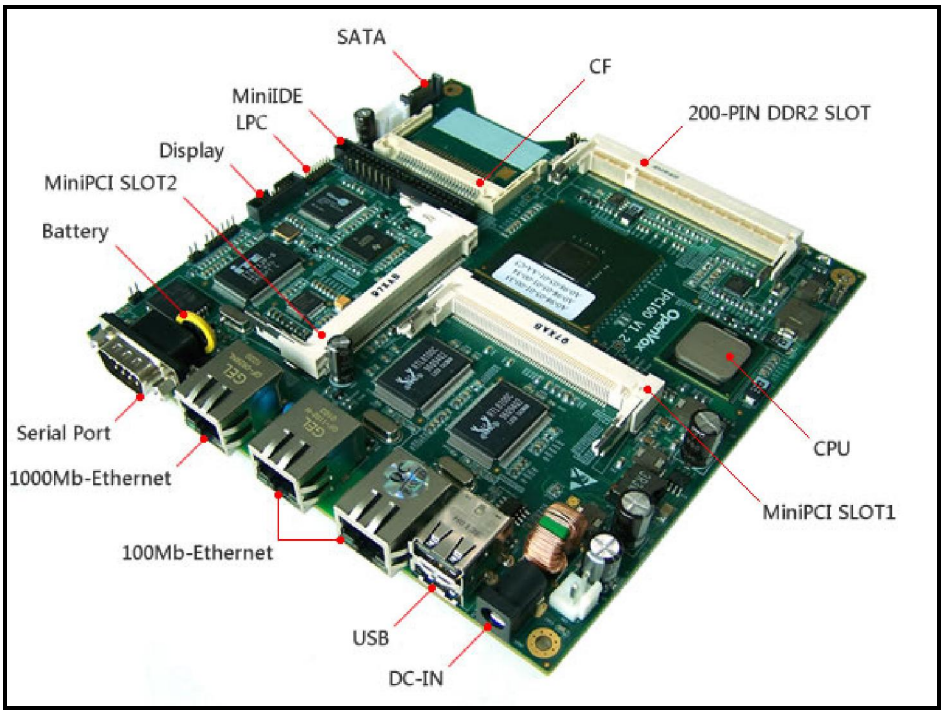
深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards



OpenVox IPC100 Series

Atom Fan-less CPU Boards

Hardware Installation V1.0.03

Hardware Version: V1.2

深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards

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Declaration Of Conformity

We herewith certify that product

IPC100A IPC100B

Conforms with the

EC –directive 2004/108/EC (EMC)

To assess the product's compliance the following standards were applied:

EN61000-6-3 (2007) for residential environments (generic device emissions)-Class A

EN61000-6-2 (2005) for industrial environments (generic device immunity)

EN55022 (2007) (ITE device emissions)-Class A

EN55024 (2003) (ITE device immunity)

This product also meet the requirements of

FCC Part 15 Subpart B –Class A

This explanation is responsible for the manufacturer

OpenVox

Given by:

President,OpenVox

Jan 22,2010

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1. Compliance Information

1.1 EMI and EMS

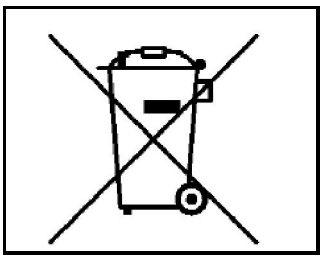
For FCC, OpenVox IPC100 has been tested as a CPU board installed in an enclosure. No further testing is needed if the board works with other components FCC qualified Please see http://www.fcc.gov/oet/ for more details.

CE must be done at the level of completed. Please contact OpenVox for assistance and documentation. OpenVox IPC100 can be used as an I.T.E, as well as a generic device. As an I.T.E, it must be tested and passed according to EN55022 and EN55024; as a generic device, it applies to EN 61000-6-2 (EMI test for commercial and light industrial environment) and EN61000-6-3 (Immunity test for industrial environment). OpenVox IPC100 meets both two measuring standards with class A result, specially the class A for emission. OpenVox will provide Class B products in the future. Also, we will offer adapter with CE verification if customers require. It is suggested that 12V@5A should be typical value considering I/O peripheral.

1.2 ESD

For satisfied resistance of electrostatic discharge events (ESD), the case of OpenVox IPC100 board should be grounded earth Ground terminal. (E.g. Through the mounting holes, or the serial port connector). Under this condition, the system can get class A evaluation according to EN 61000-4-2, or the system may get class B evaluation.

1.3 Recycling and disposal



Do not discard electronic products in household trash!
All waste electronic equipment should be recycled according to local regulations.

Information for the recycler:
Please cut off Lithium battery, if present, for separate recycling.
OpenVox enclosures are made of aluminum.

2. Introduction

2.1 Features

OpenVox IPC100 is a reliable mini-ATX board. The fan-less design, as low as 6W power, enables more abilities to operate in harsh industrial environments. Integrated up to 3 Ethernet ports, IPC100 motherboard provides flexible options for different targets. IPC100 support Mini PCI cards perfectly.

Specific Features:

- Powerful Intel Atom Z500P series Processor up to 1.6GHz
- 512 KB L2 cache, 24K data, 32K instruction
- Two mini PCI interfaces and other expansions
- Two GB DDR2 SDRAMs, 64 bit wide for high memory bandwidth
- 8Mbit flash for AMI BIOS
- Flexible combinations of data storage solutions
- Three Ethernet ports
- Wide voltage range: 7 to 20V (absolutely) DC supply through DC jack
- One serial port for debug usage
- Header for LPC bus (use for flash recovery or I/O expansions)
- Low EMI Emission level and high Electro Magnetic Susceptibility

2.2 Specification

- CPU: Intel Atom Z510P 1.1GHz/ Z520P 1.3GHz /Z530P 1.6GHz
- DRAM: Slot onboard, up to 2GB DDR2 400/533 SDRAM (double sides 1GB)
- Chipset: Intel Poulsbo
- Southbridge: Poulsbo integrated
- Storage: Compact Flash socket, 44-pin PATA connector; one SATA slot
- Power: DC jack, 7V to 20V, suggest 12V supply
- Front panel LED: For programmable GPO status indicator
- Push button support
- Expansion: Two mini PCI slots
- Network connectivity: Three Ethernet ports (10/100Mbps speed)
- I/O: One DB9 RS232 serial port; two USB 2.0 ports
- Board size: 6×6" (152.4×152.4 mm)
- Operating temperature: 0°C to 60°C
- Firmware: AMI BIOS
- PCB layer: 8
- Power dissipation: ~6W

2.3 OEM information

Standard OEM options available:

Name	Function	Operating Temperature
IPC100B	Z530P/2*100M LAN/1*Gigabit LAN	0°C to 60°C
IPC100C	Z510P/2*100M LAN/1*Gigabit LAN	0°C to 60°C

Table-1 Standard options

IPC_VGA OEM information:

- Name: IPC_VGA V1.1
- Function: SDVO to VGA daughter board

OEM options:

The following options can be configured for OEM options:

- DRAM size (1GB, 2GB)
- CPU speed (1.1 GHz/ 1.3GHz / 1.6GHz)
- Configuration options:
  2×100Mbps / 1×Gigabit
  1×100Mbps / 1×Gigabit
  2×100Mbps
  1×Gigabit
- 0°C to 85°C (only @ Z510PT/Z520PT)

3. Compatibility

3.1 Hardware

Following PCI interfaces and RAM have been tested:

Mini PCI slot:

- Broadcom BCM4318 wireless LAN adapter
- Intel(R) PRO/Wireless 2200BG Network Connection
- Intel(R) PRO/Wireless 2915BG Network Connection

Mini PCI cards:

- OpenVox B400M, B200M, B100M, A400M

Memory:

- Kingston KVR667D2S5/1G, KVR800D2S6/1G, KVR533D2S4/512MB

3.2 Operating system

System	Results				
	IDE,STAT	Network	USB	Serial port	Mini-PCI
Windows XP	Pass	Pass	Pass	Pass	Pass
Centos5.3	Pass	Pass	Pass	Pass	Pass
Centos5.4	Pass	Pass	Pass	Pass	Pass
Trixbox-2.6	Pass	Pass	Pass	Pass	Pass
Elastix-1.6	Pass	Pass	Pass	Pass	Pass

Table-2 The Compatibility of Operating system

4. Connectors and Definitions of Jumpers

4.1 Layout

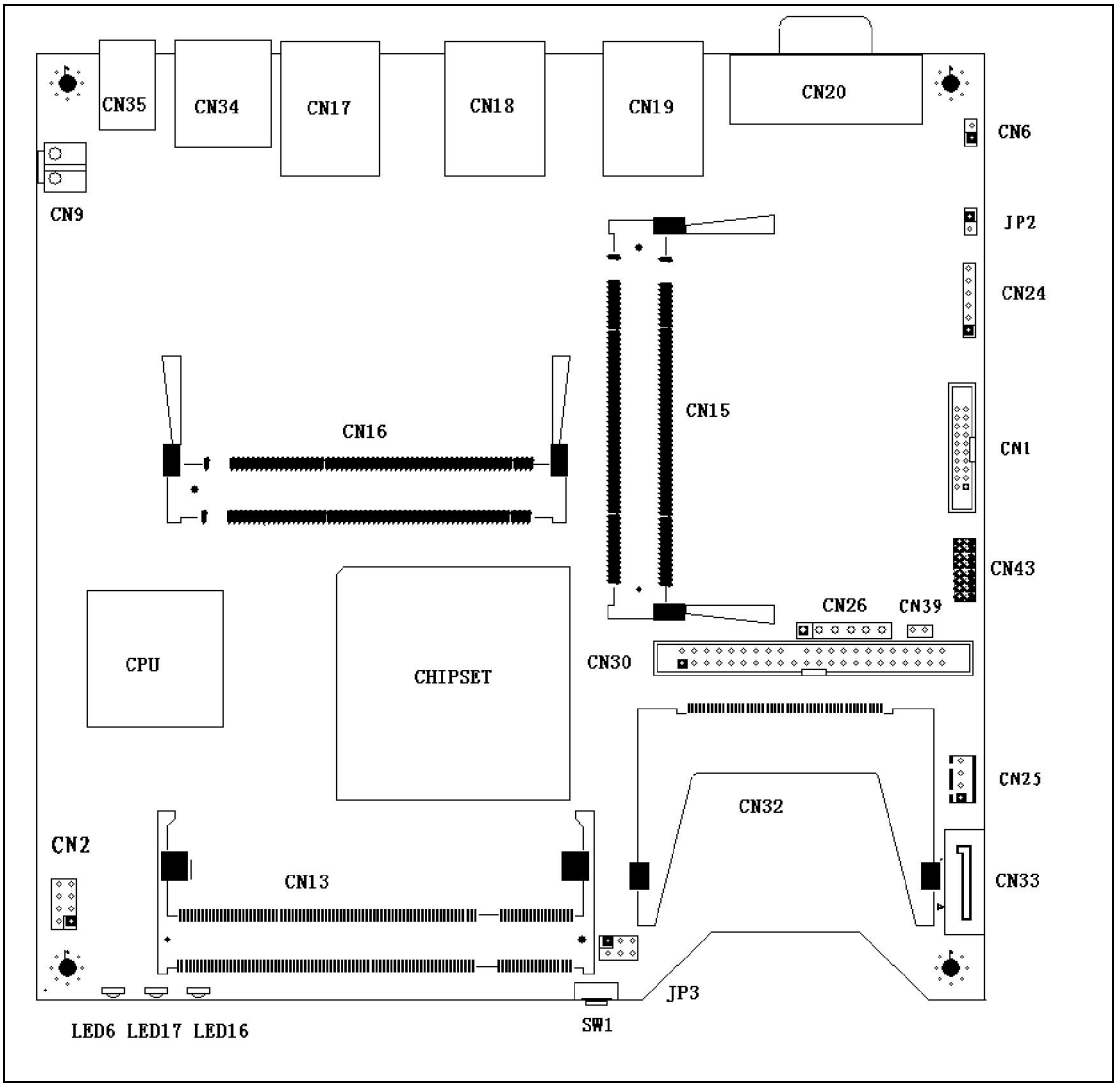


Figure-1 IPC100 Layout

4.2 Connectors

4.2.1 List

ID	Name	Function	Page
1	CN1	SDVO Display Output	11
2	CN2	External LEDs and GPIO	12
3	CN6	Clear CMOS	12
4	CN9	Power Supply Jacket	12
5	CN13	DDR2 Memory Slot	13
6	CN15	Mini PCI Slot 1	13
6	CN16	Mini PCI Slot 2	13
7	CN17	Ethernet 1	14
7	CN18	Ethernet 2	14
8	CN19	Ethernet 3	14
9	CN20	RS232 Serial Port	15
10	CN24	PS/2 Keyboard and Mouse Port	15
11	CN25	SATA Power Supply	15
12	CN30	44 Pin IDE Interface	16
13	CN32	Compact Flash Interface	17
14	CN33	SATA Interface	18
15	CN34	USB Port	18
16	CN35	Main Power in Jacket	18
17	CN43	LPC Interface	18

Table-3 Connectors

4.2.2 Descriptions

(1) **CN1 SDVO Display Output**

Attached with IPC_VGA card for VGA display

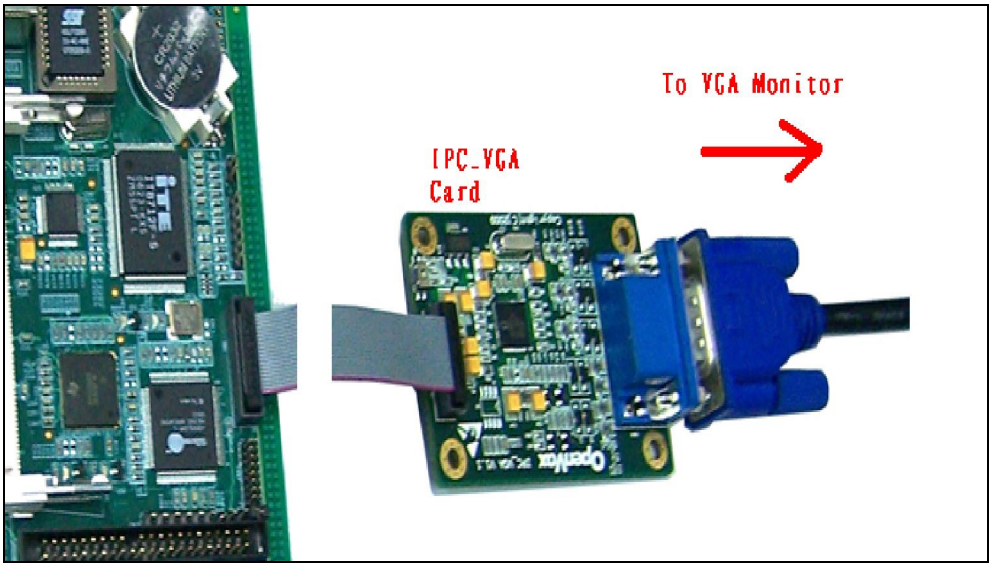


Figure-2 IPC_VGA Interface

Pin	Name	Pin	Name
1	RED positive	11	Reset#
2	Red negative	12	GND
3	Ctrl CLK	13	GND
4	Green positive	14	GND
5	Green negative	15	3.3v
6	Blue positive	16	3.3v
7	Blue negative	17	3.3v
8	CLK positive	19	3.3v
9	CLK negative	19	5v
10	Ctrl Data	20	5v

Table-4 IPC_VGA Interface Pins

(2) CN2 External LEDs and GPIOs

3.3V 200mA max CMOS output

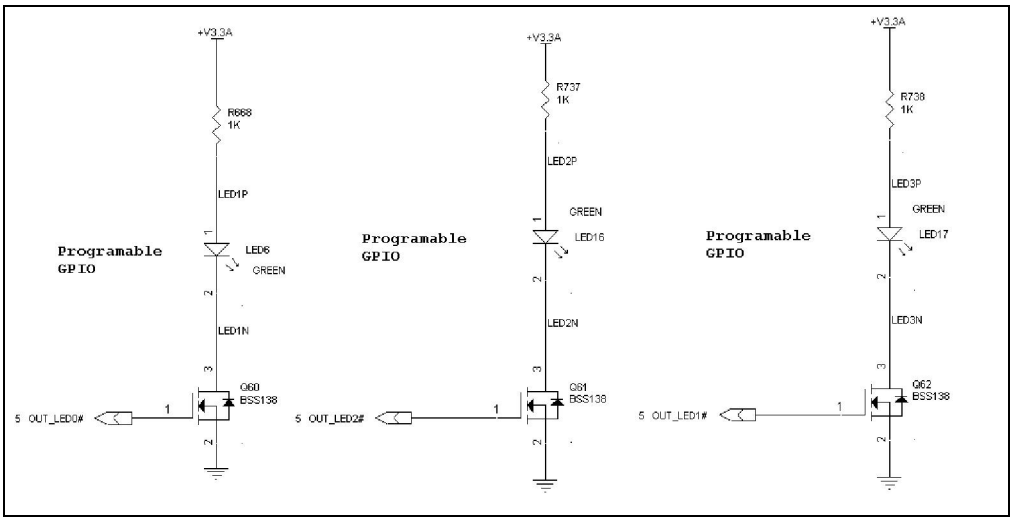


Figure-3 External LEDs and GPIOs schematic

Pin	Name	Pin	Name
1	LED1P (3.3V)	2	LED1N
3	LED2P(3.3V)	4	LED2N
5	LED3P(3.3V)	6	LED3N
7	GPIO	8	GND

Table-5 External LEDs and GPIOs Pins

(3) CN6 clears CMOS

Setting	Function
Close 1-2	Clear CMOS
Open 1-2 (default)	Normal

Table-6 CMOS Setting

(4) CN9 Power Supply Jacket DC out @12V

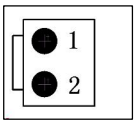


Figure-4 Power Jacket

Pin	Name
1	Vin
2	GND

Table-7 Power Jacket Pins

(5) CN13 DDR2 Memory Slot

- 1.8V
- DDR2
- Support for a maximum of 2GB of DRAM

(6) CN15 CN16 Mini PCI Slots 1&2

- Type III 124 Pin
- 3.3V
- 32bit
- 33Mhz

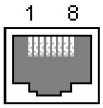
Pin	Name	Pin	Name	Pin	Name
1	TIP	43	RESERVED	83	GROUND
2	RING	44	AD[26]	84	AD[09]
3	8PMJ-3	-	Key	85	AD[08]
4	8PMJ-1	-	-	86	C/BE[0]#
5	8PMJ-6	45	C/BE[3]#	87	AD[07]
6	8PMJ-2	46	AD[24]	88	3.3V
7	8PMJ-7	47	AD[23]	89	3.3V
8	8PMJ-4	48	IDSEL	90	AD[06]
9	8PMJ-8	49	GROUND	91	AD[05]
10	8PMJ-5	50	GROUND	92	AD[04]
11	LED1_GRNP	51	AD[21]	93	RESERVED
12	LED2_YELP	52	AD[22]	94	AD[02]
13	LED1_GRNN	53	AD[19]	95	AD[03]
14	LED2_YELN	54	AD[20]	96	AD[00]
15	CHSGND	55	GROUND	97	5V
16	RESERVED	56	PAR	98	RESERVED_WIP5
17	INTB#	57	AD[17]	99	AD[01]
18	5V	58	AD[18]	100	RESERVED_WIP5
19	3.3V	59	C/BE[2]#	101	GROUND
20	INTA#	60	AD[16]	102	GROUND
21	RESERVED	61	IRDY#	103	AC_SYNC
22	RESERVED	62	Ground	104	M66EN
23	GROUND	63	3.3V	105	AC_SDATA_IN
24	3.3VAUX	64	FRAME#	106	AC_SDATA_OUT
25	CLK	65	CLKRUN#	107	AC_BIT_CLK
26	RST#	66	TRDY#	108	AC_CODEC_ID0#
27	GROUND	67	SERR#	109	AC_CODEC_ID1#
28	3.3V	68	STOP#	110	AC_RESET#
29	REQ#	69	GROUND	111	MOD_AUDIO_MON

30	GNT#	70	3.3V	112	RESERVED
31	3.3V	71	PERR#	113	AUDIO_GND
32	GROUND	72	DEVSEL#	114	GROUND
33	AD[31]	73	C/BE[1]#	115	SYS_AUDIO_OUT
34	PME#	74	GROUND	116	SYS_AUDIO_IN
35	AD[29]	75	AD[14]	117	SYS_AUDIO_OUT GND
36	RESERVED	76	AD[15]	118	SYS_AUDIO_IN GND
37	GROUND	77	GROUND	119	AUDIO_GND
38	AD[30]	78	AD[13]	120	AUDIO_GND
39	AD[27]	79	AD[12]	121	RESERVED
40	3.3V	80	AD[11]	122	MPCIACT#
41	AD[25]	81	AD[10]	123	VCC5VA
42	AD[28]	82	GROUND	124	3.3VAUX

Table-8 Mini PCI Slot Pins

(7) CN17/CN18 10/100M Ethernet Ports 1 & 2

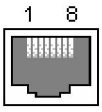
Support for a maximum speed of 100Mbps Ethernet



Pin	Name	Pin	Name
1	TX+	5	NC
2	TX-	6	RX-
3	RX+	7	NC
4	NC	8	NC

Table-9 10/10M Ethernet Port Pins

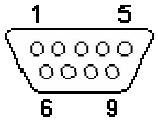
(8) CN19 Giga Ethernet Port



Pin	Name	Pin	Name
1	BI_DA+	5	BI_DC-
2	BI_DA-	6	BI_DB-
3	BI_DB+	7	BI_DD+
4	BI_DC+	8	BI_DD-

Table-10 Giga Ethernet Port Pins

(9) CN20 RS232 Serial Port



Pin	Name	Pin	Name
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Table-11 RS232 Serial Port Pins

(10) CN24 PS/2 Keyboard and Mouse Port

Pin	Name	Pin	Name
1	+5V	4	KBCLK
2	MSCLK	5	KBDATA
3	MSDATA	6	GND

Table-12 PS/2 port Pins

(11) CN25 SATA Power Supply

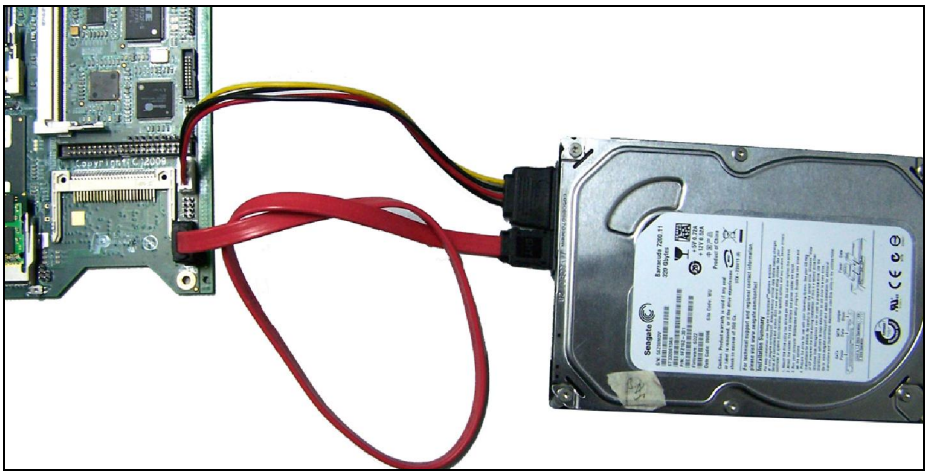


Figure-5 SATA Power Interface

Pin	Name	Pin	Name
1	5v	3	Ground
2	Ground	4	12v

Table-13 SATA Power interface pin

NOTE:

Before using the jacket, make sure the voltage of DC-in jacket (CN35) be 12V +5% below.

(12) CN30 44 Pin IDE Interface

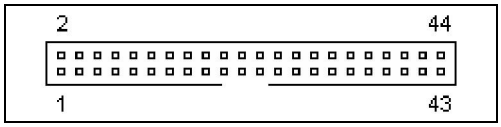
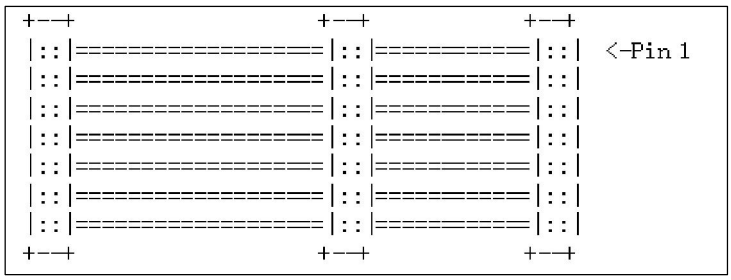


Figure-6 IDE Interface Pins

44 pin (2.0mm pitch) for 2.5" hard disks

Controller Drive 1 or 2 Drive 1 or 2



Pin	Name	Pin	Name
1	/RESET	23	/DIOW
2	GND	24	GND
3	DD7	25	/DIOR
4	DD8	26	GND
5	DD6	27	IORDY
6	DD9	28	SPSYNC:CSEL
7	DD5	29	/DMACK
8	DD10	30	GND
9	DD4	31	INTRQ
10	DD11	32	/IOCS16
11	DD3	33	DA1
12	DD12	34	PDIAG
13	DD2	35	DA0
14	DD13	36	DA2
15	DD1	37	/IDE_CS0
16	DD14	38	/IDE_CS1
17	DD0	39	/ACTIVE
18	DD15	40	GND
19	GND	41	+5V
20	KEY	42	+5V
21	DMARQ	43	GND
22	GND	44	GND

Table-14 IDE Interface Pins

(13) CN32 Compact Flash Interface

Pin	Name	Pin	Name
1	GND	26	/CD1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	/CE1	32	/CE2
8	A10	33	/VS1
9	/OE	34	/IORD
10	A9	35	/IOWR
11	A8	36	/WE
12	A7	37	/READY:/RDY:/IREQ
13	VCC	38	VCC
14	A6	39	CSEL
15	A5	40	/VS2
16	A4	41	RESET
17	A3	42	/WAIT
18	A2	43	/INPACK
19	A1	44	/REG
20	A0	45	/BVD2:SPKR
21	D0	46	/BVD1:STSCHG
22	D1	47	D8
23	D2	48	D9
24	/WP:/IOIS16	49	D10
25	/CD2	50	GND

Table-15 Compact Flash Interface Pins

(14) CN33 SATA Interface

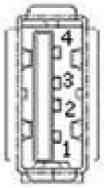
Pin	Name
1	Ground
2	Transmit +
3	Transmit -
4	Ground
5	Receive -
6	Receive +
7	Ground

Table-16 SATA Interface Pins

(15) CN34 USB Port

500 mA Continuous Current per Channel

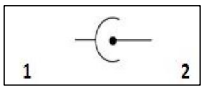
Short-Circuit and Thermal Protection with Over current Logic.



Pin	Name
1	5v
2	Data-
3	Data+
4	Ground

Table-17 USB Interface Pins

(16) CN35 Main Power Jacket DC in @12V



Pin	Name
1	GND
2	Vin

Table-18 Main Power jacket Pins

(17) CN43 LPC Interface

Pin	Name	Pin	Name
1	LPC_CLK	9	AD3
2	SERIRQ	10	+3.3V
3	AD0	11	FRAME#
4	NC	12	GND
5	AD1	13	GND
6	GND	14	NC
7	AD2	15	48MHz_CLK
8	+5V	16	NC

Table-19 LPC Interface Pins

4.3 Jumpers

4.3.1 Lists

Name	Function
JP2	Manual Reset In
JP3	IDE/SATA Configuration

Table-20 Jumpers

4.3.2 Descriptions

JP2 Manual Reset

Setting	Function
Close 1-2	Reset System
Open 1-2 (default)	Normal

Table-21 JP2 Setting

JP3 IDE/SATA Configuration

Default Setting	Function
Close 1-2	CF Master (open it means CF slave)
Close 3-4	IDE Master (open it means IDE slave)
Close 5-6	Disable SATA (default)

Table-22 JP3 Setting

Note:

1. **There is a very important point** that only one device can be allowed to exist in one master (slave) simultaneously. The IDE device should be considered as a SATA hard disk drive/a type II CF card/an IDE hard disk drive.
2. Before installing CF card or IDE hard disk, SATA (close 5-6) should be disabled. If not, system will spend much time to detect IDE devices.

4.4 Indicators of System Status

4.4.1 List

Name	Function
LED6	GPO use
LED17	GPO use
LED16	GPO use
SW1	GPI use

Table-23 Indicators of System Status

4.4.2 Descriptions

What are the status of LEDs when system booting?

(1) All three LEDs will light on after system power-up.

(2) The right LED is off, which means that system is running POST. BIOS startup messages will be displayed on serial console.

(3) Two LEDs on the right side are off, which means that POST is complete. At this time, press F4 to enter BIOS menu to modify the setting.

How to use the status indicator LEDs and Micro switch SW1?

After system boots completely, entering I/O space based address 480H and edit register values as following:

480H+28H

7	6	5	4	3	2	1	0
						Bit2	

Bit2=1 LED6 will be light on

Bit2=0 LED6 will be light off

480H+09H

7	6	5	4	3	2	1	0
						Bit2	

Bit2=1 LED16 will be light on

Bit2=0 LED16 will be light off

480H+08H

7	6	5	4	3	2	1	0
					Bit3		

Bit3=1 LED17 will be light on

Bit3=0 LED17 will be light off

480H+08H

7	6	5	4	3	2	1	0
	Bit7						

When press SW1, Bit7=0

When SW1 be released, Bit7=0 (default)

CN2.7-8pin GPIO

480H+04H

7	6	5	4	3	2	1	0
		Bit6					

Bit6=0, CN2.7 as an output port

Bit6=1, CN2.7 as an input port

480H+08H

7	6	5	4	3	2	1	0
		Bit6					

As output port, set Bit6=1, CN2.7 will put out High level

As output port, set Bit6=0, CN2.7 will put out Low level

As input port, feeding High level to CN2.7, automatically bit6 setting to 1

As input port, feeding Low level to CN2.7, automatically bit6 setting to 0

5. BIOS Setup Utility

5.1 Enter BIOS setup menu

When system adds power up, press F4 on keyboard of remote PC connected IPC100's serial port.

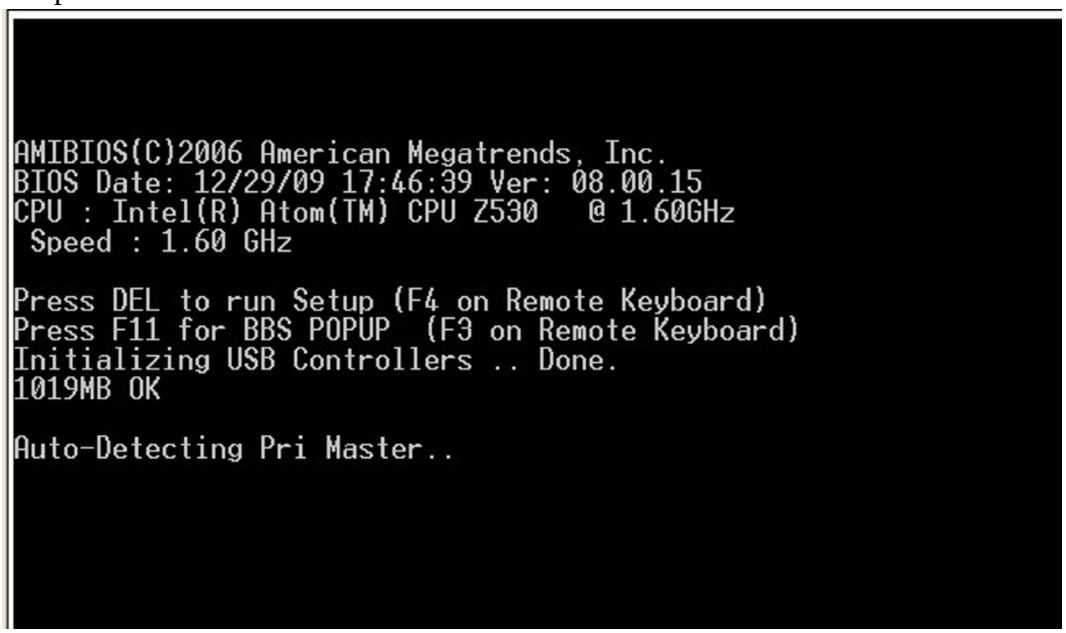


Figure-6 System power up

Notice: ***Press F1 when following picture appeared***

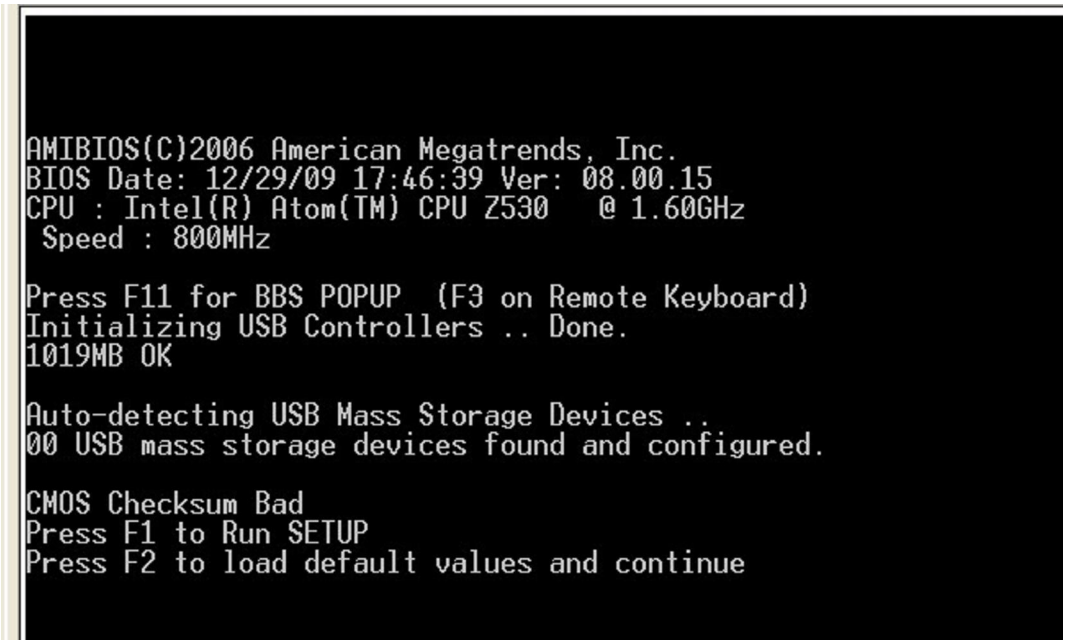


Figure-7 Press F1 or F2

System will show the main menu:

(1) Main menu

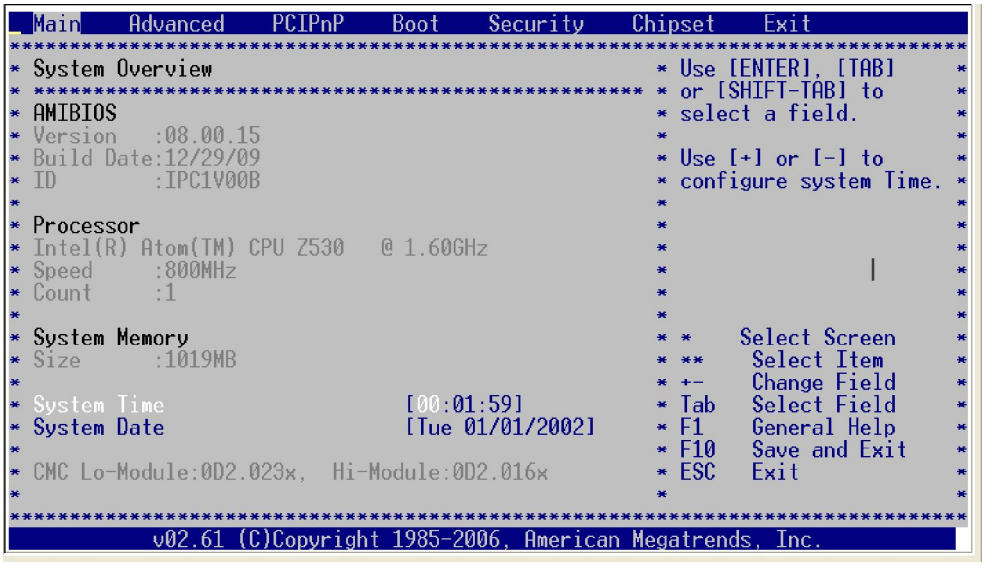


Figure-8 Main menu

(2) Press "↓" key , you will see submenus as following:

Advanced menu

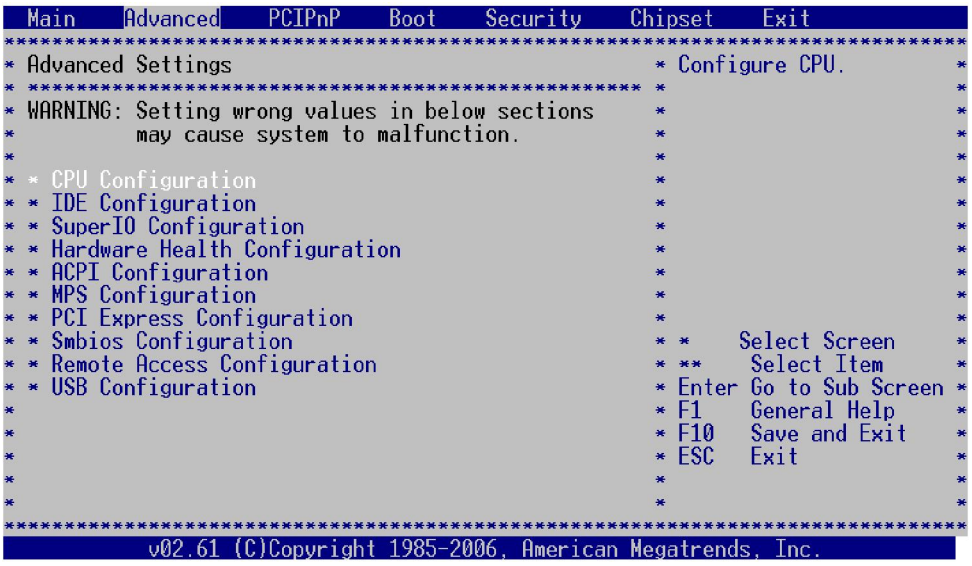


Figure-9 Advanced menu

(3) PCIPnP menu

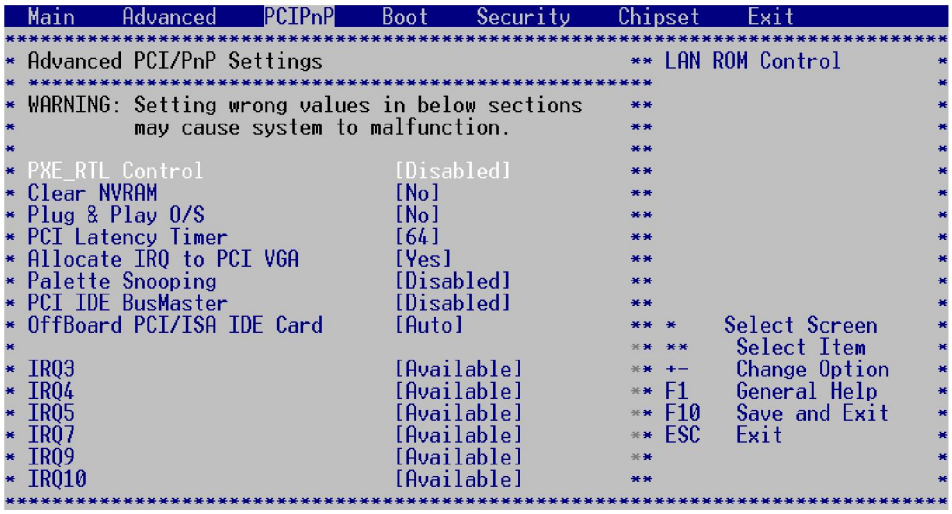


Figure-10 PCIPnP menu

(4) Boot menu

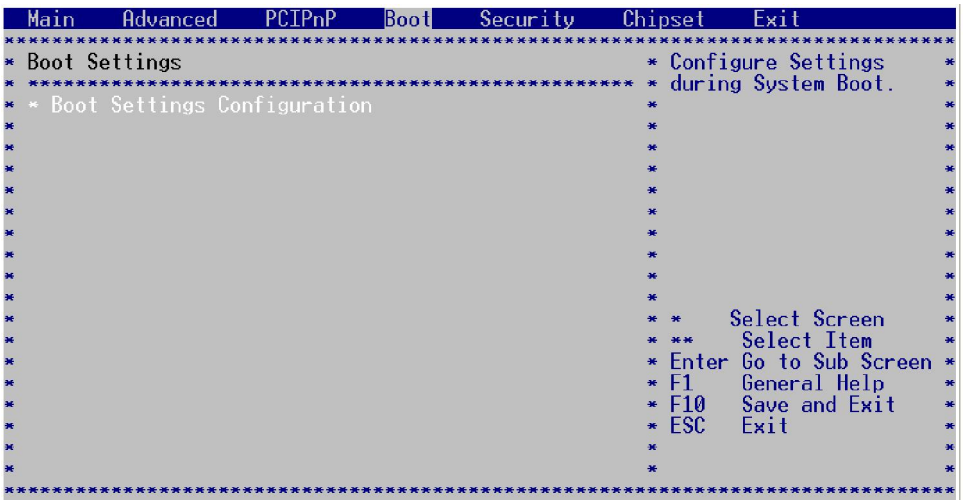


Figure-11 Boot menu

(5) Security menu

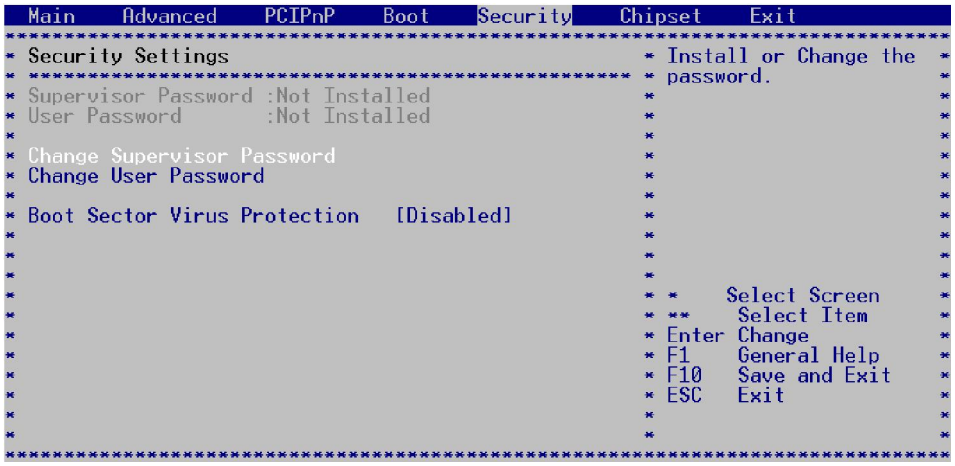


Figure-12 Security menu

(6) Chipset menu

Figure-13 Chipset menu

(7) Exit menu

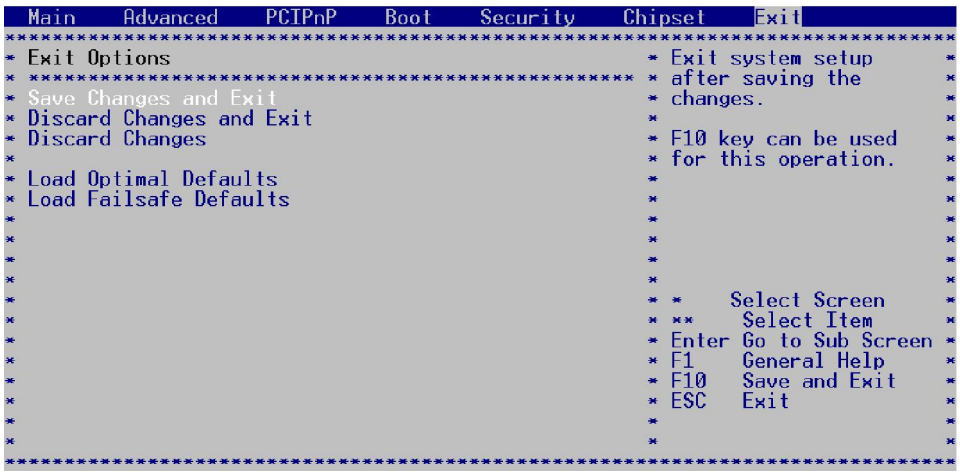


Figure-14 Exit menu

5.2 General BIOS Setup

5.2.1 Loading BIOS default value

(1) Select “Exit” menu, press “↓” key to highlight “LOAD optimal Defaults” item. Then press “ENTER” key.
(2) System will prompt as following, select “OK”.

Figure-15 Load Option Defaults

(3) Press “↑” key to highlight “save changes and exit” item.

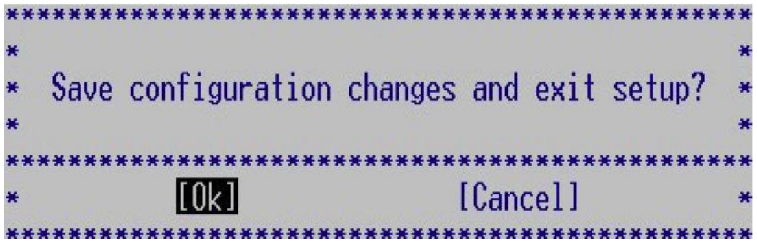


Figure-16 Save and Exit

(4) Select “OK” to confirm the change.

5.2.2 Modify system DATE and TIME

(1) Select “Main” menu, press “↓” key to highlight “system time” or “system date” item, input in a new time or date.
(2) Press “Enter” key to confirm the new time or date.
(3) Select “Exit” menu, and highlight “save changes and exit” item.

Figure-17 Save and Exit

(4) Select “OK” to confirm the change.

5.2.3 Modify serial port baud rate

(1) Select “Advanced” menu and highlight “remote access configuration” item.

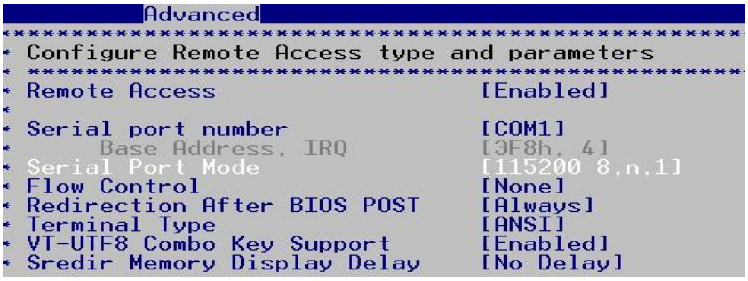


Figure-18 Remote access configuration

(2) System will display following options:

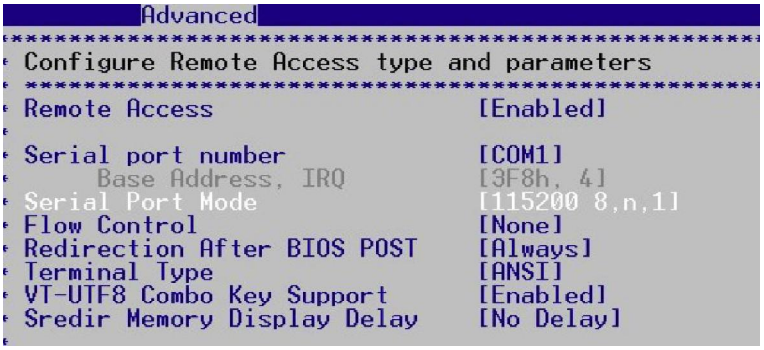


Figure-18 Advanced menu

(3) Highlight “serial port mode” item.

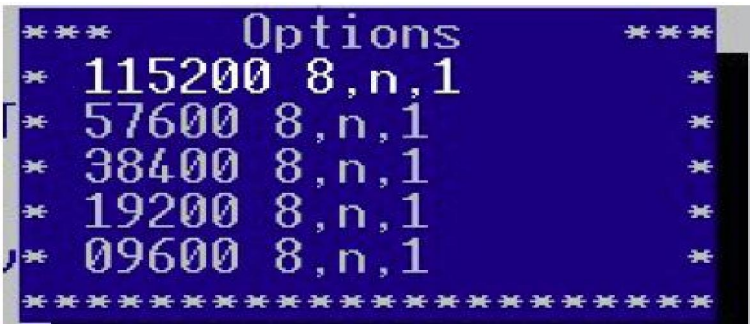


Figure-19 Serial port mode

(4) Press the enter key, and then select an option you want to edit.

(5) Select “Exit” menu, and highlight “save changes and exit” item.

Figure-20 Save and Exit

(6) Select “OK” to confirm the change.

5.2.4 PXE remote boot function setup

(1) Select ” PCIPnP” menu.
(2) Highlight “PXE_RTL control” item.
(3) Press “Enter” key, system will prompt as following.

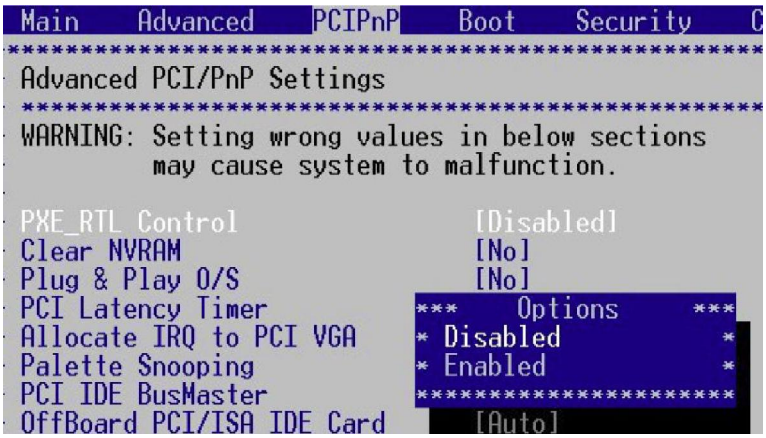


Figure-21 PXE_RTL Control

(4) Select “Enabled” to open PXE function.
(5) Select “Exit” menu and highlight “save changes and exit” item, select “OK” to confirm the change.

5.2.5 PCI slot IRQ setup

IPC100 series board provides two mini PCI slots (3.3v). You can install standard mini PCI card. The IRQ can be relocated as following.
(1) Select “PCIPnP” menu

Figure-21 PCI slot IRQ

(2) Press “↓” key to highlight “PCI Slot-x IRQ preference” item.
Slot-3 is CN16; slot-4 is CN15.

(3) Press ENTER key, system will show a list for IRQs

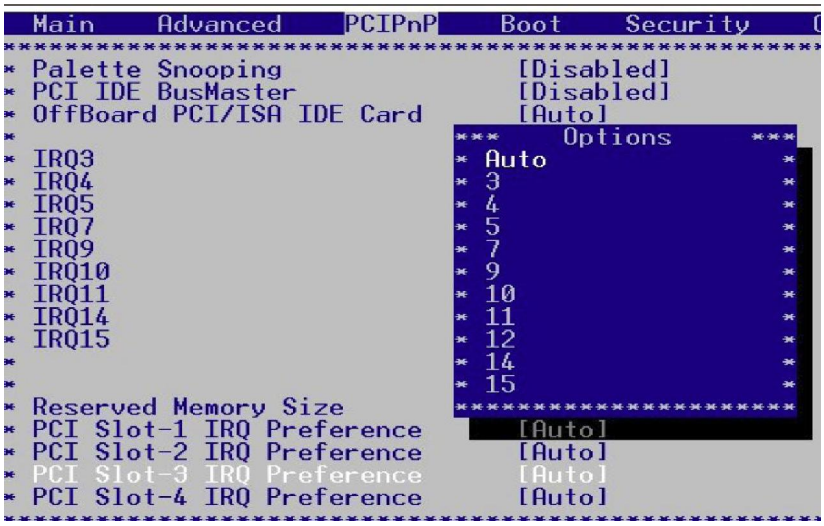


Figure-22 PCI slot IRQ Options

(4) Select new value that you want.

Notice: ***if selecting an IRQ system reserved, the IRQ will fail for PCI device.***

IRQs system reserved:

IRQ3: Serial port

IRQ14: Primary IDE channel

IRQ12: PS/2 mouse

(5) Press the enter key

(6) Select “Exit” menu, and highlight “save changes and exit” item.

Figure-23 Save and Exit

(7) Select “OK” to confirm the change.