the pin outs of the USB connectors.



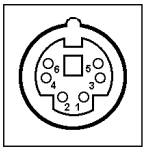
Signal Name	J10 Pin #		Signal Name
N.C.	1	5	Vcc
USB-	2	6	USB-
USB+	3	7	USB+
Ground	4	8	Ground

JP10: PS/2 Mouse External Connector



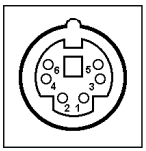
Pin #	Signal Name
1	Mouse data
2	N.C.
3	Ground
4	5V
5	Mouse Clock

J12: PS/2 Keyboard Connector



Pin #	Signal Name
1	Keyboard data
2	N.C.
3	GND
4	5V
5	Keyboard clock
6	N.C.

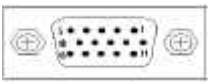
J13: PS/2 Mouse Connector



Pin #	Signal Name
1	Mouse data
2	N.C.
3	N.C.
4	5V
5	Mouse Clock
6	N.C.

J14: VGA CRT Connector

The pin assignments of the VGA CRT connector are as follows:

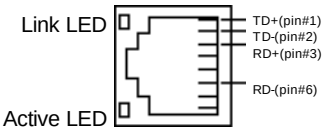


J14

Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

J15: RJ45 Connector

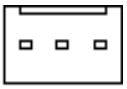
This connector is for the 10/100Mbps Ethernet capability of the CPU card. The figure below shows the pin out assignments of this connector and its corresponding input jack.



J15

J16: CPU Fan Power Connector

J16 is a 3-pin header for the CPU fan. The fan must be a 12V fan.

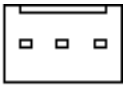


1 2 3

Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

J17: System Fan Power Connector

J17 is a 3-pin header for the system fan. The fan must be a 12V fan.

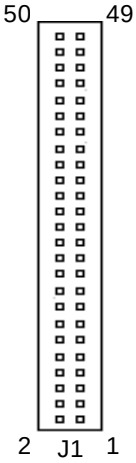


1 2 3

Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

J1: LCD Panel Connector (IBD69)

The IBD69 C&T 69000 VGA MicroPCI daughter card supports LCD panels. Use J1 to connect the system to an LCD panel.



Signal Name	Pin #	Pin #	Signal Name
GND	1	2	P33
P34	3	4	P31
P35	5	6	P32
P30	7	8	P28
P29	9	10	P27
P25	11	12	P26
P24	13	14	P21
P23	15	16	P22
P16	17	18	P20
P17	19	20	P18
P19	21	22	P14
P13	23	24	P12
P15	25	26	P11
P7	27	28	P10
5V or 3.3V	29	30	5V or 3.3V
P9	31	32	P8
P4	33	34	P6
P3	35	36	P5
P2	37	38	P1
M	39	40	P0
SHFCLK	41	42	ENABKL
FPVDD	43	44	FLM(V SYNC)
FPVEE	45	46	LP(H SYNC)
GND	47	48	GND
+12V	49	50	+12V

Flat Panel Display Interface Pin Descriptions

	Mono	Mono	Mono	Color	Color	Color	Color	Color	Color	Color	Color	Color
	SS	DD	DD	TFT	TFT	TFT	TFT	TFT+HR	STN-SS	STN-SS	STN-DD	STN-DD
Pin Name	8-bit	8-bit	16-bit	9/12/16 bit	18/24 bit	36-bit	18/24 bit	8-bit (4bP)	16-bit (4bP)	8-bit (4bP)	16-bit (4bP)	24-bit
P0	D0	UD3	UD7	B0	B0	FB0	FB0	R1	R1	UR1	UR0	UR0
P1	D1	UD2	UD6	B1	B1	FB1	FB1	B1	G1	UG1	UG0	UG0
P2	D2	UD1	UD5	B2	B2	FB2	FB2	G2	B1	UB1	UB0	UB0
P3	D3	UD0	UD4	B3	B3	FB3	FB3	B3	R2	UB2	UR1	LR0
P4	D4	LD3	UD3	B4	B4	FB4	SB0	G4	G3	LR1	LR0	LG0
P5	D5	LD2	UD2	G0	B5	FB5	SB1	R5	B2	LG1	LG0	LB0
P6	D6	LD1	UD1	G1	B6	SB0	SB2	B5	R3	LB1	LB0	UR1
P7	D7	LD0	UD0	G2	B7	SB1	B3		G3	LR2	LR1	UG1
P8			LD7	G3	G0	SB2	FG0		B3		UG1	UB1
P9			LD6	G4	G1	SB3	FG1		R4		UB1	LR1
P10			LD5	G5	G2	SB4	FG2		G4		UR2	LG1
P11			LD4	R0	G3	SB5	FG3		B4		UG2	LB1
P12			LD3	R1	G4	FG0	SG0		R5		LG1	UR2
P13			LD2	R2	G5	FG1	SG1		G5		LB1	UG2
P14			LD1	R3	G6	FG2	SG2		B5		LR2	UB2
P15			LD0	R4	G7	FG3	SG3		G6		LG2	LR2
P16					R0	FG4	FR0					LG2
P17					R1	FG5	FR1					LB2
P18					R2	SG0	FR2					UR3
P19					R3	SG1	FR3					UG3
P20					R4	SG2	SR0					LR3
P21					R5	SG3	SR1					LG3
P22					R6	SG4	SR2					LB3
P23					R7	SG5	SR3					
P24						FR0						
P25						FR1						
P26						FR2						
P27						FR3						
P28						FR4						
P29						FR5						
P30						SR0						
P31						SR1						
P32						SR2						
P33						SR3						
P34						SR4						
P35						SR5						
SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK
Pixels/Clk:	8	8	16	1	1	2	2	2-2/3	5-1/3	2-2/3	5-1/3	8

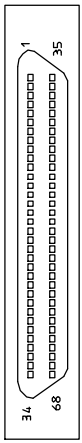
JP1: WakeOnLAN Connector (IBD59)

The IBD59 Intel 82559 LAN MicroPCI daughter card supports the JP1 WakeOnLAN connector. The following table shows the pin out assignments of this connector. WakeOnLAN will function properly only with an ATX power supply with 5VSB that has 800mA.

Pin #	Signal Name
1	+5VSB
2	Ground
3	Wake on LAN

J1: Ultra2 SCSI Connector (IBD60)

The IBD60 Initio INIC-1060 SCSI MicroPCI daughter card supports a 68-pin SCSI connector. The table below shows its pin-out assignments.



J1

Signal Name	Pin #	Pin #	Signal Name
LVDP12	1	35	LVDM12
LVDP13	2	36	LVDM13
LVDP14	3	37	LVDM14
LVDP15	4	38	LVDM15
LVDPHP	5	39	LVDPHM
LVDP0	6	40	LVDM0
LVDP1	7	41	LVDM1
LVDP2	8	42	LVDM2
LVDP3	9	43	LVDM3
LVDP4	10	44	LVDM4
LVDP5	11	45	LVDM5
LVDP6	12	46	LVDM6
LVDP7	13	47	LVDM7
LVDPLP	14	48	LVDPLM
GROUND	15	49	GROUND
DFFSENSE	16	50	LVEXT68
GROUND	17	51	LVTRMPWR
LVTRMPWR	18	52	LVTRMPWR
LVTRMPWR	19	53	N.C.
GROUND	20	54	GROUND
LVATNP	21	55	LVATNM
GROUND	22	56	GROUND
LVBSYP	23	57	LVBSYM
LVACKP	24	58	LVACKM
LVRSTP	25	59	LVRSTM
LVMSGP	26	60	LVMSGM
LVSELP	27	61	LVSELM
LVCDP	28	62	LVCDM
LVREQP	29	63	LVREQM
LVIOP	30	64	LVIOM
LVDP8	31	65	LVDM8
LVDP9	32	66	LVDM9
LVDP10	33	67	LVDM10
LVDP11	34	68	LVDM11

Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined at I/O port 0443H. To enable the watchdog timer and allow the system to reset, write I/O port 0443H. To disable the timer, write I/O port 0441H for the system to stop the watchdog function. The timer has a tolerance of 20% for its intervals.

The following describes how the timer should be programmed.

Enabling Watchdog:

```
MOV    AX, 000FH (Choose the values from 0)
MOV    DX, 0443H
OUT    DX, AX
```

Disabling Watchdog

```
MOV    AX, 00FH (Any value is fine.)
MOV    DX, 0441H
OUT    DX, AX
```

WATCHDOG TIMER CONTROL TABLE

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	16
2	E	2	10	6	18
3	D	4	11	5	20
4	C	6	12	4	22
5	B	8	13	3	24
6	A	10	14	2	26
7	9	12	15	1	28
8	8	14	16	0	30

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the CPU card. The topics covered in this chapter are as follows:

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Socket 7 level processors. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also features virus and password protection as well as detailed fine-tuning of the chipset controlling the entire system.

The fields shown in each BIOS Setup page are for reference only. The manufacturer sees to it that the BIOS information in these pages is accurate. However, the fields and default settings may have slight differences with those in the BIOS shipped with the product.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST(Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS
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	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. Another section at the bottom of the Main Menu just below the control keys section displays information on the currently highlighted item in the list.

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and the manufacturer to provide the maximum performance and reliability.

Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the CPU card is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Jan 1 1997
Time (hh:mm:ss) : 00 : 00 : 00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	None	0	0	0	0	0	0	-----
Secondary Master	None	0	0	0	0	0	0	-----
Secondary Slave	None	0	0	0	0	0	0	-----

Drive A	: 1.44M, 3.5 in	Base Memory	: 640K
Drive B	: None	Extended Memory	: 31744K
Floppy 3 Mode Support	: Disabled	Other Memory	: 384K
Video	: EGA / VGA		
Halt On	: All Errors	Total Memory	: 32768K

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

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1900 to 2099**

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the “Time” field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

To enter the specifications for a hard disk drive, you must select first a "Type". There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type "User" is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select "Auto" under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or 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.

CYLS :	Number of cylinders
HEAD :	Number of read/write heads
PRECOMP :	Write precompensation
LANDZ :	Landing zone
SECTOR :	Number of sectors
SIZE :	Automatically adjust according to the configuration
MODE (for IDE HDD only) :	Auto
	Normal (HD < 528MB)
	Large (for MS-DOS only)
	LBA (HD > 528MB and supports Logical Block Addressing)

The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

Drive A / Drive B

These fields identify the types of floppy disk drive, A or drive B, that has been installed in the computer. The available specifications are:

360KB 5.25 in.	2MB 5.25 in.	720KB 3.5 in.	44MB 3.5 in.	88MB 3.5 in.

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5-inch diskette. You have four options to choose:

Disabled	No 3 mode floppy drive installed. (default)
Drive A	Installed 3 mode drive at drive A.
Drive B	Installed 3 mode drive at drive B.
Both	Installed 3 mode drive at drive A and B.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters.(default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA, includes high resolution monochrome adapters.

Halt On

This field determines whether the system will halt if an error is detected during power up.

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

BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS
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
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Drive	: Enabled	DC000-DFFF Shadow	: Disabled
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI /VGA Palette Snoop	: Disabled		
OS Select For DRAM>64MB	: Non-OS2		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

Many disk diagnostic programs which attempt to access the boot sector table can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

CPU Internal Cache / External Cache

These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are ***Enabled***.

Quick Power On Self Test

Enabling this field speeds up the Power On Self Test (POST) after you turn on the system. If it is set to *Enabled*, BIOS will skip some items. By default, this choice is ***Enabled***.

Boot Sequence

This field determines the drive that the system searches first for an operating system. The options are :

A, C, SCSI	D, A, SCSI	SCSI, C, A
C, A, SCSI	E, A, SCSI	C only
C, CDROM, A	F, A, SCSI	LS120, C
CDROM, C, A	SCSI, A, C	ZIP100, C

Swap Floppy Drive

This item 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

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to ***Enabled.***

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with ***NumLock*** On.

Boot Up System Speed

This has no function and selects the default system speed ***(High).***

Gate A20 Option

This field allows you to select how Gate A20 is worked. The Gate A20 is a device used to address memory above 1 MB. By default, this field is set to ***Fast.***

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to ***6.***

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option

This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System,* the system prompts for the User Password every time you boot up. When you select *Setup,* the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

PCI/VGA Palette Snoop

Some display cards that are non-standard VGA 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 this field is enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***NON-OS/2***.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether optional ROM will be copied to RAM or not.

Chipset Features Setup

This Setup menu controls the configuration of the CPU card chipset.

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE INC.

Auto Configuration	: Enabled	PCI 2.1 Compliance	: Disabled
DRAM Timing	: 60ns	DRAM Refresh Rate	: 15.6µs
DRAM Leadoff Timing	: 10/6/4	CPU Warning Temperature	: Disabled
DRAM Read Burst (EDO/FP)	: X333/x444	Current System Temp.	: 37°C/98°F
DRAM Write Burst Timing	: X333	Current CPU Temperature	: 25°C/77°F
Fast EDO Lead Off	: Enabled	Current CPU Fan Speed	: 5720 RPM
Refresh RAS# Assertion	: 4 Clks	Current Chassis Fan Speed	: 5443 RPM
Fast RAS to CAS Delay	: 3		
DRAM Page Idle Timer	: 2 Clks	Vio (V) : 1.98 V	Vcore (V) : 1.50 V
DRAM Enhanced Paging	: Disabled	Vio (V) : 1.98 V	Vcore (V) : 1.50 V
Fast MA to RAS# Delay	: 2 Clks	+12 V : 12.46 V	+5V : 5.10 V
SDRAM (CAS Lat/RAS-to-CAS)	: 3/3	-5V : - 5.21 V	-12 V : -12.54V
SDRAM Speculative Read	: Disabled		
System BIOS Cacheable	: Disabled	ESC : Quit	↑ ↓ → ← : Select Item
Video BIOS Cacheable	: Disabled	F1 : Help	PU/PD/+/- : Modify
8 Bit I/O Recovery Time	: 3	F5 : Old Values	(Shift) F2 : Color
16 Bit I/O Recovery Time	: 2	F6 : Load BIOS Defaults	
Memory Hole At 15M-16M	: Disabled	F7 : Load Setup Defaults	

Auto Configuration

Auto Configuration selects predetermined optimal values for chipset parameters. When *Disabled*, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is *Enabled*.

DRAM Timing

The DRAM timing is controlled by the DRAM Timing Registers. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower memory.

DRAM Leadoff Timing

Select the combination of CPU clocks the DRAM on the IB500 requires before each read from or write to the memory. Changing the value from the setting determined by the board designer for the installed DRAM may cause memory errors.

DRAM Read Burst (EDO/FP)

Set the timing for burst-mode reads from DRAM. The lower the timing numbers, the faster the system addresses memory. Selecting timing numbers lower than the installed DRAM is able to support can result in memory errors.

DRAM Write Burst Timing
Set the timing for burst-mode writes from DRAM. The lower the timing numbers, the faster the system addresses memory. Selecting timing numbers lower than the installed DRAM is able to support can result in memory errors.

Fast EDO Leadoff
Select Enabled only for EDO DRAMs in either a synchronous cache or a cacheless system. It causes a 1-HCLK pull-in for all read leadoff latencies for EDO DRAMs (i.e., page hits, page misses, and row misses). Select Disabled if any of the DRAM rows are populated with FPM DRAMs.

Refresh RAS# Assertion
Select the number of clock ticks RAS# is asserted for refresh cycles.

Fast RAS To CAS Delay
When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS to Column Address Strobe (CAS).

DRAM Page Idle Timer
Select the amount of time in HCLKs that the DRAM controller waits to close a DRAM page after the CPU becomes idle.

DRAM Enhanced Paging
The DRAM timing is controlled by the DRAM Timing Registers. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower.

Fast MA to RAS# Delay
The values in this field are set by the system board designer, 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(CAS Lat/RAS-to-CAS)
You can select a combination of CAS latency and RAS-to-CAS delay in HCLKs of 2/2 or 3/3. The system 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 Speculative Read

The chipset can "speculate" on a DRAM read address, thus reducing read latencies. The CPU issues a read request containing the data memory address. The DRAM controller receives the request. When this field is Enabled, the controller issues the read command slightly before it has finished decoding the data address.

System BIOS Cacheable

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Video BIOS Cacheable

When enabled, access to video BIOS addressed at C0000H to C7FFFH are cached, provided that the cache controller is disabled.

8 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. This field let you add recovery time (in bus clock cycles) for 8-bit I/O.

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. This field let you add recovery time (in bus clock cycles) for 16-bit I/O.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to ***Disabled.***

PCI 2.1 Compliance

Concurrent PCI allows multiple PCI transfers from the PCI master buses to memory to CPU. By default, this field is set to ***Disabled***.

DRAM Refresh Rate

The options for the DRAM Refresh Rate are *15.6ms*, *31.2ms*, *64.4ms*, *125ms*, *126ms* and *Disabled*.

CPU Warning Temperature

The onboard hardware thermal sensor monitors CPU temperature changes and prevents the CPU from overheating. Alert is sounded through the speaker and CPU speed slows down when the temperature exceeds the temperature set in the BIOS until the temperature falls below a safe level. By default, this field is set to ***Disabled***.

Current System / CPU Temperature

These fields show the current system and system temperature as monitored by the sensor under the CPU. This is a function of the optional System Hardware Monitoring Device.

CPU and Chassis Fan Speed

These fields show the RPM (revolution per minute) status of your CPU fan and Chassis fan. This is a function of the optional System Hardware Monitoring Device.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

ROM PCI/ISA BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: User Define	** Reload Global Timer Events **	
PM Control by APM	: Yes	IRQ3 [3-7, 9-15],NMI	: Disabled
Video Off Method	: V/H SYNC +Blank	Primary IDE 0	: Disabled
Video Off After	: Standby	Primary IDE 1	: Disabled
Modem Use IRQ	: 3	Secondary IDE 0	: Disabled
Doze Mode	: Disabled	Secondary IDE 1	: Disabled
Standby Mode	: Disabled	Floppy Disk	: Disabled
Suspend Mode	: Disabled	Serial Port	: Enabled
HDD Power Down	: Disabled	Parallel Port	: Disabled
Throttle Duty Cycle	: 62.5%		
ZZ Active in Suspend	: Disabled		
PCI/VGA Active Monitor	: Enabled		
Soft-off by PWR-BTTN	: Instant Off		
CPUFAN Off In Suspend	: Enabled		
PWR On by Modem/LAN	: Disabled	ESC : Quit	↑ ↓ → ← : Select Item
Resume by Alarm	: Disabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
IRQ 8 Break Suspend	: Disabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Disable	No power management.
Min. Power Saving	Minimum power management.
Max. Power Saving	Maximum power management. Only available for SL CPU.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

PM Control by APM

This field allows you to use the Advanced Power Management device to enhance the Max. Power Saving mode and stop the CPU' s internal clock. If the Max. Power Saving is not enabled, this will be preset to NO.

Video Off Method

This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows the BIOS to control the video display card if it supports the DPMS feature.
Blank Screen	This option only writes blanks to the video buffer.

Video Off After

This field specifies the mode after which the Video Off feature is enabled. The options are *Doze, Standby, Suspend,* and *N/A.*

Modem Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. The options are *3, 4, 5, 7, 9, 10, 11* and *NA.*

Doze Mode

When enabled, and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices still operate at full speed.

Standby Mode

When enabled, and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

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

HDD Power Down

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

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.

ZZ Active in Suspend

When *Enabled,* the ZZ signal is active during Suspend mode.

VGA Active Monitor
This option specifies if the BIOS is to monitor activity on the display monitor for power conservation purposes.

Soft-Off by PWR-BTTN
This field specifies the power-off mode of the ATX system. The *Instant Off Mode* allows powering off immediately upon pressing the power button. In the *Delay 4 Secs Mode*, the system powers off after pressing the power button for more than four seconds. By default, this field is set to ***Instant Off Mode***.

CPU Fan Off in Suspend
The system fans will power off automatically, even in suspend mode. This function reduces both energy consumption and system noise.

PWR On by Modem/LAN
Enabling this field allows powering on of the system through a modem or the local area network.

Resume by Alarm
This allows a computer to be turned on automatically through the timer set in the BIOS to make the system more scheduleable. By default, this field is set to ***Disabled***.

IRQ 8 Break Suspend
This section sets the wake-up call of the system. If activity is detected from the enabled IRQ 8, the system wakes up from suspend mode.

Reload Global Timer Events
This section determines the reloading of the 'timers' after entering the Full On mode. When enabled, the item reloads the set time of inactivity before entering the power saving mode.

PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION
AWARD SOFTWARE INC.

PNP OS Installed			: No	PCI IDE IRQ Map To	: PCI-Auto
Resources Controlled by			: Manual	Primary IDE INT#	: A
Reset Configuration Data			: Disabled	Secondary IDE INT#	: B
				Assign IRQ For USB	: Enabled
IRQ-3	assigned	to	: Legacy ISA		
IRQ-4	assigned	to	: Legacy ISA	Used MEM base addr	: N/A
IRQ-5	assigned	to	: PCI/ISA PnP		
IRQ-7	assigned	to	: Legacy ISA		
IRQ-9	assigned	to	: PCI/ISA PnP		
IRQ-10	assigned	to	: PCI/ISA PnP		
IRQ-11	assigned	to	: PCI/ISA PnP		
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

This field allows you to specify if the operating system installed in your system is plug and play aware.

Operating systems such as DOS, OS/2, and Windows 3.x do not use PnP.

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95. The default value is ***Manual.***

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is ***Disabled.***

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

PCI IDE IRQ Map To

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA).

Assign IRQ For USB

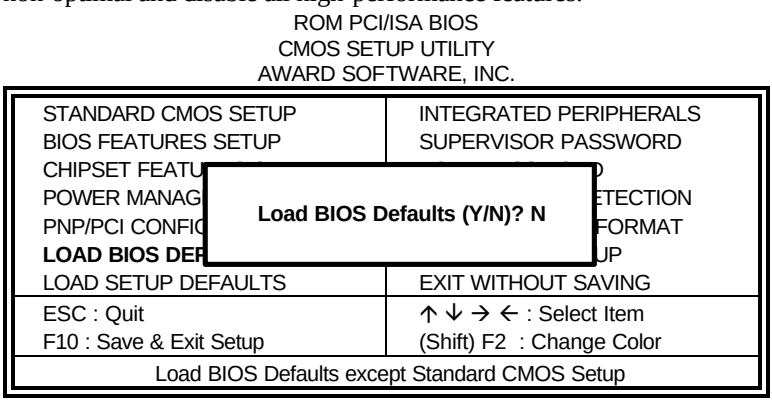
This field assigns the IRQ for the USB.

Used MEM base addr

This field allows the user to set the base address and block size of a legacy (non-PnP) ISA card that uses any memory segment within the C800H and DFFFH address range. If you have such a card and are not using an ICU (ISA Configuration Utility) to specify its address range, select a base address from the six available options. During selection, the "Used MEM Length" field will appear with the block size options. If you have more than one legacy ISA card in your system that require the use of this address range, you can increase the block size to either 8K, 16K, 32K or 64K. If you are using ICU to accomplish this task, leave "Used MEM base addr" to its default setting of ***N/A***.

Load BIOS Defaults

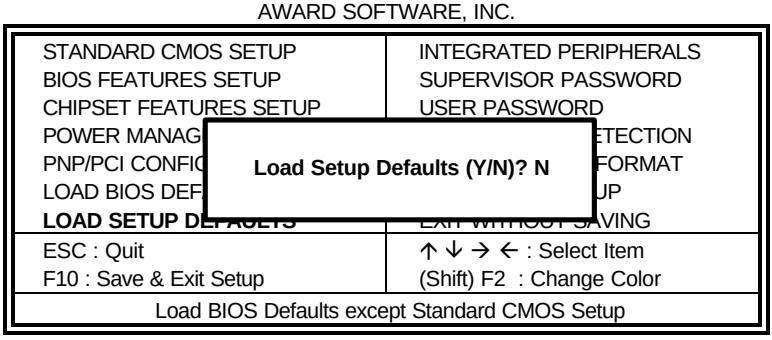
This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.



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

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".

Integrated Peripherals

This option allows you to determine your hard disk configuration, mode and port.

ROM PCI/ISA BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

IDE HDD Block Mode	: Enabled	Onboard FDD Controller	: Enabled
IDE Primary Master PIO	: Auto	Onboard Serial Port 1	: 3F8/IRQ4
IDE Primary Slave PIO	: Auto	Onboard Serial Port 2	: 2F8/IRQ3
IDE Primary Master UDMA	: Auto	Onboard UART 2 Mode	: Normal
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master PIO	: Auto	Onboard Parallel Port	: 378H/IRQ7
IDE Secondary Slave PIO	: Auto	Parallel Port Mode	: SPP
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
		ESC : Quit	↑ ↓ ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

IDE Primary Master/Slave PIO and Secondary Master/ Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary Master/Slave UDMA and Secondary Master/ Slave UDMA

This field allows your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

On-Chip Primary/Secondary PCI IDE

These fields allow you either to enable or disable the Primary/Secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

USB Keyboard Support

This field allows your system to support a USB keyboard.

Onboard FDD Controller

This option allows you to select the onboard FDD port.

Onboard Serial Port

These fields allow you to select the onboard serial ports and their addresses. The default value for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3

UART 2 Mode

This field determines the UART 2 mode in your computer. The default setting is ***Normal***.

Parallel Port Mode

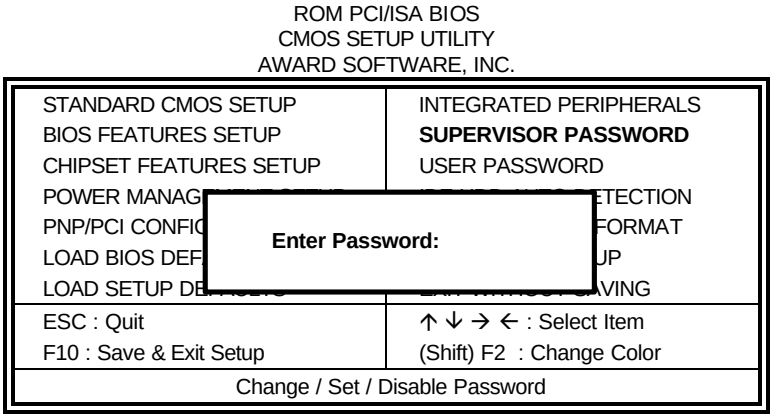
This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Extended Capabilities Port or Enhanced Parallel Port

Supervisor / User Password

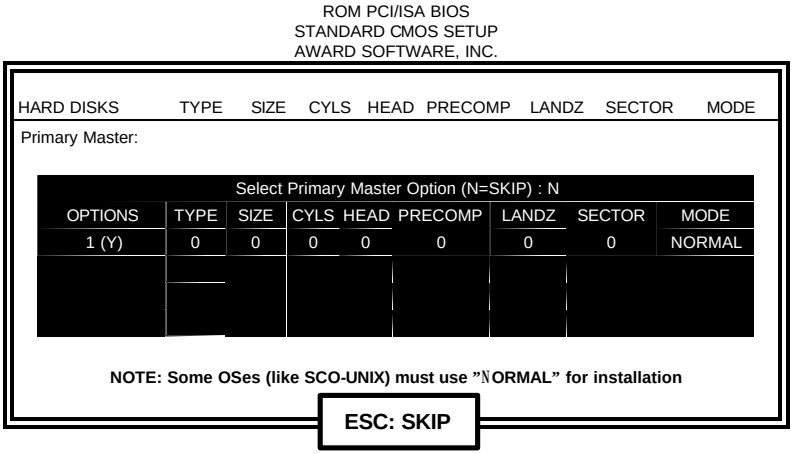
These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

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



IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.



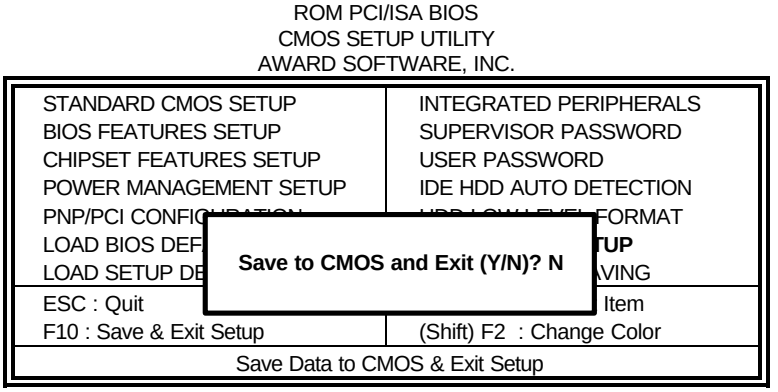
Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the "Y" key; to skip to the next drive, press the "N" key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

HDD Low Level Format

This option should only be used by a professional. Low-level formatting can cause irreparable damage to your hard disk. The procedures include selecting the drive you want to low-level format, determining the bad tracks, and proceeding with pre-formatting.

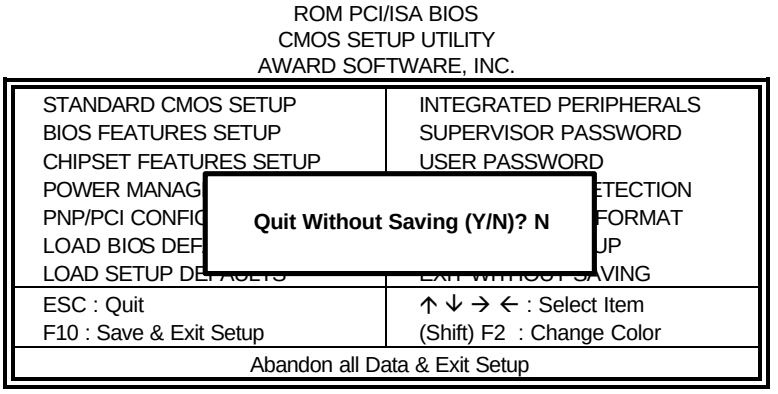
Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. If you type "Y", you will quit the setup utility and save all changes into the CMOS memory. If you type "N", you will return to Setup utility.



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.



VGA Drivers Installation

This section provides information on how to install the VGA drivers that come with IB500. Please follow the instructions set forth in this section carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers.

The following items are covered in this section:

The driver installation information in this manual is for reference only. It maybe possible that the installation procedure or the driver information has changed. In such cases, please contact the local agent or the distributor where you purchased the product.

Installing the Drivers for Windows 95/98

The following section describes the normal display driver installation procedures for Windows 95/98. Use the following procedures when installing the display drivers for Windows 95/98.

1. Click **Start**, then **Settings**, then **Control Panel**.
2. Double click **Display**.
3. Select the **Settings** tab, click the **Change Display Type** button.
4. Click the **Change** button under **Adapter Type**.
5. Click the **Have Disk** button and press **OK**.
6. Specify the path to the new driver and press **<ENTER>**:

Example 1: Insert the driver CD in the CD-ROM drive, and enter d:\vga\ct69000\win95 (assuming D: is the CD-ROM drive.)

Example 2: If you're not sure exactly where the drivers are, click the **Browse** button to find them.

7. The *Select Device* dialog box will appear. Select the hardware that corresponds to the one you installed in your machine and click **OK**.
8. Windows 95/98 will copy the display drivers to the proper directories on your system.
9. Continue by choosing **Close**. You will be asked to restart your machine. Do so accordingly.
10. After the system has restarted, you can go back into the **Display** applet and select alternate screen resolutions and color depths.

Installing the Drivers for Windows NT 4.0

Once you are in the Windows NT 4.0 environment, follow the procedures below to install the VGA drivers that come with your board.

1. Click the **Start** button, then go to **Settings** and click on **Control Panel**.
2. Click on the **Display** icon to start the *Display Properties* window.
3. Click on the **Settings** tab, and then click on **Display Type**.
4. In the *Change Display Type* window, click on **Change Adapter Type**. This will bring up the *Select Device* window.
5. In the *Change Display* window, click on **Have Disk**. Enter the directory where the Windows NT driver files are located as **d:\vga\ct69000\winnt40** (assuming D: is the CD-ROM drive.) Then select **OK**, or press **ENTER**.
6. Select **Chips Video Accelerator** from the display list provided, then click **OK** or press **ENTER**.
7. You will then see a warning panel about Third Party Drivers. Click on **Yes** to finish the installation.
8. Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.
9. When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected. Click the **Start** button, and then go to **Settings** and click on **Control Panel**. Click on the **Display** icon to start the *Display Properties* window. Click on the **Settings** tab. A new screen setting can be selected using either of the following methods:
    A. Use the slide-bar in the Desktop Area to select new setting.
    B. Click on **List All Modes**. From the list provided, select a new setting, then click **OK** or press **ENTER**.
    C. Click on **Test** to test the newly selected graphics mode. Follow the instructions given on screen. A test screen should appear, followed by the *Testing Mode* window. Click on **Yes** to continue. Click on **Apply** to switch to the new graphics mode. Graphics modes are changed dynamically on NT 4.0, so you do not need to shut down and restart for the new screen settings to work.

LAN Drivers Installation

This section describes LAN features and driver installation of the Intel 82559 Ethernet function available with the IBD99 or IBD59 MicroPCI card.

The following items are covered in this section:

The driver installation information in this manual is for reference only. It maybe possible that the installation procedure or the driver information has changed. In such cases, please contact the local agent or the distributor where you purchased the product.

Introduction

Intel 82559 a 32-bit 10/100MBps Ethernet controller for PCI local bus-compliant PCs. It supports bus mastering architecture, and auto-negotiation feature that can be used for both 10Mbps and 100Mbps connection.

Making Floppy Disks for NetWare and Windows Installation

You need to use a floppy disk to install the LAN drivers. Use the MAKEDISK.BAT utility located in the \LAN\I8255X\MAKEDISK directory on the CD.

MAKEDISK [operating system] [destination]

where [operating system] is the OS for which you are creating the diskette, and [destination] is the drive letter and path (such as A:). If no destination is specified, the A: drive will be used.

The possible [operating system] options are:

NT	Microsoft Windows NT
W2K	Microsoft Windows* 2000
W9X	Microsoft Windows* 95 and Windows 98
NW	Novell NetWare servers and clients
DOS	Microsoft DOS and IBM OS2

Make sure you have a 1.44 MB formatted, non-bootable diskette in the floppy drive when using this utility.

The utility MUST be run from the \LAN\I8255X \MAKEDISK directory.

Alternately, you can use the following .BAT files (located in the root directory on this CD) to simplify this process:

MAKEW9X.BAT	Creates a drivers disk for Windows 95 and Windows 98.
MAKENT.BAT	Creates a drivers disk for Windows NT.
MAKEW2K.BAT	Creates a drivers disk for Windows 2000.
MAKENW.BAT	Creates a drivers disk for Novell NetWare servers and clients.

Installing LAN Drivers for Windows 95

Follow these steps to install the Intel 82559 LAN/Ethernet driver for Windows 95:

1. From the **Control Panel**, double-click the **System** icon.
2. Click the **Device Manager** tab.
3. Double-click **Other Devices** (question mark icon) in the list area.
4. Double-click a PCI Ethernet Controller.
5. Click the **Driver** tab, then click **Update Driver**.
6. Insert the Configuration and Drivers disk or CD in the appropriate drive, and at the Update Device Driver Wizard, select **No** and click **Next**.
7. Click **Have Disk**, insert the Configuration and Drivers disk in the appropriate drive, and click **OK**.
8. At the Select Device dialog box, click **OK** again.
9. Follow any prompts for Windows 95 installation disks and restart when prompted.

The Windows 95 system files are typically available on the Windows 95 CD in the win95 directory (D:\win95).

Installing LAN Drivers for Windows 98

Follow these steps to install the Intel 82559 LAN/Ethernet driver for Windows 95:

1. From the **Control Panel**, double-click the **System** icon.
2. Click the **Device Manager** tab.
3. Double-click **Other Devices** or Network Adapters in the list area.
4. Double-click a PCI Ethernet Controller.
5. Click the **Driver** tab, then click **Update Driver**.
6. Click **Next** at the Update Device Driver Wizard.
7. Select **Display a list of all the drivers...** and click **Next**.
8. Insert the Intel adapter disk and click **Have Disk**.
9. Enter the appropriate drive for your disk media (A:) and click **OK**.
10. Click **OK** at the Select Device dialog box.
11. The Update Wizard displays the message that it has found the driver. Click **Next**.
12. Click **Finish**.
13. Restart your computer when prompted.

Installing LAN Drivers for Windows NT

It is recommended that you install the latest Service Pack for Windows NT 4.0, available through Microsoft.

Follow the instructions below to configure it the Ethernet hardware under Windows NT.

1. Double-click the **Network** icon in the **Control Panel**.
2. Select the **Adapter** tab.
3. Click **Add**. You'll see a list of adapters.
4. Don't select an adapter from this list. Instead, insert the Intel adapter disk or CD into the appropriate drive and click **Have Disk**.
5. Enter the appropriate drive for your disk media (A:) and click **OK**. Then follow the prompts to complete installation. When the adapter is added you'll see a new adapter listed in the Network adapters list.
6. Click **Close** to finish and configure any protocols as prompted.
7. Restart Windows NT when prompted.

SCSI Drivers Installation

This section serves as an installation guide to the SCSI interface on your SCSI MicroPCI card. It contains important information to ease the installation and configuration process.

The procedure in this section is used in conjunction with the SCSI drivers found in the optional driver floppy diskette that comes with the optional SCSI MicroPCI card.

With the SCSI interface, you can connect SCSI peripherals such as hard disk drives, scanners, CD-ROM drives and tape drives.

Topics covered in this chapter include:

The driver installation information in this manual is for reference only. It maybe possible that the installation procedure or the driver information has changed. In such cases, please contact the local agent or the distributor where you purchased the product.

Installing SCSI Driver for DOS

The DOSSETUP.EXE program installs the 16bit ASPI drivers, SCSI CD-ROM driver and the Microsoft CD extensions. This program will automatically create or modify the AUTOEXEC.BAT and CONFIG.SYS files on your hard drive. To complete CD-ROM installation, you will need MSCDEX.EXE pre-installed on the hard drive or on a floppy disk. MSCDEX.EXE is on MS-DOS 6.2x Setup Disk Number One. Be sure that you know the location and the path of MSCDEX.EXE prior to running DOSSETUP.EXE. The hard drive will need MS-DOS 6.xx installed or it will need to be formatted with the /s option (i.e. - bootable format) prior to running Initio DOSSETUP.EXE. From the x:\ DOS prompt type **DOSSETUP** and press **Enter**. NOTE: x = drive letter of floppy drive used. After DOSSETUP.EXE completes, be sure to reboot system so changes take effect.

Installing SCSI Driver for Windows 95/98

Files you need:

Information script files for installation: INIA100.INF.
Miniport device driver: INIA100.MPD.

Installation:

A: New Windows 95 installation:
B. Adding INI-A100U2W to an existing Windows 95/98:
C. Updating device driver:

A: New Windows 95/98 installation:

1. Run **SETUP.EXE** from the Windows 95/98 CD-ROM and follow the directions on the screen.
2. After a Windows 95/98 session is established, select **My Computer/ Control Panel/System/Device Manager/Other devices/PCI SCSI Bus Controller** from the Windows 95/98 desktop.
3. Click the **Driver** tab, then click the **Change Driver** tab.
4. Double click **SCSI controllers**, then click the **Have Disk** button.
5. At the prompt, type in **A:\win95**, insert Initio INI-A100U2W driver disk 1, and click the **OK** button.
6. Select **Initio INI-A100U2W Host Adapter**, click the **OK** button. Windows 95 will copy INIA100.MPD to your hard disk. Reboot to complete the driver installation.

B. Adding INI-A100U2W to an existing Windows 95:

1. Install the Initio hardware as described in the User Manual/User Guide. Windows 95 will detect the presence of a new hardware.
2. When Windows 95 displays the following:

New Hardware Found PCI SCSI Bus Controller Select which driver you want to install for your new hardware: * Driver from disk provided by hardware manufacture OK Cancel Help

Click **OK**.

3. Windows 95 will then display the following:

Install From Disk Insert the manufacturer's installation disk into the drive Selected, and then click OK Copy manufacturer's files from A:\WIN95

Insert the Initio disk 1 into drive A: and Click **OK**.

Windows 95 will interpret INIA100.INF script files and load INIA100.MPD driver to win95/system/iosubsys directory.

4. Windows 95 will then display the following:

System Settings Changed To finish setting up your new hardware, you must restart Your computer. Do you want to restart your computer now? Yes No

Remove the diskette from drive A: and Click **Yes**.

C. Updating device drivers:

1. From the Windows 95 desktop, select **My Computer/Control Panel/System/Device Manager/SCSI Controller/Initio INI-A100U2W Host Adapter**.
2. Click the **Driver** tab, and then click the **Change Driver** tab.
3. Type **A:\win95** and insert Initio INI-A100U2W driver disk into floppy drive A:, click **OK**, Windows 95 will copy the new device driver into the hard disk.

Driver Installation for Windows-NT

Files you need:

Script files for installation: txtsetup.oem, oemsetup.inf, disk1.
Device driver: INIA100.SYS

Installation:

A: Install Windows-NT on a hard drive from the INI-A100U2W SCSI Host adapter.

1. If you are installing Windows-NT from a floppy drive, locate the Windows-NT Disk 1 for floppy Installation. Make a backup copy of this diskette.
2. If you are installing Windows-NT from a CD-ROM drive, locate the, Windows-NT Setup Disk for CD-ROM Installation. Make a backup copy of this diskette.
3. Put the disk into drive A and turn on your computer.
4. Follow the instructions, and select **CUSTOM SETUP**.
5. Select **OTHER** from the list of **Additional SCSI Adapters**. A message will appear on the screen stating "Requires disk provided by a hardware manufacturer". Insert the diskette containing INI-A100U2W device driver and press **ENTER**.
6. Windows-NT will interpret the txtsetup.oem and oemsetup.inf script files and load INIA100.SYS driver to xxx/system32/drivers directory.

B: Adding or updating the Initio driver to an existing Windows-NT 4.0 booted from IDE drive or different type of host adapter:

1. Establish a Windows-NT session.
   - Select **CONTROL PANEL** from within the **MY COMPUTER** group.
   - Select **SCSI ADAPTERS** from within the **CONTROL PANEL** group.
2. Select the **DRIVERS** tab from within the **SCSI ADAPTERS** group:
   - In the **DRIVERS** window, select **ADD...**.
3. In the **INSTALL DRIVER** window, select **HAVE DISK...**.
4. In the **INSTALL FROM DISK** window that is displayed, enter the Initio Driver path name:
   - Insert INI-A1000U2W Driver Disk 1 into drive A:
   - Type **A:\WINNT**, then select **OK**

5. Select INITIO INI-A100U2W Host Adapter, select **OK** to install the INIA100.SYS driver onto your hard disk drive.
6. In the WINDOWS NT SETUP window that is displayed, enter the Initio Driver path name to continue:
   - Type **A:\WINNT**, then select **CONTINUE**
7. This completes updating the Host Adapter Driver. Follow the on-screen directions to restart your computer and activate the new driver.
8. It is highly recommended that you verify your Windows NT device driver has been properly installed by selecting **MY COMPUTER** from the desktop. Then select **CONTROL PANEL**:
   - Select **SCSI ADAPTERS** from within the **CONTROL PANEL** group
   - Highlight **INITIO INI-A100U2W SCSI HOST ADAPTER** from within the SCSI ADAPTERS listing, and select **PROPERTIES**. If "**This device is working properly**" is displayed in the Device status box, the driver has been correctly installed.

C: Floppyless SETUP

If you are running WINNT.EXE or WINNT32.EXE to install or upgrade Windows NT, when system reboot and screen turn black with the text "**Setup is inspecting your computer's hardware configuration...**",

You have two seconds to press the **F6** key to enter the driver installation screen. Insert the Initio Windows NT installation diskette, and type **A:\WINNT** to load the INI-A100U2W Windows NT driver.

Installing SCSI driver for OS/2 3.X & 4.X

I) Installation procedures for INI-A100u2W OS/2 3.X & 4.X device driver:

A) Installed as a secondary controller

1) Open the OS/2 System Folder.
2) Open the System Setup Folder.
3) Double-click "Device Driver Install".
4) Insert the Initio installation diskette into your floppy drive.
5) Change to the OS/2 directory.
6) Choose INIA100.ADD, then click INSTALL.
7) After installation is done, OS/2 will report the status.

B) Installed as a primary controller

1) Make backup copies of the OS/2 Diskette 1.
2) Copy the INIA100.ADD onto OS/2 Diskette 1.
3) Modify the config.sys file on Diskette 1 to add BASEDEV=INIA100.ADD /V
4) Install OS/2 using the backup Diskette 1

II) Driver configuration options:

/V	Verbose mode provides detail information about driver when driver is initialized
/!V	Non Verbose mode (default)
/ET	Driver assumes that all targets have more than one LUN (default)
/!ET	Driver assumes that all targets only have LUN 0
/Q:x	Specifies maximum number of tag commands per target
/!Q	No tag command
/B:(d,dd),.	Scan devices only on PCI BUS d, DEVICE dd
/B:d	Scan all the devices on the PCI BUS d
/T:xxxx	Target enable mask WORD (Default scan all targets)
/A:d	Adapter IDs are assigned based on BIOS address and ..then PCI device address
/DM:d,..	Enable direct access storage device (DASD) support on target d
/!DM:d,..	Disable DASD manager support on target d
/SM:d,..	Enable SCSI manager support on target d
/!SM:d,..	Disable SCSI manager support on target d

Appendix

A. Post Codes
B. I/O Port Address Map
C. Interrupt Request Lines (IRQ)

A. POST Codes

POST (Power On Self Test) codes are to determine problems during boot up. Below are the codes for your reference.

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.

POST (hex)	Description
12h	Use walking 1' s algorithm to check out interface in CMOS circuitry. A set real-time clock power status, and then check for override.
14h	Program chipset default values into chipset. Chipset default values ar MODBINable by OEM customers.
16h	Initial Early_Init_Onboard_Generator switch.
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) a CPU level (586 or 686).
1Bh	Initial interrupts vector table. If no special specified, all H/W interru are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Dh	Initial EARLY_PM_INIT switch.
1Fh	Load keyboard matrix (notebook platform)
21h	HPM initialization (notebook platform)
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid take into consideration of the ESCD' s legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
27h	Initialize INT 09 buffer
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onbo IDE controller. 4. Measure CPU speed. 5. Invoke video BIOS.
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU ty CPU speed ….
33h	Reset keyboard except Winbond 977 series Super I/O chips.
3Ch	Test 8254
3Eh	Test 8259 interrupt mask bits for channel 1.
40h	Test 8259 interrupt mask bits for channel 2.
43h	Test 8259 functionality.

POST (hex)	Description
47h	Initialize EISA slot
49h	1. Calculate total memory by testing the last double word of each 6 2. Program writes allocation for AMD K5 CPU.
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with prop cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in c cacheable ranges between each CPU are not identical.
50h	Initialize USB
52h	Test all memory (clear all extended memory to 0)
55h	Display number of processors (multi-processor platform)
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
59h	Initialize the combined Trend Anti-Virus code.
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onbaord_AUDIO switch.
60h	Okay to enter Setup utility; i.e. not until this POST stage can users e CMOS setup utility.
65h	Initialize PS/2 Mouse
67h	Prepare memory size information for function call: INT 15h ax=E820h
69h	Turn on L2 cache
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item is set to “AUTO”.
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
77h	Detect serial ports & parallel ports.
7Ah	Detect & install co-processor

POST (hex)	Description
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen l 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

B. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

C. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
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	Serial Port #3
IRQ10	Serial Port #4
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE