User's Manual

3307640

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Safety Instructions

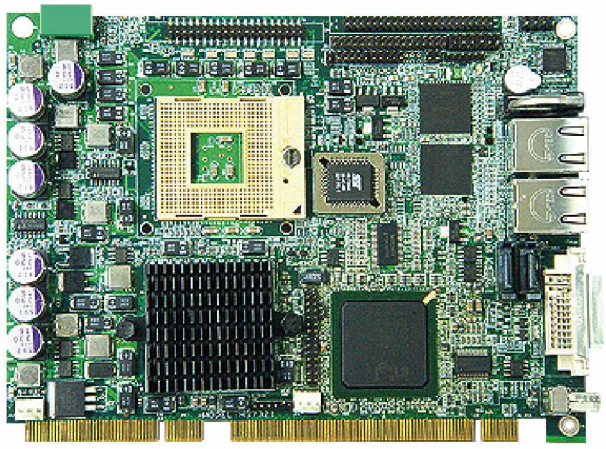
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components. Fasten the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please wear and connect the strap before handle the product to ensure harmlessly discharge any static electricity through the strap.
- Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTIONS.*

Chapter 1

General Description



The 3307640 is an Intel® 945GM GMCH chipset-based board designed. The 3307640 is an ideal all-in-one PICMG1.3 Half-size SBC. Additional features include an enhanced I/O with CF, DVI/CRT/LVDS, dual GB LAN, audio, SATA, COM, and USB2.0 interfaces.

Designed with the Intel® 945GM GMCH, the board supports Intel® Core™ 2 Duo/Core™ Duo/Core™ Solo processor 1.66~2.33GHz.

Its onboard ATA/33/66/100 to IDE drive interface architecture allows the 3307640 to support data transfers of 33, 66 or 100MB/sec. to one IDE drive connection. The Intel® ICH7-M serial ATA controller with two ports supporting transfer rates up to 150MB/sec.

Onboard Intel® 945GM GMCH for CRT display with DVMT or CHRONTEL 7307 for DVI display supporting up to 2048 x 1536. It also supports 18-bit single channel/36-bit dual channel LVDS interface. System memory is also sufficient with the one SO-DDRII socket that can support up to 1GB.

Additional onboard connectors include an advanced USB2.0 port providing faster data transmission. And two external RJ-45 connectors for 10/100/1000 Based Ethernet uses.

To ensure the reliability in an unmanned or standalone system, the watchdog timer (WDT) onboard 3307640 is designed with software that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard WDT will automatically reset the CPU or generate an interrupt to resolve such condition.

1.1 Major Features

The 3307640 comes with the following features:

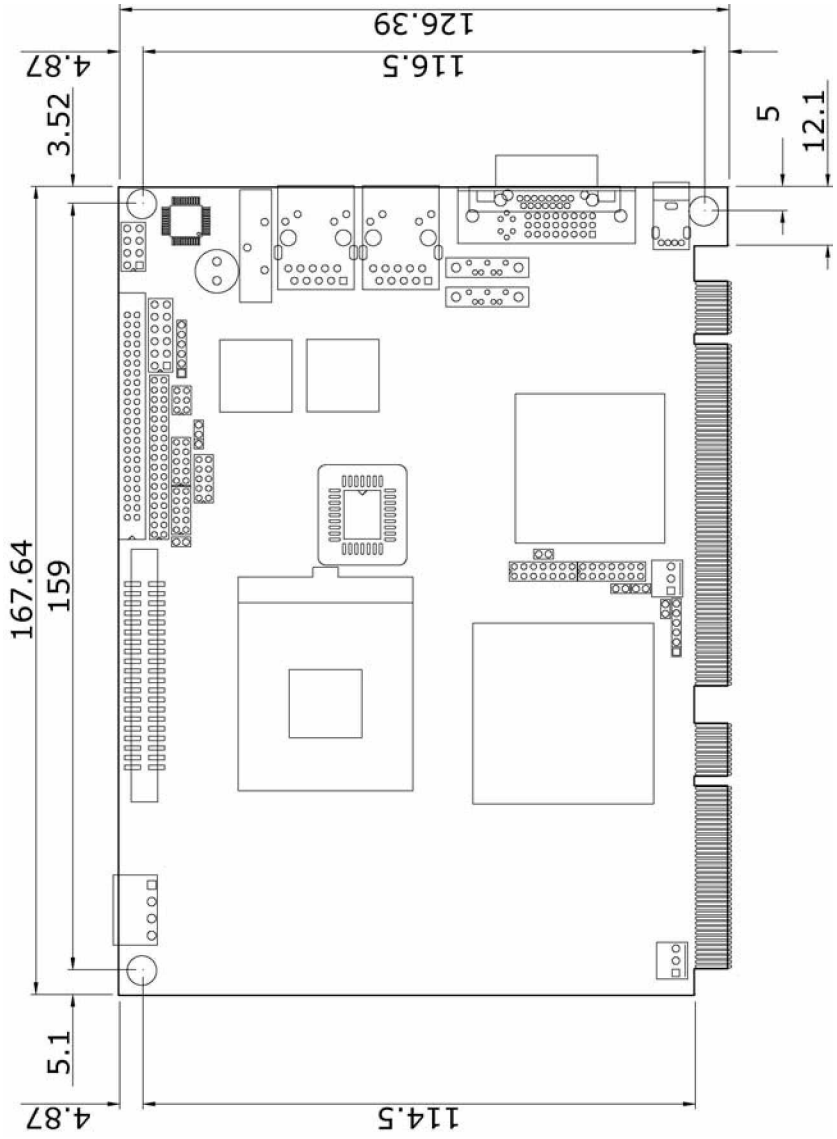
- Intel® Core™ 2 Duo/Core™ Duo/Core™ Solo processor 1.66~2.33GHz
- Supports 533/667MHz FSB
- One SO-DDRII socket with a max. capacity of 1GB
- Intel® 945GM GMCH/ICH7-M chipset
- Winbond W83627EHG super I/O chipset
- Intel® 945GM graphics controller
- 18-bit/36-bit LVDS panel display interface
- Dual Intel® 82573L Gigabit Ethernet controller
- AC97 3D audio controller
- Intel® ICH7-M Serial ATA controller
- Fast PCI ATA/33/66/100 IDE controller
- CompactFlash card adapter, 4 COM, 3 USB2.0
- Single +12V power in
- Hardware Monitor function

1.2 Specifications

- **CPU:** Intel® Core™ 2 Duo/Core™ Duo/Core™ Solo processor 1.66~2.33GHz
- **Bus Interface:** PICMG1.3 Half-size
- **Front Side Bus:** Supports 533/667MHz FSB
- **Memory:** One SO-DDRII socket supporting up to 1GB
- **Chipset:** Intel® 945GM GMCH/ICH7-M
- **I/O Chipset:** Winbond W83627EHG
- **CompactFlash:** One, Type I/II IDE interface adapter
- **PCI Slot:** One, Type III mini PCI slot
- **8-bit I/O:** 8-bit input/output (parallel port)
- **VGA:** Intel® 945GM for CRT display with DVMT or CHRONTEL 7307 for DVI display, supporting up to 2048 x 1536 (DVI and CRT connector is optional)
- **LVDS Panel:** Supports 18-bit single channel/36-bit dual channel LVDS interface

- **Ethernet:** Dual Intel® 82573L 10/100/1000 Based LAN
- **Audio:** AC97 3D audio controller
- **Serial ATA:** Intel® ICH7-M controller and with two ports supporting a transfer rate up to 150MB/sec.
- **IDE:** One 2.0-pitch 44-pin IDE connector
- **FDD:** Supports up to two floppy disk drives
- **Serial Port:** 16C550 UART-compatible RS-232/422/485 x 1 and RS-232 x 3 serial ports with 16-byte FIFO
- **USB:** 3 USB2.0 ports, internal x 2 and external x 1
- **Keyboard/Mouse:** 6-pin header
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **Power In:** Single +12V power in
- **Hardware Monitor:** Winbond W83627EHG
- **Board Size:** 17.66(L) x 12.64(W) cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

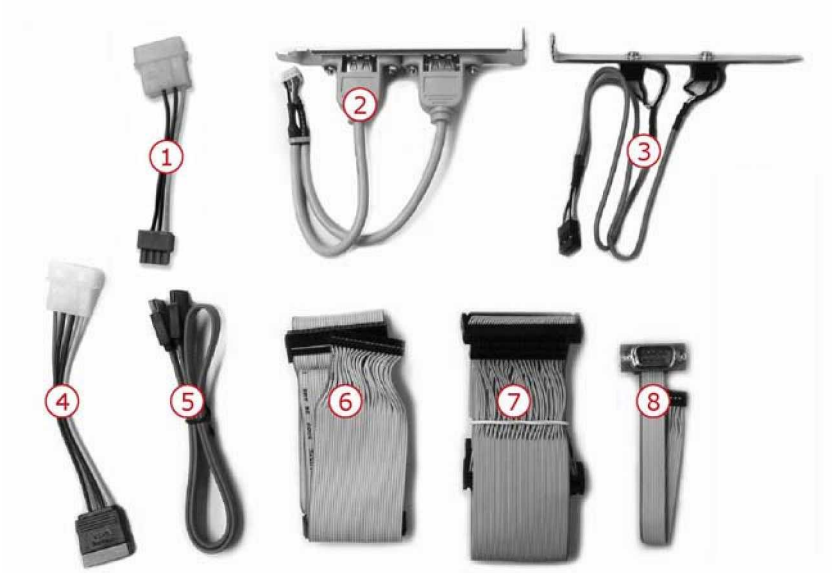
The 3307640 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Examine all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip to ensure that they are firmly seated. The 3307640 delivery package contains the following items:

- 3307640 Board x 1
- Utility CD Disk x 1
- Cables Package x 1
- Jumper Bag x 1
- User's Manual



Cables Package	
NO.	Description
1	4-pin power cable x 1
2	Two USB flat cable with bracket x 1
3	Audio cable x 1
4	SATA power cable x 1
5	SATA cable x 1
6	Floppy flat cable x 1
7	IDE flat cable x 1
8	COM flat cable x 2

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

Chapter 3

Hardware Installation

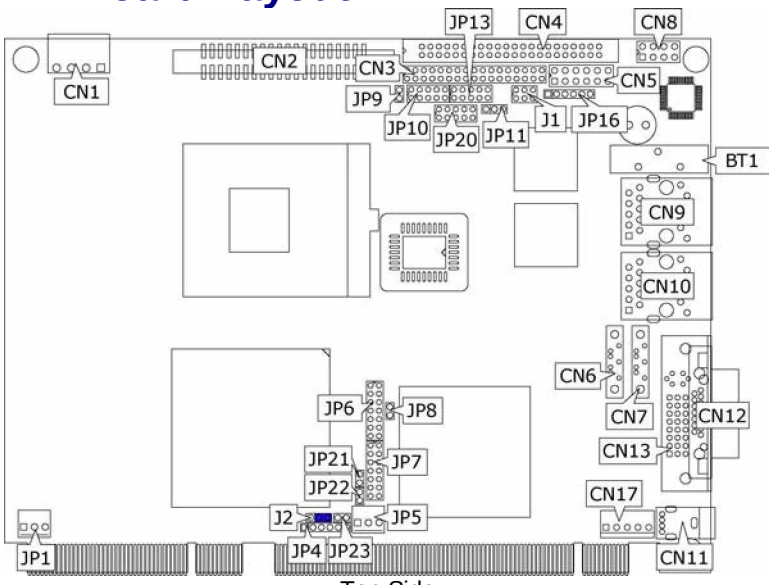
This chapter provides the information on how to install the hardware using the 3307640. This chapter also contains information related to jumper settings of switch, and watchdog timer selection etc.

3.1 Before Installation

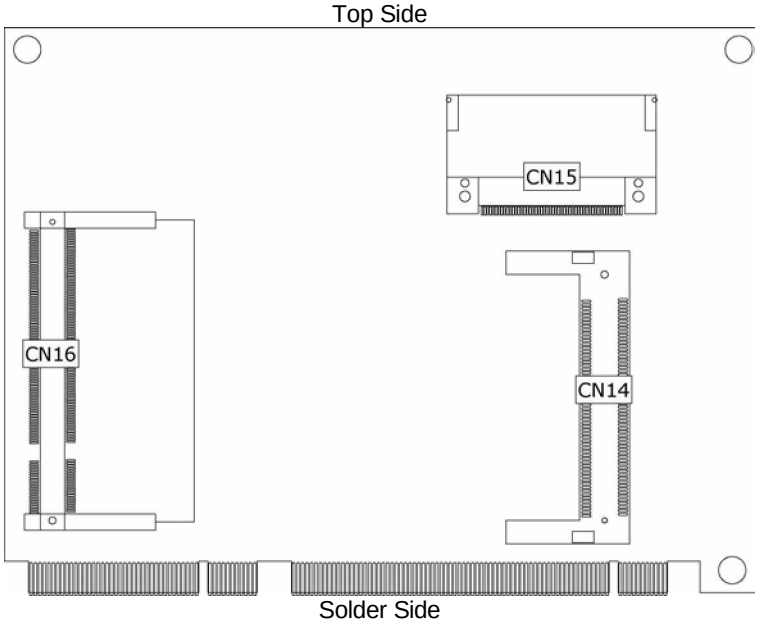
After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper. (Set JP8 open)
2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections on this chapter for the detailed information on the connectors.
3. Keep the manual and diskette in good condition for future reference and use.

3.2 Board Layout



Top Side



Solder Side

3.3 Jumper List

Jumper	Default Setting	Setting	Page
J2	Panel Voltage Select: *+3.3V*	Short 2-3	10
JP8	Clear CMOS: *Normal Operation*	Open	18
JP9	CF Use Master/Slave Select: *Slave*	Open	23
JP20	COM4 Use RS-232 or RS-422/485 Select: *RS-232*	Open	16
JP21	PCI-E x16 Function Enabled/ Disabled Select: *Disabled*	Open	10
JP22		Open	10
JP23	AT/ATX Function Select: *AT*	Short	19

3.4 Connector List

Connector	Definition	Page
CN1	4-pin Power In Connector	19
CN2	COM 1~COM 4 Connector	16
CN3	Floppy Connector	15
CN4	IDE Connector	13
CN5	System Front Panel Control	20
CN6/CN7	Serial ATA Connector	14
CN8	MIC In/Line Out Connector	22
CN9/CN10	RJ-45 Connector	17
CN11	External USB2.0 Port	18
CN12	15-pin CRT Connector	10
CN13	DVI Connector	10
CN14	Mini PCI Slot	24
CN15	CompactFlash Connector	23
CN16	SO-DDRII Socket	10
CN17	5-pin ATX Power In Connector	19
J1	RS-422/485 Connector	16
JP1/JP5	Fan Power In Connector	19
JP4	Inverter Power In Connector	10
JP6/JP7	LVDS Panel Connector	10
JP10	Internal USB2.0 Port	18
JP11	Wake On LAN Connector	17
JP13	8-bit I/O Port	24
JP16	6-pin KB/MS Connector	20

3.5 Configuring the CPU

The 3307640 provides with Intel® Core™ 2 Duo/Core™ Duo/Core™ Solo processor 1.66~2.33GHz. User don't need to adjust the frequently and check speed of processor.

3.6 System Memory

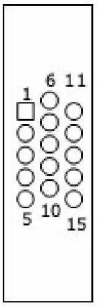
The 3307640 provides one SO-DDRII socket at locations *CN16*. The maximum capacity of the onboard memory is 1GB.

3.7 VGA Controller

The 3307640 provides two connection methods of a VGA device. *CN4A* offers a single standard CRT connector and *JP18/JP19* are the LVDS interface connectors onboard reserved for flat panel installation.

- **CN12: CRT Connector**

PIN	Description	PIN	Description
1	Red	2	Green
3	Blue	4	N/C
5	GND	6	GND
7	GND	8	GND
9	N/C	10	GND
11	N/C	12	SDA
13	HSYNC	14	VSYNC
15	SCL		

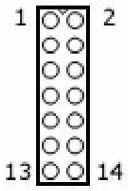


- **JP21/JP22: VGA Use Onboard or Add-on Card Select**

Options	Settings	
	JP21	JP22
Onboard (default)	Open	Open
Add-on Card	Short	Short

- **JP7/JP6: LVDS Interface Connector**

PIN	Description	PIN	Description
1	V_{LCD}	2	V_{LCD}
3	GND	4	GND
5	Y0-/Z0-	6	Y0+/Z0+
7	Y1-/Z1-	8	Y1+/Z1+
9	Y2-/Z2-	10	Y2+/Z2+
11	CLK-	12	CLK+
13	N/C	14	N/C



NOTE: *LVDS cable should be produced very carefully. Y0- & Y0+ have to be fabricated in twister pair (Y1- & Y1+, Y2- & Y2+ and so on) otherwise the signal won't be stable. Please set the proper voltage of your panel using J2 before proceeding on installing it.*

NOTE: *If use JP7 only, it just supports 18-bit single channel LVDS panel; If you want to use 36-bit dual channel LVDS panel, please use JP7 and JP6 combined.*

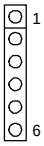
The 3307640 has an onboard jumper that selects the working voltage of the flat panel connected to the system. Jumper *J2* offers two voltage settings for the user.

- **J2: Panel Voltage Select**

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

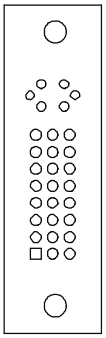
- **JP4: Inverter Power In Connector**

PIN	Description
1	+12V
2	+12V
3	+5V
4	+5V
5	VDDEN
6	GND



z CN13: DVI-I Connector

PIN	Description	PIN	Description
1	- DATA2	2	DATA2
3	GND	4	-DATA4
5	DATA4	6	DDCCLK
7	DDCDATA	8	VSYNC
9	-DATA1	10	DATA1
11	GND	12	-DATA3
13	DATA3	14	VCC5
15	GND	16	HPDET
17	-DATA0	18	DATA0
19	GND	20	-DATA5
21	DATA5	22	GND
23	CLK	24	-CLK
25	RED	26	GREEN
27	BLUE	28	HSYNC
29	GND	30	GND

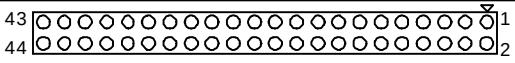


3.8 PCI E-IDE Drive Connector

CN4 is a standard 2.0-pitch 44-pin connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the 3307640. A maximum of two ATA/33/66/100 IDE drives can be connected to the 3307640 via *CN4*.

z CN4: IDE Connector

PIN	Description	PIN	Description
1	IDERST	**2**	GND
3	PDD7	**4**	PDD8
5	PDD6	**6**	PDD9
7	PDD5	**8**	PDD10
9	PDD4	**10**	PDD11
11	PDD3	**12**	PDD12
13	PDD2	**14**	PDD13
15	PDD1	**16**	PDD14
17	PDD0	**18**	PDD15
19	GND	**20**	N/C
21	PDDREQ	**22**	GND
23	IOW#	**24**	GND
25	IOR#	**26**	GND
27	PIORDY	**28**	470Ω with GND
29	PDDACK#	**30**	GND
31	IRQ14	**32**	N/C
33	PDA1	**34**	PD33/66
35	PDA0	**36**	PDA2
37	PDCS1#	**38**	PDCS3#
39	HDD Active	**40**	GND
41	VCC	**42**	VCC
43	GND	**44**	N/C

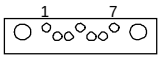


3.9 Serial ATA Connector

You can connect the Serial ATA device that provides you high speeds transfer rates (150MB/sec.). If you wish to use RAID function, please note that these two serial ATA connectors just support RAID0 and only compatible with WIN XP.

z CN6/CN7: Serial ATA Connector

PIN	Description
1	GND
2	SATATXP
3	SATATXN
4	GND
5	SATARXN
6	SATARXP
7	GND

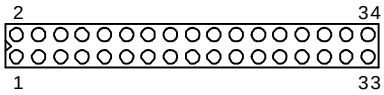


3.10 Floppy Disk Drive Connector

The 3307640 uses a standard 34-pin header connector, *CN3*, for floppy disk drive connection. A total of two FDD drives may be connected to *CN3* at any given time.

z CN3: Floppy Connector

PIN	Description	PIN	Description
1	GND	2	DRVDEN0
3	GND	4	N/C
5	GND	6	DRVDEN1
7	GND	8	INDEX#
9	GND	10	MTR0#
11	GND	12	DS1#
13	GND	14	DS0#
15	GND	16	MTR1#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRAK00#
27	GND	28	WRTPRT#
29	GND	30	RDATA#
31	GND	32	HDSEL#
33	GND	34	DSKCHG#

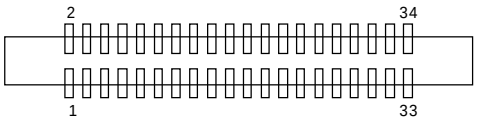


3.11 Serial Port Connectors

The 3307640 offers NS16C550 compatible UARTs with Read/ Receive 16-byte FIFO serial ports and five internal 10-pin headers and two RS-422/485 connectors.

z CN2: COM 1~COM 4 Connector (20x2 Header)

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	+12V
11	DCD	12	DSR
13	RXD	14	RTS
15	TXD	16	CTS
17	DTR	18	RI
19	GND	20	+12V
21	DCD	22	DSR
23	RXD	24	RTS
25	TXD	26	CTS
27	DTR	28	RI
29	GND	30	+12V
31	DCD	32	DSR
33	RXD	34	RTS
35	TXD	36	CTS
37	DTR	38	RI
39	GND	40	+12V



z J1: RS-422/485 Connector (3x2 Header)

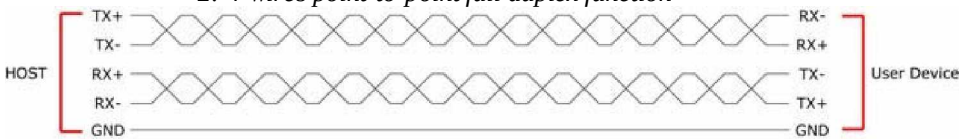
PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	VCC

z JP20: COM 4 use RS-232 or RS-422/485 Select

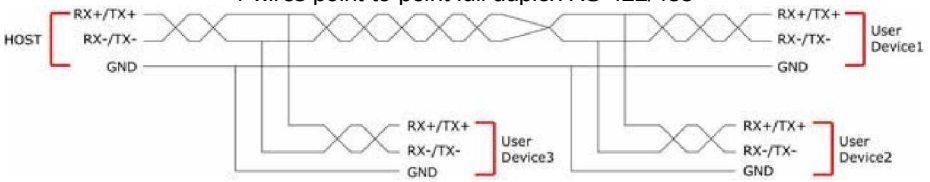
Options	Settings
RS-232 (default)	Open
RS-485 by Auto (*1)	Short 1-2, 3-4, 5-7, 8-10
RS-485 by –RTS (*-1)	Short 1-2, 3-4, 7-9, 8-10
RS-422/485 Full Duplex (*2)	Short 1-2, 3-4, 6-8

NOTE: **1: 2-wires RS-485 function*

**2: 4-wires point-to-point full duplex function*



4-wires point-to-point full duplex RS-422/485



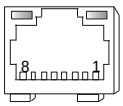
Typical RS-485 2-wires Mutildrop Network

3.12 Ethernet Connector

The 3307640 provides two external RJ-45 interface connectors. Please refer to the following for its pin information.

z CN9/CN10: RJ-45 Connector

PIN	Description
1	TX+
2	TX-
3	RX+
4	R/C GND
5	R/C GND
6	RX-
7	R/C GND
8	R/C GND



z JP11: Wake On LAN

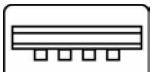
PIN	Description
1	+5V
2	GND
3	Wake On LAN

3.13 USB Connector

The 3307640 provides two 8-pin connectors, at location *JP10/JP11*, for four USB ports, and four external USB2.0 ports at *CN5B/CN6B*.

z CN11: External USB2.0 Connector

PIN	Description
1	VCC
2	USBD2-
3	USBD2+
4	GND



z JP10: Internal USB2.0 Connector

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD0-	4	USBD1-
5	USBD0+	6	USBD1+
7	GND	8	GND

3.14 CMOS Data Clear

The 3307640 has a Clear CMOS jumper on *JP8.*

z JP8: Clear CMOS

Options	Settings
Normal Operation (default)	Open
Clear CMOS	Short

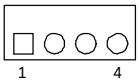
IMPORTANT: *Before you turn on the power of your system, please set JP8 to open for normal operation.*

3.15 Power and Fan Connectors

3307640 provides one 4-pin power in at *CN1*. If use ATX function, the *CN1* MUST BE CUT OFF.

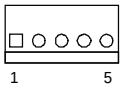
z CN1: 4-pin Power In Connector

PIN	Description
1	+12V
2	GND
3	GND
4	+12V



z CN17: 5-pin ATX Power In Connector

PIN	Description
1	GND
2	PS_ON
3	N/C
4	5VSB
5	VCC

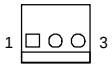


z JP23: AT/ATX Function Select

Options	Settings
AT (default)	Short
ATX	Open

z JP1/JP5: Fan Power In Connector

PIN	Description
1	GND
2	+5V
3	Fan In 1/Fan In 2



Connector *JP1/JP5* onboard 3307640 is a 3-pin fan power output connector.

3.16 Keyboard/Mouse Connectors

The 3307640 offers two possibilities for keyboard/mouse connections. The connection is via *JP16* for an internal 6-pin cable converter to a keyboard/mouse.

z JP16: 6-pin Keyboard/Mouse Connector

PIN	Description
1	Keyboard Data
2	Mouse Data
3	GND
4	+5V
5	Keyboard Clock
6	Mouse Clock

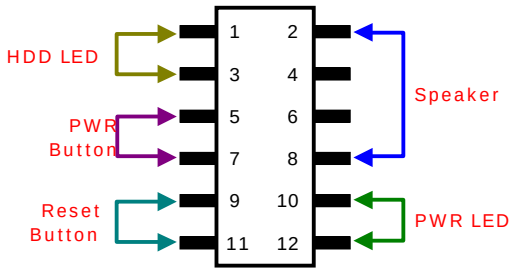
3.17 System Front Panel Control

The 3307640 has front panel control at location *CN5* that indicates the power-on status.

z CN5: System Front Panel Control

PIN	Description	PIN	Description
1	VCC	2	Speaker
3	HDD LED	4	N/C
5	PWR Button	6	GND
7	VCC	8	GND
9	Reset Switch	10	VCC
11	GND	12	PWR LED

Connector CN5 Orientation



3.18 Watchdog Timer

Once the Enable cycle is active a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A system reset signal will restart when such error happens.

The following sample programs show how to enable, disable and refresh the watchdog timer:

```
.286

      .MODEL SMALL
      .DATA                          ;this is data area

x1          db    '-----------------------------------------------------',0ah,0dh,'$'
copyright   db    '|Copyright by Richard | ',0ah,0dh,'$' x2          db    '----------
-------------------------------------------',0ah,0dh,'$'

port      equ       02Eh       ;W83627H Chipset port
datao     equ       02Fh       ;data port

      .CODE

print     macro     buff
          mov       dx,offset buff;
          mov       ah,09h
          int       21h
          endm

begin   proc    near
          mov       ax,@data
          mov       ds,ax
          STI
                                ; W83627H
          mov       dx,port     ; Unlock registor
          mov       al,087H     ;
          out        dx,al
          jmp         $+2
          out       dx,al
          mov       dx,port     ;
          mov       al,07H      ;
          out       dx,al
          jmp       $+2
          mov       dx,datao    ; set device 8
          mov       al,08H      ;
          out       dx,al
          jmp       $+2

          mov       dx,port     ; Watchdog IO function
          mov       al,030H     ; registor
          out       dx,al
          jmp       $+2

          mov       dx,datao    ; set 01h toactivate
          mov       al,01H      ;
          out       dx,al
```

```
                jmp     $+2

                mov     dx,port     ; set CRF5
                mov     al,0f5H     ;
                out     dx,al
                jmp     $+2

                mov     dx,datao    ; set CRF5 to secend
                mov     al,00H      ;
                out     dx,al
                jmp     $+2

                mov     dx,port     ; set CRF6 time
                mov     al,0f6H     ;
                out     dx,al
                jmp     $+2

                mov     dx,datao    ; set CRF6 time to 5 s'
                mov     al,05H      ;
                out     dx,al

                print   x1
                print   copyright
                print   x2
                mov     ah,4ch      ;go back to dos
                int     21h
                .stack
begin   endp
end begin
```

User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H=2sec….FFH=255sec.

3.19 Audio Connectors

The 3307640 has an onboard AC97 3D audio controoler. The following tables list the pin assignments of the Line In/Audio Out connector.

z CN8: MIC In/Line Out Connector

PIN	Description	PIN	Description
1	AOUTL	2	AOUTR
3	GND	4	GND
5	MIC IN	6	N/C
7	GND	8	GND

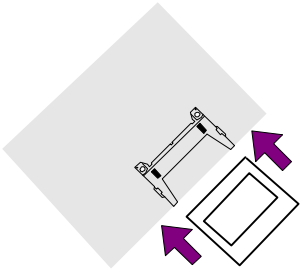
3.20 CompactFlash™ Connector

The 3307640 also offers a Type I/II CompactFlash™ connector which is IDE interface located at the solder side of the board. The designated *CN15* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card.

z CN15: CompactFlash™ Connector

PIN	Description	PIN	Description
1	GND	2	IDE_PDD3
3	IDE_PDD4	4	IDE_PDD5
5	IDE_PDD6	6	IDE_PDD7
7	IDE_PDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	+3.3V	14	GND
15	GND	16	GND
17	GND	18	IDE_PDA2
19	IDE_PDA1	20	IDE_PDA0
21	IDE_PDD0	22	IDE_PDD1
23	IDE_PDD2	24	GND
25	GND	26	GND
27	IDE_PDD11	28	IDE_PDD12
29	IDE_PDD13	30	IDE_PDD14
31	IDE_PDD15	32	IDE_PDCS3#
33	GND	34	IDE_PDIOR#
35	IDE_PDIOW#	36	+3.3V
37	INT_IRQ15	38	+3.3V
39	+3.3V	40	N/C
41	RESET#	42	IDE_PDIORDY
43	CF_PDERQ	44	CF_REGB
45	IDE_ACTP#	46	DETECT
47	IDE_PDD8	48	IDE_PDD9
49	IDE_PDD10	50	GND

Inserting a CompactFlash™ card into the adapter is not a difficult task. The socket and card are both keyed and there is only one direction for the card to be completely inserted. Refer to the diagram on the following page for the traditional way of inserting the card.



z JP9: CF Use Master/Slave Select

Options	Setting
Master	Short
Slave (default)	Open

NOTE: *When use CF card, IDE device function will be disabled.*

3.21 Expansion Slot

The 3307640 offers one Type III mini PCI slot at *CN14*.

3.22 8-bit I/O Function

The 3307640 offers one 8-bit input/output port by parallel port.

z JP13: 8-bit Input/Output

PIN	Description	PIN	Description
1	VCC	**2**	GND
3	GD0	**4**	GD4
5	GD1	**6**	GD5
7	GD2	**8**	GD6
9	GD3	**10**	GD7


```
.286

        .MODEL SMALL
        .DATA                           ;this is data area
port    equ     0378h                   ;print port can be change to 278h

        .CODE

print   macro   buff
        mov     dx, offset buff;
        mov     ah,09h
        int     21h
        endm

delay :
```

```
        push    cx
        mov     cx,0155h
@@:
        jmp     $+2
        push    cx
        mov     cx,0ffffh

wait1:  loop    wait1
        pop     cx
        loop    @b
        pop     cx
        ret


begin   proc    near
        mov     ax,@data
        mov     ds,ax
        STI

        Mov     dx, port
        Mov     al, 80h             out     dx, al
;;-------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call    delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;-------------------
;;-------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
```

```
;;-------------------
;;-------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;-------------------
;;-------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;-------------------
;;-------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;-------------------
```

```
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;flash LED 3 time
        mov     cx, 01h
@@:
        mov     al, 0ffh
        out     dx, al
        call delay
        mov      al,0h
        out      dx, al
        call delay
        loop    @b
ee:

        mov     ah, 4ch             ;go back to dos
        int     21h
        .stack
        begin   endp
        end begin
```

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Chapter 4

AMI BIOS Setup

The 3307640 uses AMI BIOS for the system configuration. The AMI BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options that could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Starting Setup

The AMI BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

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

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

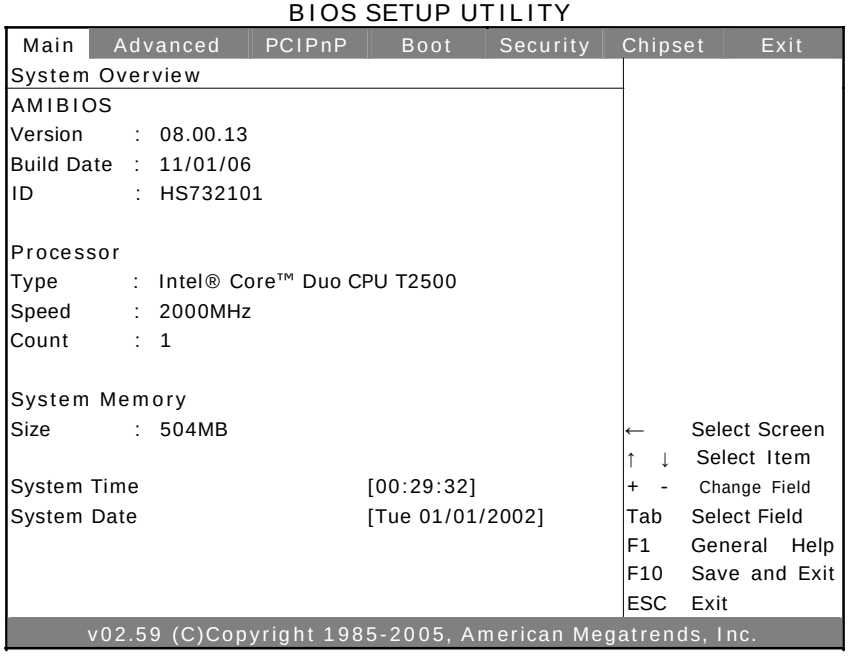
4.2 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the <PageUp> and <PageDown> keys to change entries, and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

↑	Move to previous item
↓	Move to next item
←	Move to previous item
→	Move to previous item
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Decrease the numeric value or make changes
PgDn key	Increase the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	Reserved
F2 key	Change color from total 8 colors. F2 to select color forward
F3 key	F2 to select color backward
F4 key	Reserved
F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.3 Main Menu

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



NOTE: *A brief description of the highlighted choice appears at the bottom of the screen.*

4.4 Advanced Settings

This section allows you to configure your system for the basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced Settings

WARNING: Setting wrong values in below sections may cause system to malfunction.

- ► CPU Configuration
- ► IDE Configuration
- ► Floppy Configuration
- ► SuperIO Configuration
- ► Hardware Health Configuration
- ► ACPI Configuration
- ► APM Configuration
- ► USB Configuration

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Configure advanced CPU settings
Module Version –13.03

Manufacturer	:	Intel		
Brand String	:	Intel® Core™ Duo CPU T2500		
Frequency	:	2.00GHz		
FSB Speed	:	667MHz		
Cache L1	:	64 KB		
Cache L2	:	2048 KB		
Max CPUID Value Limit			[Disabled]	
Execute Disable Bit			[Enabled]	← Select Screen
Core Multi-Processing			[Enabled]	↑ ↓ Select Item
CPU TM function			[Enabled]	+ - Change Field
Venderpool Technology			[Enabled]	Tab Select Field
Digital Thremal Sensor			[Disabled]	F1 General Help
DTS Calibration			[Enabled]	F10 Save and Exit
Intel® SpeedStep™ tech.			[Automatic]	ESC Exit
Intel® C-STATE tech.			[Enabled]	
C1 Enable.			[Standard]	
C2 Enable.			[Standard]	
C3 Enable.			[Disabled]	
C4 Enable.			[Disabled]	
Hard C4 Enable.			[Disabled]	

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

IDE Configuration

ATA/IDE Configuration		[Enhanced]
Configure SATA as		[IDE]
Configure SATA Channels		[Behind PATA]
► Primary IDE Master	:	[Not Detected]
► Primary IDE Slave	:	[Not Detected]
► Third IDE Master	:	[Not Detected]
► Third IDE Slave	:	[Not Detected]
► Fourth IDE Master	:	[Not Detected]
► Fourth IDE Slave	:	[Not Detected]
Hard Disk Write Protect		[Disabled]
IDE Detect Time Out (Sec)		[35]
ATA(PI) 80Pin Cable Detection		[Host & Device]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Floppy Configuration

Floppy A	[1.44 MB 3.5″]
Floppy B	[Disabled]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field F1
	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Configure WIN627EHF Super IO Chipset

OnBoard Floppy Controller	[Enabled]		
Parallel Port Address	[378]		
Parallel Port Mode	[Normal]		
Parallel Port IRQ	[IRQ7]		
Serial Port1 Address	[3F8]		
Serial Port1 IRQ	[4]		
Serial Port2 Address	[2F8]		
Serial Port2 IRQ	[3]		
Serial Port3 Address	[3E8]		
Serial Port3 IRQ	[11]	←	Select Screen
Serial Port4 Address	[2E8]	↑ ↓	Select Item
Serial Port4 IRQ	[10]	+ -	Change Field
		Tab	Select Field F1
			General Help
		F10	Save and Exit
		ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Hardware Health Configuration

Hardware Health Configuration

System Temperature	:		
CPU Temperature	:		
Vcore	:		
3VCC	:	←	Select Screen
+12V	:	↑ ↓	Select Item
+1.5V	:	+ -	Change Field
+1.05V	:	Tab	Select Field
+5V	:	F1	General Help
VSB	:	F10	Save and Exit
		ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

ACPI Settings

ACPI Aware O/S	[Yes]	
► General ACPI Configuration		
► Advanced ACPI Configuration		← Select Screen
► Chipset ACPI Configuration		↑ ↓ Select Item
		+ - Change Field
		Tab Select Field F1
		General Help
		F10 Save and Exit
		ESC Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

General ACPI Configuration

Suspend mode	[Auto]	
Repost video on S3 Resume	[No]	← Select Screen
		↑ ↓ Select Item
		+ - Change Field
		Tab Select Field F1
		General Help
		F10 Save and Exit
		ESC Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced ACPI Configuration

ACPI Version Features	[ACPI v1.0]	
ACPI APIC support	[Enabled]	
AMI 0EMB table	[Enabled]	
Headless mode	[Disabled]	
		← Select Screen
		↑ ↓ Select Item
		+ - Change Field
		Tab Select Field F1
		General Help
		F10 Save and Exit
		ESC Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

South Bridge ACPI Configuration		
Energy Lake Feature	[Disabled]	
APIC ACPI SCI IRQ	[Disabled]	← Select Screen
USB Device Wakeup From S3/S4	[Disabled]	↑ ↓ Select Item
		+ - Change Field
		Tab Select Field F1
		General Help
		F10 Save and Exit
		ESC Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

APM Configuration		
Power Management/APM	[Enabled]	
Video Power Down Mode	[Disabled]	
Hard Disk Power Down Mode	[Disabled]	
Suspend Time Out	[Disabled]	
Throttle Slow Clock Ratio	[50%]	
Keyboard & PS/2 Mouse	[MONITOR]	
Power Button Mode	[On/Off]	
Advanced Resume Events Controls		
Resume On Ring	[Disabled]	
Resume On LAN	[Disabled]	
Resume On PME#	[Disabled]	← Select Screen
Resume On RTC Alarm	[Disabled]	↑ ↓ Select Item
		+ - Change Field
		Tab Select Field F1
		General Help
		F10 Save and Exit
		ESC Exit

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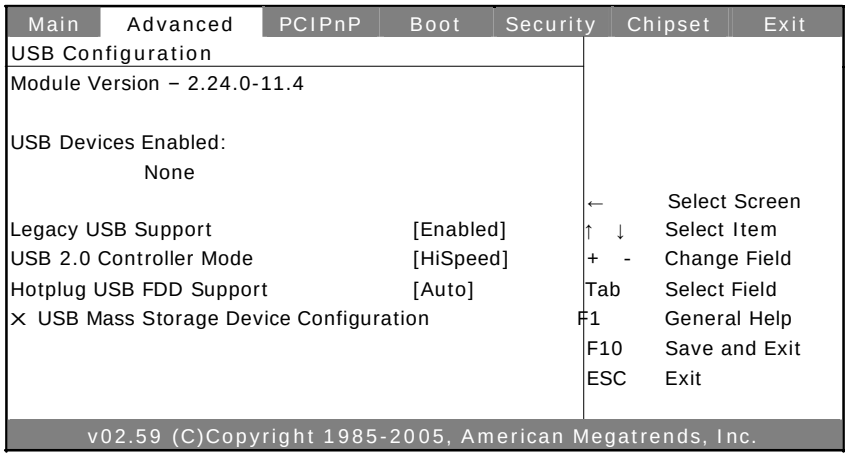
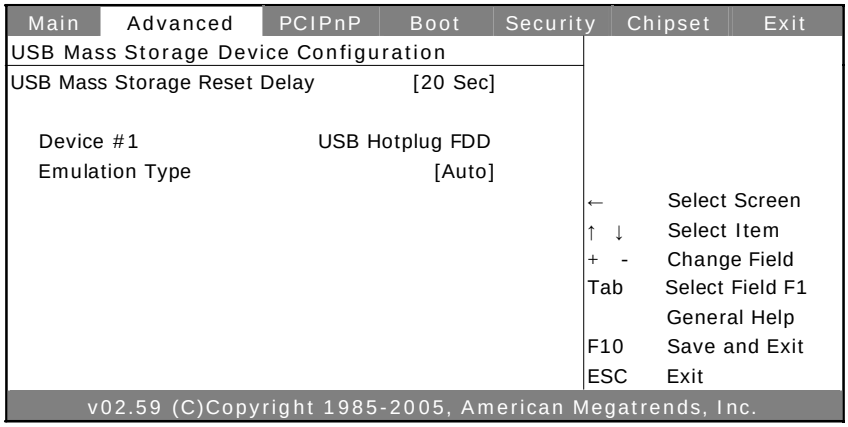
BIOS SETUP UTILITY



BIOS SETUP UTILITY



4.5 Advanced PCI/PnP Settings

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

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced PCI/PnP Settings		
WARNING: Setting wrong values in below sections may cause system to malfunction.		
Clean NVRAM	[No]	
Plug & Play O/S	[No]	
PCI Latency Timer	[64]	
Allocate IRQ to PCI VGA	[Yes]	
Palette Snooping	[Disabled]	
PCI IDE BusMaster	[Disabled]	
Offboard PCI/ISA IDE Card	[Auto]	
IRQ3	[Available]	
IRQ4	[Available]	
IRQ5	[Available]	
IRQ7	[Available]	
IRQ9	[Available]	
IRQ10	[Available]	
IRQ11	[Available]	
IRQ14	[Available]	
IRQ15	[Available]	
DMA Channel 0	[Available]	
DMA Channel 1	[Available]	← Select Screen
DMA Channel 3	[Available]	↑ ↓ Select Item
DMA Channel 5	[Available]	+ - Change Field
DMA Channel 6	[Available]	Tab Select Field
DMA Channel 7	[Available]	F1 General Help
		F10 Save and Exit
Reserved Memory Size	[Disabled]	ESC Exit

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4.6 Boot Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Boot Settings

► Boot Settings Configuration

► Boot Device Priority
► Removable Drivers

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field F1
	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Boot Settings Configuration

Quick Boot	[Enabled]
AddOn ROM Display Mode	[Force BIOS]
Bootup Nom-Lock	[On]
PS/2 Mouse Support	[Auto]
Wait For 'F1' If Error	[Enabled]
Hit 'DEL' Message Display	[Enabled]
Interrupt 19 Capture	[Disabled]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Boot Device Priority

1st Boot Device	[USB:USB Hotplug FD]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field F1
	General Help
F10	Save and Exit
ESC	Exit

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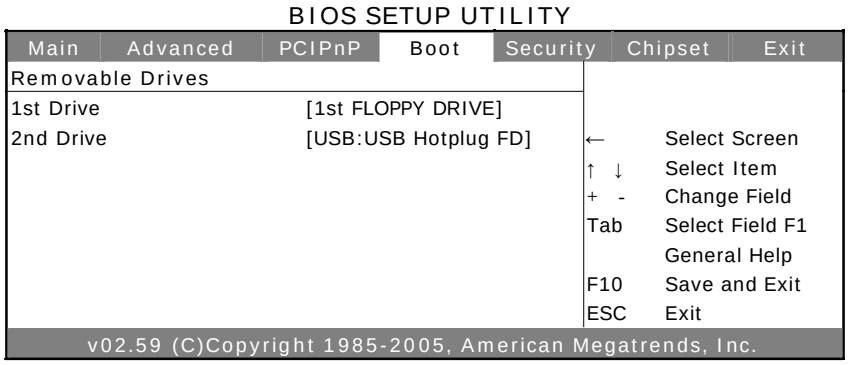
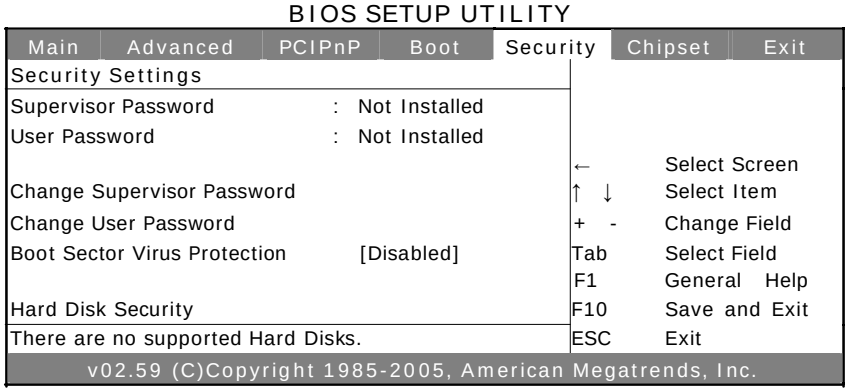


4.7 Security Settings



4.8 Advanced Chipset Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced Chipset Settings

WARNING: Setting wrong values in below sections may cause system to malfunction.

► North Bridge Chipset Configuration
► South Bridge Chipset Configuration

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field F1
	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

North Bridge Chipset Configuration

DRAM Frequency	[Auto]
Configure DRAM Timing by SPD	[Enabled]
Memory Hole	[Disabled]
Boots Graphic Adapter Priority	[PEG/PCI]
Internal Graphics Mode Select	[Enabled, 8MB]
PEG Port Configuration	
PEG Port	[Auto]
PEG Force x1	[Disabled]
Chipset Thermal Throttling	[Disabled]
DT in SPD	[Disabled]
TS on DIMM	[Disabled]

► Video Function Configuration

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Video Function Configuration

DVMT Mode Select	[DVMT Mode]
DVMT/FIXED Memory	[128MB]
Boot Display Device	[CRT]
Flat Panel Type	[800x600LVDS]
Local Flat Panel Scaling	[Auto]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field F1
	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Sorth Bridge Chipset Configuration

USB Function	[4 USB Ports]
USB 2.0 Controller	[Enabled]
Audio Controller	[AC'97 Audio Only]
PRO-NIC Controller	[Disabled]
SMBUS Controller	[Enabled]
Reserved Page Route	[LPC]
SLP_S4# Min. Assertion Width	[1 to 2 seconds]
Restore on AC Power Loss	[Last State]
PCIE Ports Configuration	
ONBOARD LAN 1	[Auto]
ONBOARD LAN 2	[Auto]
PCIE SLOT 1	[Auto]
ASF Support	[Enabled]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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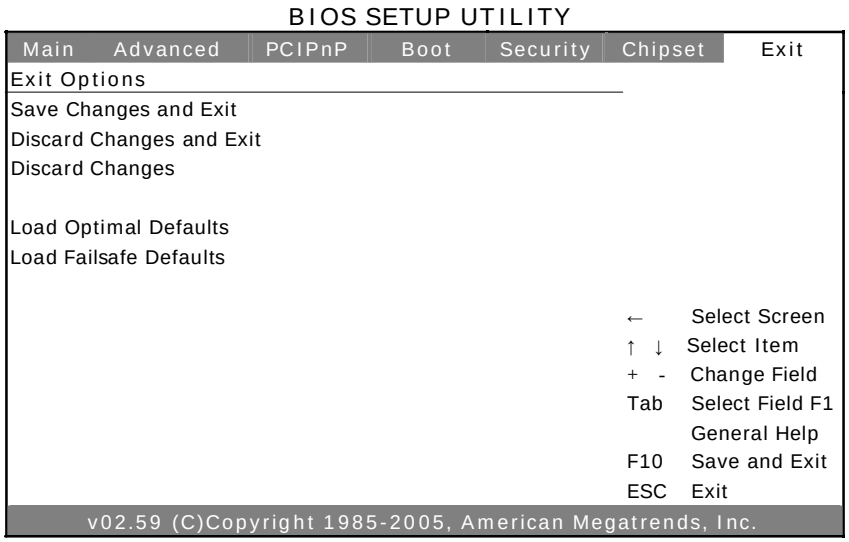
4.9 Exit Options



Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

Global American Inc.

Address: 17 Hampshire Drive
Hudson, NH 03051

TEL: Toll Free (U.S. Only) 800-833-8999
(603)886-3900

FAX: (603)886-4545

Website: http://www.globalamericaninc.com

E-Mail: salesinfo@globalamericaninc.com