

FabiaTech Corporation

IPC Solution

Website: <http://www.fabiatech.com>

Email: [support@fabiatech.com](mailto:support@fabiatech.com)

**ISA CPU Card**  
**Low Power Series**  
**FB2606 User's Manual**

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- ❑ Description of you peripheral attachments
- ❑ Description of you software (operating system, version, application software, etc.) and BIOS configuration
- ❑ Description of the symptoms (Extract wording any message)

For updated BIOS, drivers, manuals, or product information, please visit us at [www.fabiotech.com](http://www.fabiotech.com)

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## Chapter 1 Introducing the FB2606 CPU Board

### Overview

The FB2606 is Intel® Atom™ N270 low power all-in-one ISA CPU card. This user's manual provides information on the physical features, installation, and BIOS setup of the FB2606.

Built to unleash the total potential of the Intel® Atom™ N270 Processor, Able to support 1.6 GHz CPU, this system supports one 10/100/1000M Base-TX LAN port, DDR2 SDRAM up to 2GB and an onboard VGA port up to 8MB share memory that can support CRT/LVDS LCD, HD Audio function, TTL I/O, Compact Flash socket and four USB2.0 ports.

Each FB2606 has two ports for I/O communications. One RS-232C and one RS-232C/422/485 ports are available. There is also a watchdog timer that can be configured from software to automatically reset the system.

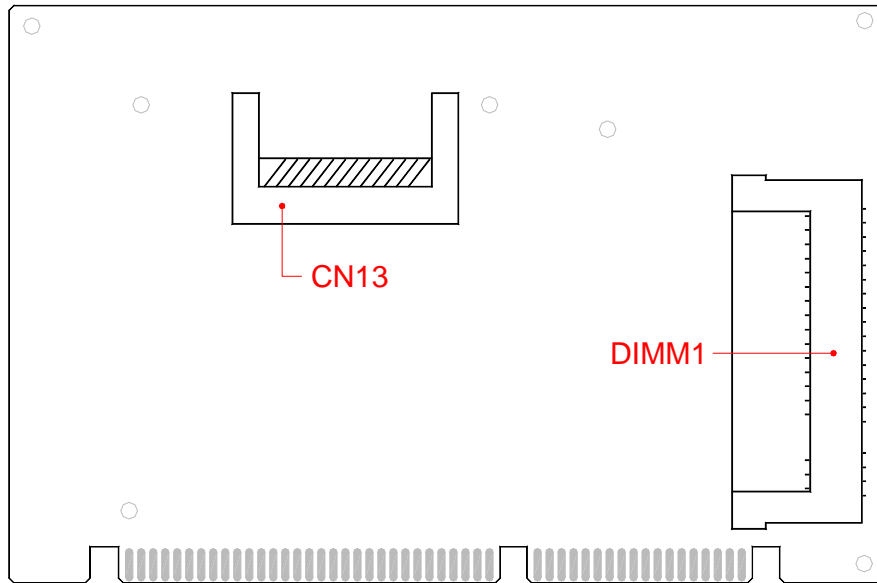
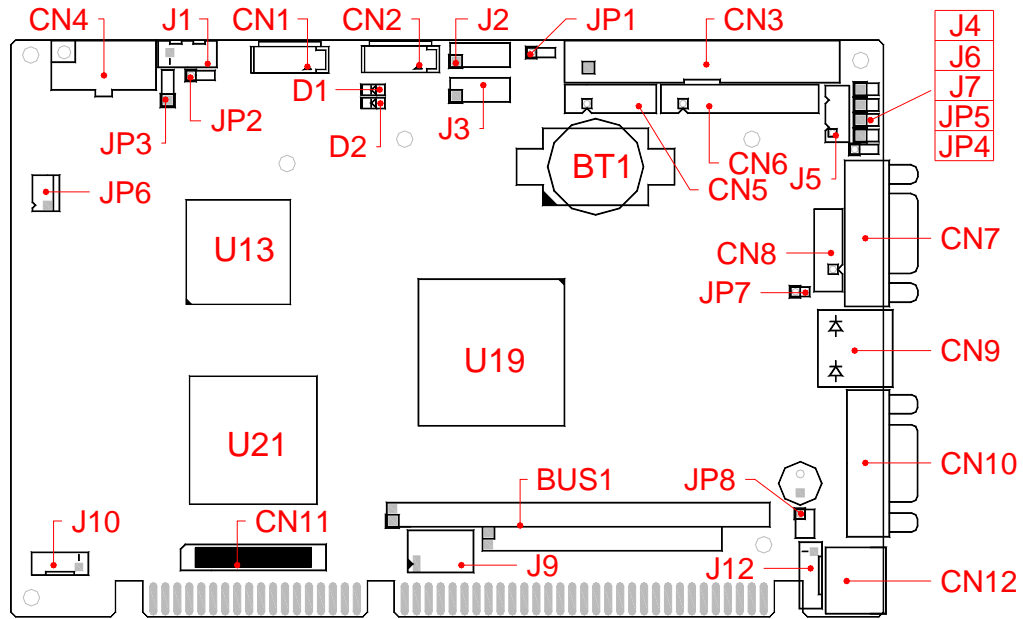
The FB2606 is perfect for POS and POI applications, network systems, panel / MMI's, order entry kiosks and test equipment. The Compact size is only 185X122 (mm).

## Series Comparison Table

Model	FB2606
Processor	Intel® Atom™ N270 1.6GHZ
<i>N+S-Chipset</i>	Intel 945GSE+ 82801GBM(ICH7M)
<i>Memory</i> <i>1*200 Pin-DIMM (Max.)</i>	<i>DDR2 400/533</i> <i>2GB</i>
<i>CRT VGA/LVDS LCD</i>	<i>Yes</i>
<i>Watchdog Timer</i>	<i>Yes</i>
<i>Multi I/O Port</i>	<i>One RS232 &amp;</i> <i>One RS232/RS422/RS485</i>
<i>Digital IO</i>	<i>4-In/4-Out</i>
<i>SATA Port</i>	<i>Two</i>
<i>Compact Flash Socket</i>	<i>One</i>
<i>USB 2.0 Port</i>	<i>Four</i>
<i>Audio*</i>	<i>Line -Out And MIC-In</i>
<i>RJ45 LAN port</i> <i>(100/1000Mbps)</i>	<i>One Realtek RTL8111C</i>
<i>Dimensions (Unit: mm)</i>	<i>185(D) x 122(W)</i>

\* Audio Function is optional.

# Layout



## Specifications

- Support Intel® Atom™ N270 1.6GHZ Low Power Processor
- Intel 945GSE+ICH7M and Internal L2 Cache 512k inside CPUs
- One 200-pin So-DIMM Socket for up to 2GB DDR2 400/533
- Supports two SATA interface, and one IDE Channel supports Ultra ATA-33/66/100 for Compact Flash.
- Supports VGA/VLDS LCD with 8MB share memory and Intel® DVMT.
- One RS-232 and one RS-232/RS-422/RS-485 ports and one parallel port.
- PS/2 compatible keyboard and mouse interface and four USB 2.0 ports.
- Provides HD audio function.
- Eight-line TTL I/O, On-board buzzer, and LED indicator.
- Support one Realtek RTL8111C 100/1000 base-TX with RJ45 connectors.
- On-board buzzer and LED indicator
- Software programmable watchdog timer.
- Supports AT and ATX mode function.
- Power requires +5V/5.4A Max. (Base On 1.6GHz CPU), +12V/0.25A (Only For FAN).
- Compact size, 185 mm x 122 mm.

## Packing List

Upon receiving the package, verify the following things. Should any of the mentioned happens, contact us for immediate service.

- Unpack and inspect the FB2606 package for possible damage that may occur during the delivery process.
- Verify the accessories in the package according to the packing list and see if there is anything missing or incorrect package is included.
- If the cable(s) you use to install the FB2606 is not supplied from us, please make sure the specification of the cable(s) is compatible with the FB2606 system board.

**Note:** after you install the FB2606, it is recommended that you keep the diskette or CD that contains drivers and document files, document copies, and unused cables in the carton for future use.

The following lists the accessories that may be included in your FB2606 package. Some accessories are optional items that are only shipped upon order.

- One FB2606 system board.
- One SATA hard disk drive interface cable.
- One serial port and parallel port interface cable with bracket.
- One dual USB adapter cable with bracket.
- One compact disc containing manual file in PDF format and necessary drivers and utilities.

Optional:

- Y-type keyboard and mouse port adapter cables.
- FB4706 Audio adapter board with cables.



## Chapter 2 Hardware Installation

To set up a FB2606 system board, complete the description Chapter 2 and Chapter 3.

This chapter introduces the system board connectors, jumper settings and then guides you to apply them for field application.

### Before Installation

Before you install the system board, make sure you follow the following descriptions.

1. Before removing the board from its anti-static bag, wear an anti-static strap to prevent the generation of Electricity Static Discharge (ESD). The ESD may be created from human body that touches the board. It may do damage to the board circuit.
2. Install or unplug any connector, module, or add-on card, be sure that the power is disconnected from the system board. If not, this may damage the system board components, module, or the add-on-card.
3. Installing a heat sink and cooling fan is necessary for heat dissipation from your CPU. If heat sink or cooling fan is not mounted, this may cause the CPU fail due to over-heating problem.
4. When you connect the connectors and memory modules, be careful with the pin orientations.

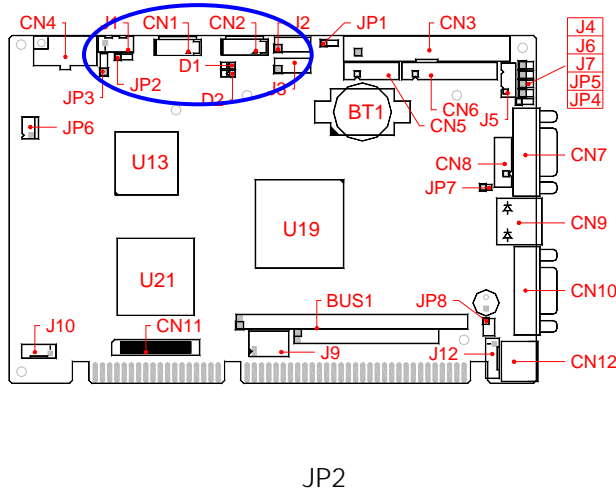
## Hardware Features

The following lists the connectors and jumpers to install the FB2606.

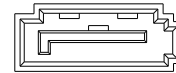
Item	Description
<a href="#">CN1_JP2</a>	SATA DOM Connector/ SATA DOM power source select Header(3 pin 2.0mm)
<a href="#">CN2</a>	SATA connector for SATA HDD
<a href="#">CN3</a>	IDE Connector (IDC-2*20 pin 2.54mm)
<a href="#">CN4</a>	Mini-ATX power connector (ATX 2*5 pin )
<a href="#">CN5</a>	HD Audio Connector (IDC-2*6 pin 2.0mm )
<a href="#">FB4706</a>	HD Audio daughter board (Optional)
<a href="#">CN6</a>	LPT port connector (IDC-2*13 pin 2.0mm)
<a href="#">CN7</a>	COM1-RS232 port (DB9 )
<a href="#">CN8_JP8</a>	COM2-RS-232/422/485 port (IDC-2*5 pin 2.0mm), and RS232/RS-422/RS-485 Select Header.
<a href="#">CN9</a>	LAN connector (RJ45 )
<a href="#">CN10</a>	VGA Connector (DB-15)
<a href="#">CN11_J10</a>	LVDS LCD Connector (DF13-30-pin) /Power Connector for LVDS LCD inverter board(JST-5 pin)
<a href="#">CN12</a>	PS-2 Keyboard and Mouse connector (MiniDin)
<a href="#">J12</a>	Keyboard and Mouse connector (JST-6 pin 2.0mm)
<a href="#">CN13_JP1</a>	Compact Flash Socket, CF Master/Slave select header (3 pin 2.0mm)
<a href="#">J1_JP3_JP5</a>	AT/ATX Power Supply Select header (JST-4 pin 2.5mm/ 3 pin 2.54mm /2 pin 2.54mm)
<a href="#">J2_J3</a>	USB #1/#2/#3/#4 ports connector header (2*5 pin 2.54mm)
<a href="#">J4</a>	ATX PWR-SW header (2 pin 2.54mm )
<a href="#">J5</a>	TTL I/O connector (JST- 2*5 pin 2.0mm )
<a href="#">J6</a>	Reset header (2-pin 2.54mm)
<a href="#">J7</a>	Clear CMOS data header (2-pin 2.54mm)
<a href="#">JP6</a>	case/CPU cooling fan header (3-pin 2.54mm)
<a href="#">JP7</a>	RS485 Terminal select header (2-pin 2.0mm)
<a href="#">BZ1</a>	On board Buzzer
<a href="#">DIMM1</a>	DDR2 SDRAM So-DIMM Socket (200-pin)
<a href="#">LED-D1</a>	SATA/PATA/CF LED indicator
<a href="#">LED-D2</a>	Power and watchdog LED indicator
<a href="#">BUS1</a>	PC/104 Bus

□ **CN1/JP2 & CN2: Serial ATA hard Disk Connector**

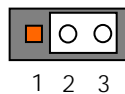
This CN1 & CN2 connector is for SATA hard disk Use the SATA cables to SATA hard disk drives or USE the SATA DOM to CN1. The JP2 is select +3.3 voltages to SATA DOM of CN1, if necessary use the SATA DOM.



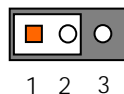
SATA – Serial ATA connector



Pin	Description	Note
1	Ground	**: If CN1 use SATA DOM and no useful external power source, you can use JP2 select internal voltage to SATA DOM.
2	TX-DP	
3	TX-DN	
4	Ground	
5	RX-DN	
6	RX-DP	
7	Ground/**+3.3V	



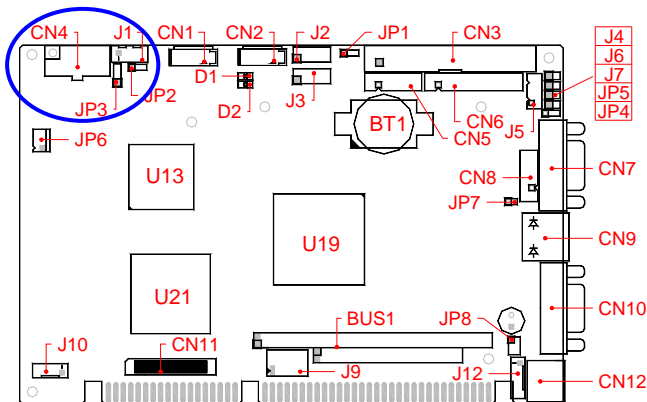
Normal for SATA HDD  
Default



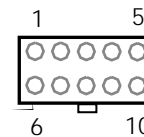
Internal Voltage 3.3 V  
for SATA DOM

□ **CN4: ATX Power Connector**

CN4 is the power connector for FB2606 is used with **stand-alone** applications.



CN4

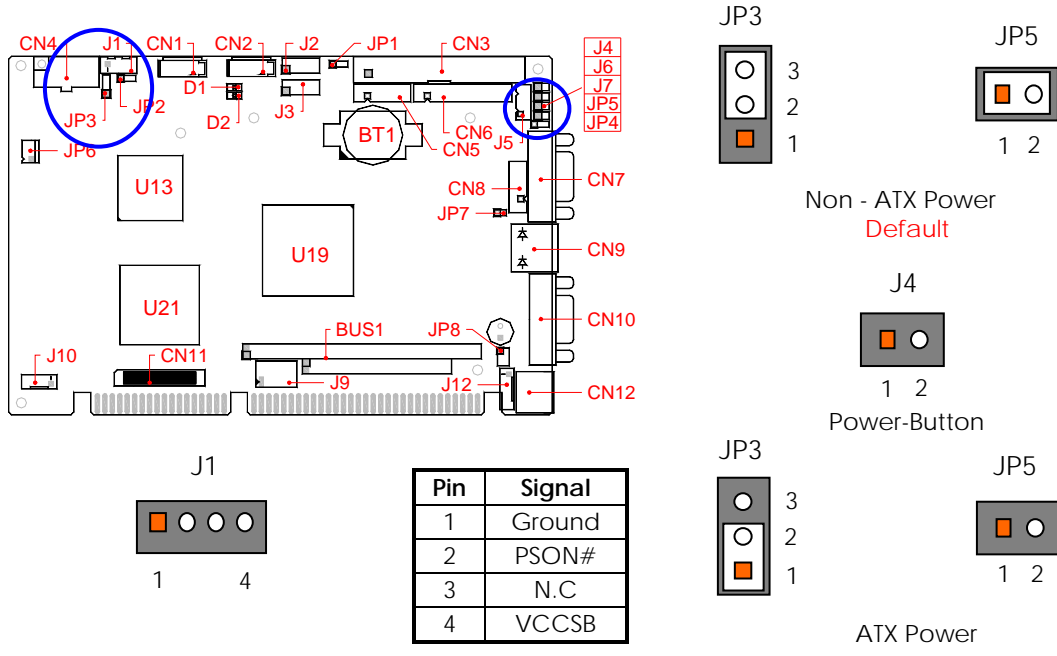


**Note:** This power connector is ideal for standalone applications.

Pin	Signal	Pin	Signal
1	PS_ON	6	5V Standby
2	Ground	7	+5V
3	Ground	8	+5V
4	+12V	9	-12v
5	+3.3V	10	Ground

□ **J1, J4, JP3 & JP5: Soft Start Connector (for ATX Power Supply Only)**

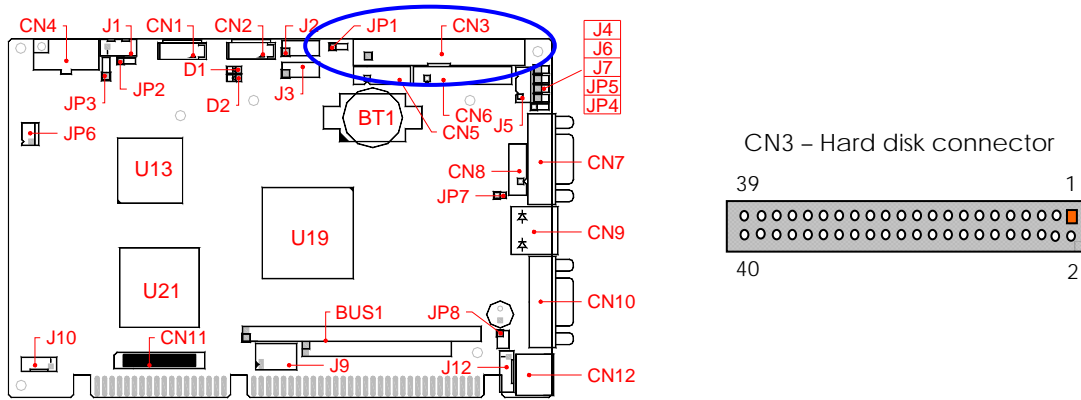
When ATX power supply is used, you can connect J1 to ATX control signals from the back plane, and short JP3 1-2 to close, JP5 is open and connect J4 to a push button switch as soft power switch. If non-ATX power supply is used, please short JP3 2-3 to close and JP5 1-2 to close with jumper and you don't need to connect J1 and J4.



**Note:** The J4 is a 2 pin connecting to PWR-SW (Power Button Switch); It's Pushing the PWR-SW button once will switch the FB2606 on or off. It's depending on system BIOS (Advanced Power Management Setup) or OS setting.

□ **CN3: IDE hard Disk Connector**

CN3 is 40-pin 2.54mm IDE hard disk connector. The included hard disk is able to attach up to two hard disk drives.



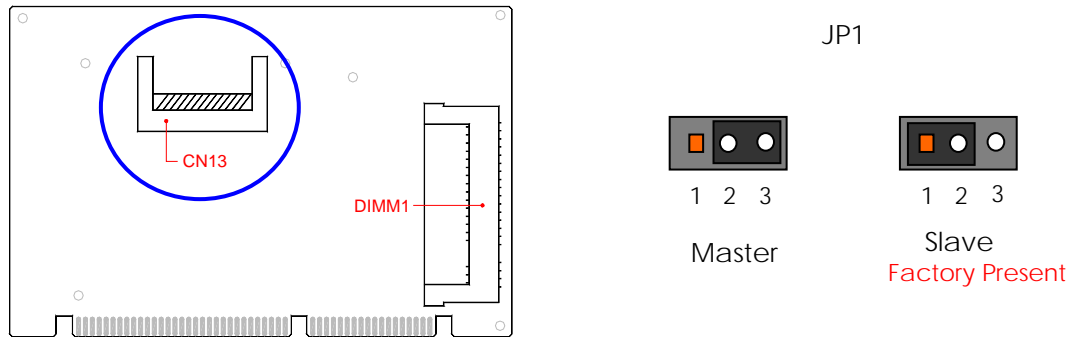
The following table lists the pin description of CN3.

Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	Not Used
21	IDEDREQ	22	GROUND
23	-IOW	24	GROUND
25	-IOR	26	GROUND
27	IDEIORDYA	28	GROUND
29	-DACKA	30	GROUND
31	AIN <sub>T</sub>	32	GROUND
33	SA 1	34	Not Used
35	SA 0	36	SA 2
37	CS 0	38	CS 1
39	HD LED A	40	GROUND

**Note:** The Compact Flash socket supports 3.3V Compact Flash and Micro Drives. The JP1 is used to select master/slave device of this socket and default is slave (close). Be sure not to set master/slave to the same IDE connector, if you use CF and IDE hard disk simultaneously.

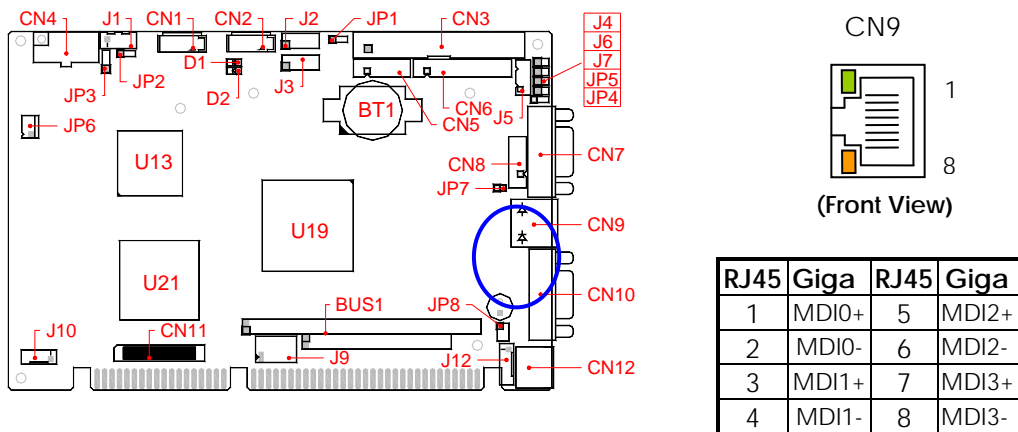
□ **CN13: Compact Flash Socket**

The Compact Flash socket CN13 (on the solder side) is optional and supports 3.3V Compact Flash and Micro Drives. JP1 is used to select master/slave device of this socket. Be sure to ward off the same master/slave setting with which connects to IDE (CN3) connector, if you use CN3 and CN13 simultaneously.



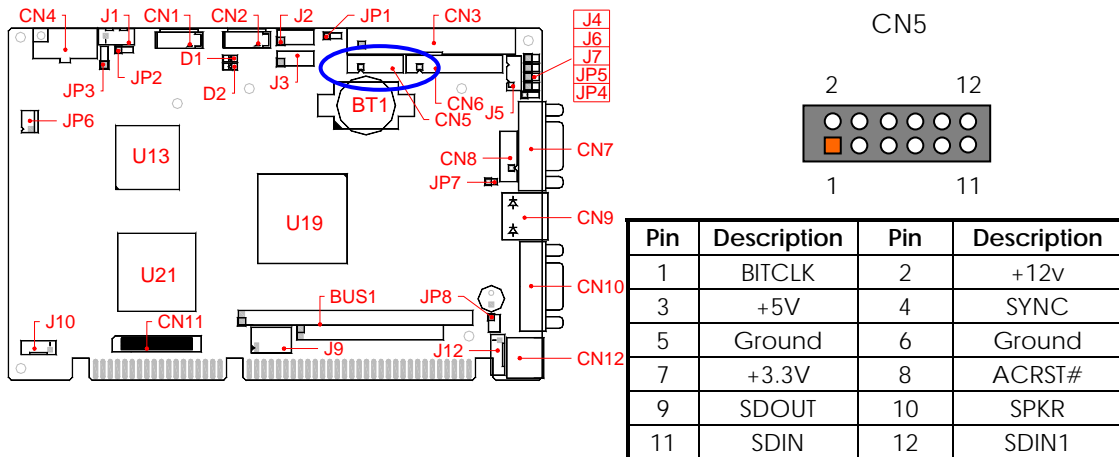
□ **CN9: RJ45 LAN Connector**

The CN9 contain LAN twist pair signals and LAN accesses indicator signal is RJ45 type connector with 2 LED indicators. The down side LED (orange) indicates data is accessing and the up side LED (green) indicates on-line status. (When lighted indicates on-line and off indicates off-line). The following lists the pin assignment of CN9:



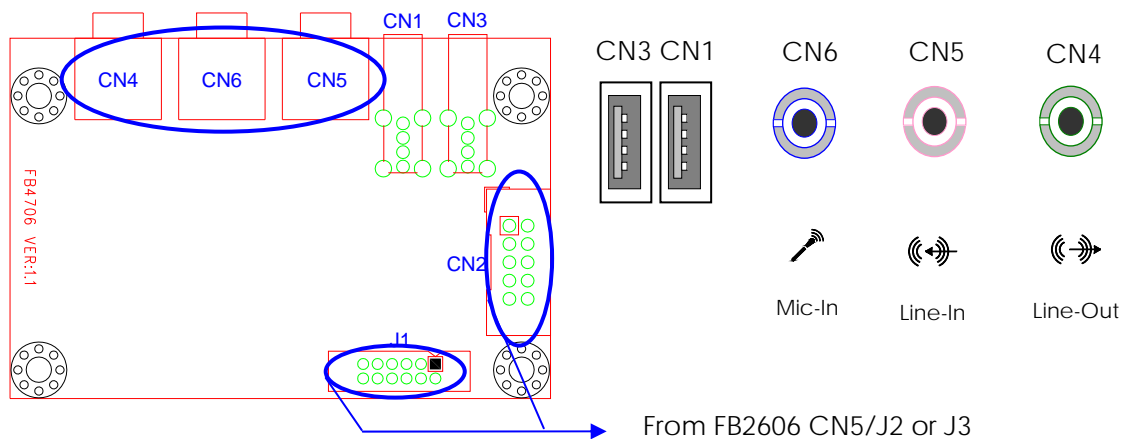
□ **CN5: External Bus Connector for Audio Function**

CN5 provides HD signals for Audio functions. FB4706 (Audio Adapter Board, Optional) is recommended for your best Audio solutions.



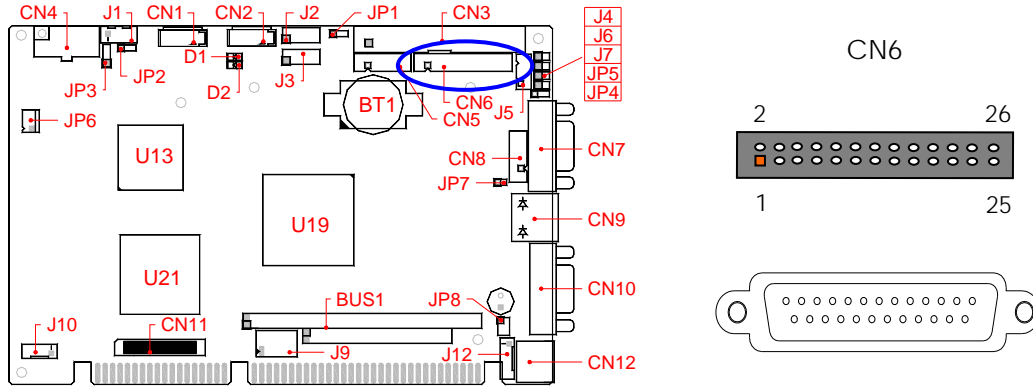
➤ **FB4706x: Provides Audio and USB Board**

The CN4, CN6, and CN5 connectors on FB4706x are 2-way Line-In, mono Microphone input, and 2-way Lineout respectively. You can connect J1 (Audio), CN2 (USB) cable from FB2647 CN3 and J3 or J4. The following figure shows these Audio connectors on FB4706x board:



□ **CN6: Parallel Port Connector**

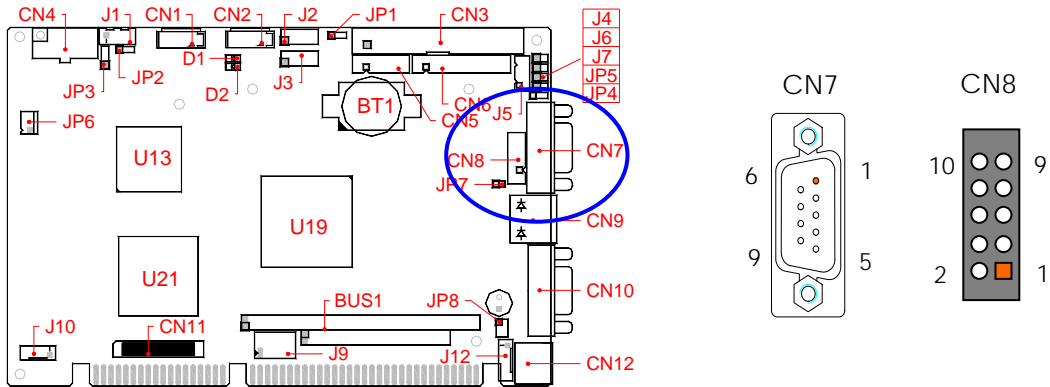
The included printer interface cable is used to transfer 26-pin connector into standard DB25 connector.



CN6	DB-25	Signal	CN6	DB-25	Signal
1	1	-STROBE	2	14	-AUTO FORM FEED
3	2	DATA 0	4	15	-ERROR
5	3	DATA 1	6	16	-INITIALIZE
7	4	DATA 2	8	17	-PRINTER SELECT IN
9	5	DATA 3	10	18	Ground
11	6	DATA 4	12	19	Ground
13	7	DATA 5	14	20	Ground
15	8	DATA 6	16	21	Ground
17	9	DATA 7	18	22	Ground
19	10	-ACKNOWLEDGE	20	23	Ground
21	11	BUSY	22	24	Ground
23	12	PAPER	24	25	Ground
25	13	PRINTER SELECT	26	--	No Used

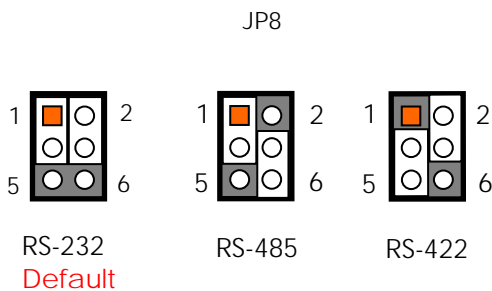
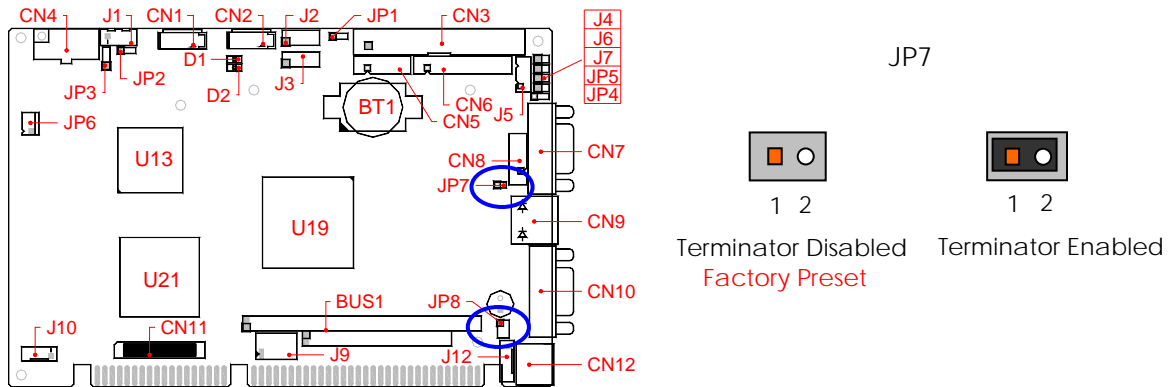
□ **CN7 & CN8: RS232 Serial Ports 1, 2 Connectors and Jumpers**

The Serial port 1 CN7 connector on bracket is 9-pin D-type male connector. The serial port 2 adapter cables are used to transfer 10-pin IDC connector into standard DB9 connectors.



➤ **CN8, JP7 & JP8: Serial Port 2, Terminal and RS232/RS422/RS485 Select**

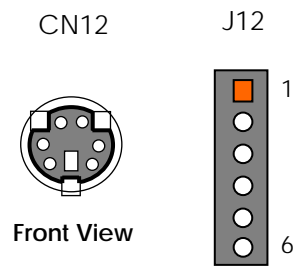
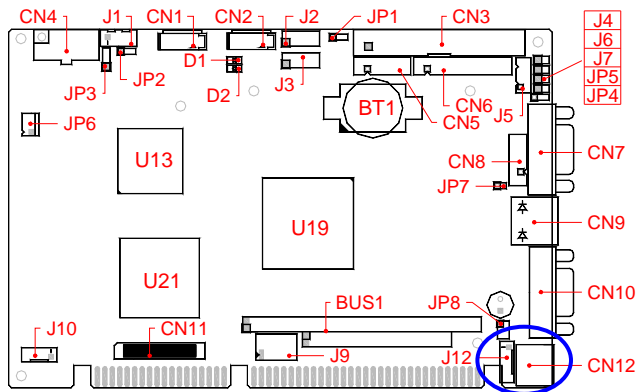
The Serial port 2 (CN8) is designed for multiple purposes, use JP8 selects the RS-232, RS-422 or RS-485, and JP7 is use to enable or disable terminator if RS-485 mode is selected. The following tables show the signal connections of these connectors.



DB-9	Pin	RS-232	RS-422	RS-485
1	1	-DCD		
6	2	-DSR		
2	3	RXD	RX-	485-
7	4	-RTS	TX-	
3	5	-TXD	RX+	485+
8	6	-CTS	TX+	
4	7	-DTR		
9	8	-RI		
5	9	Ground		
Metal	10	Case Ground		

□ **CN12, J12: Keyboard/Mouse Connector**

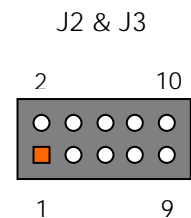
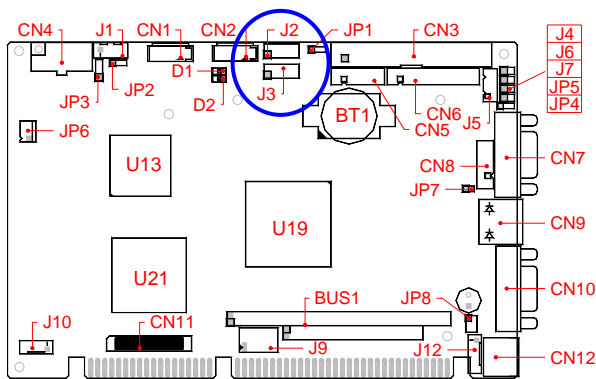
CN12 is a standard PS/2 type keyboard connector, so any PS/2 type keyboard can plug into CN11 directly without extra adapter cable. J12 provides PS/2 mouse interface, use the included mouse adapter cable to connect between J12 and standard PS/2 mouse.



Pin	Signal
1	Mouse Data
2	Keyboard Data
3	Ground
4	VCC
5	Mouse Clock
6	Keyboard Clock

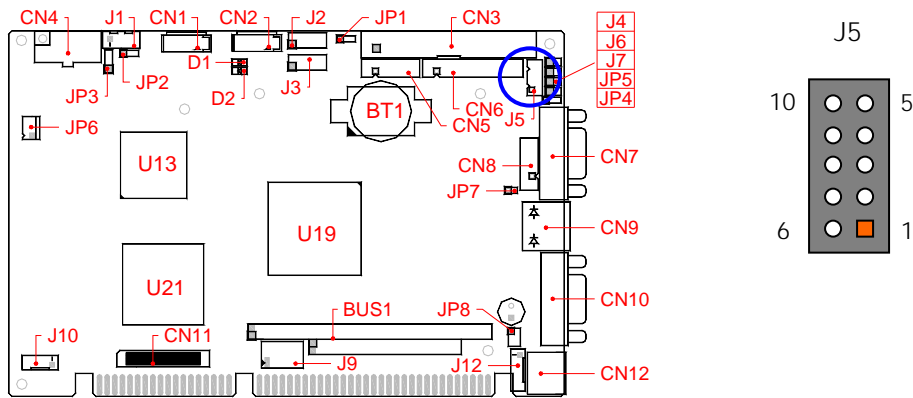
□ **J2 & J3: USB Port & Connector Header**

The FB2606 supports four USB port. Any USB device can be attached to USB ports with plug-and-play supported, J2 and J3 are 10-pin connectors. Use the USB adapter cable (or ) and FB4641 board and USB adapter cable, you can attach up to 4 USB devices.



Pin	Signal	Pin	Signal
1	USBV0 (1/3)	2	Case Ground
3	USBD0 (1/3)-	4	USBG1 (2/4)
5	USBD0 (1/3)+	6	USBD1 (2/4)+
7	USBG0 (1/3)	8	USBD1 (2/4)-
9	Case Ground	10	USBV1 (2/4)

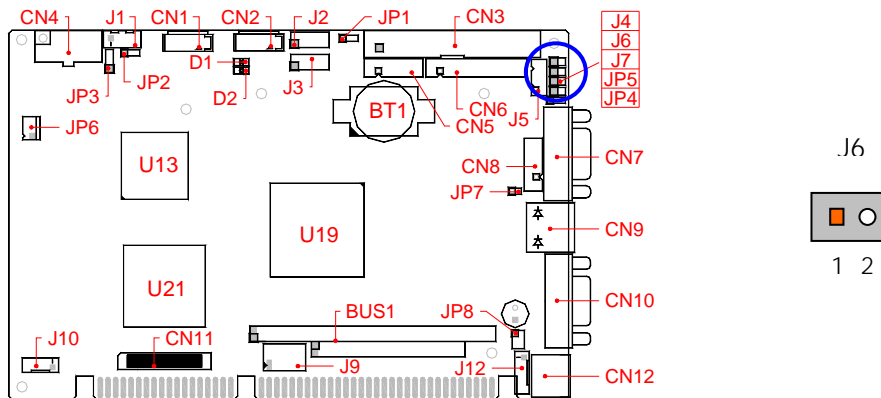
□ **J5: TTL I/O Connector**



Pin	TTL Lines	Pin	TTL Lines	Bit Location
1	Output Line 0	6	Input Line 0	Please refer to <a href="#">Chapter4- J5 TTL I/O - Software programming example</a>
2	Output Line 1	7	Input Line 1	
3	Output Line 2	8	Input Line 2	
4	Output Line 3	9	Input Line 3	
5	Ground	10	Ground	

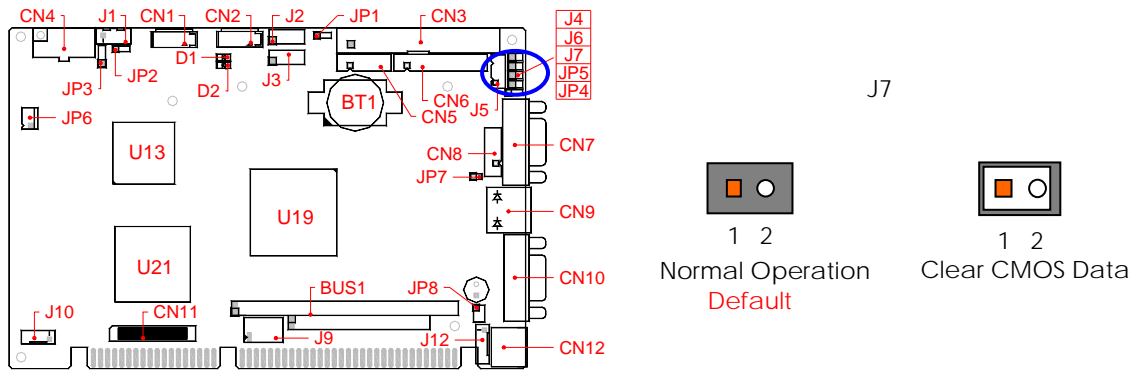
□ **J6: Reset Header**

J6 is a 2-pin header for connecting to system reset button. Short-circuit these 2 pins to hardware reset CPU board as well as restart system. It is similar to power off the system and then power it on again.

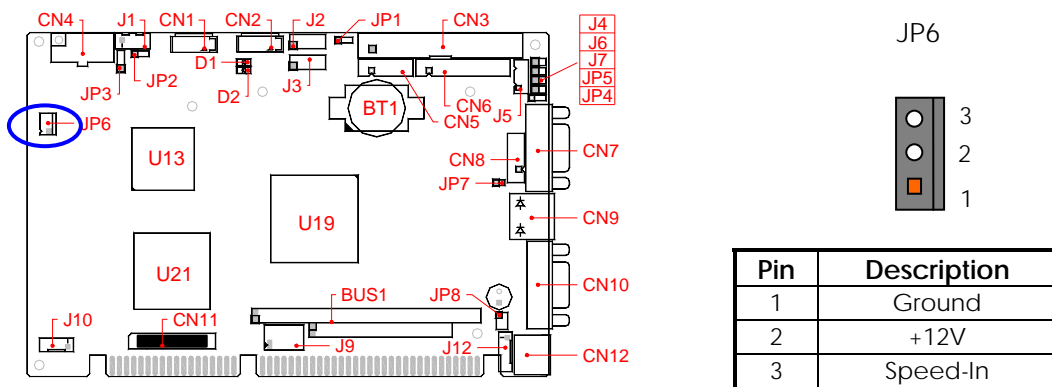


□ **J7: CMOS Data Clear**

You can use J7 to clear CMOS data. The CMOS store information like system date, time, boot up device, password, IRQ... that are set up with the BIOS. To clear the CMOS, set J1 jumper 1-2 close and then remove jumper 1-2.

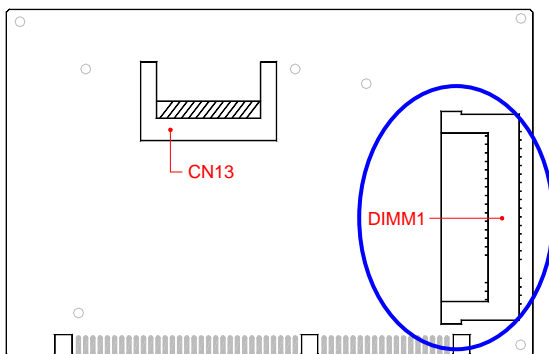


□ **JP6: CPU or System Fan Connector**

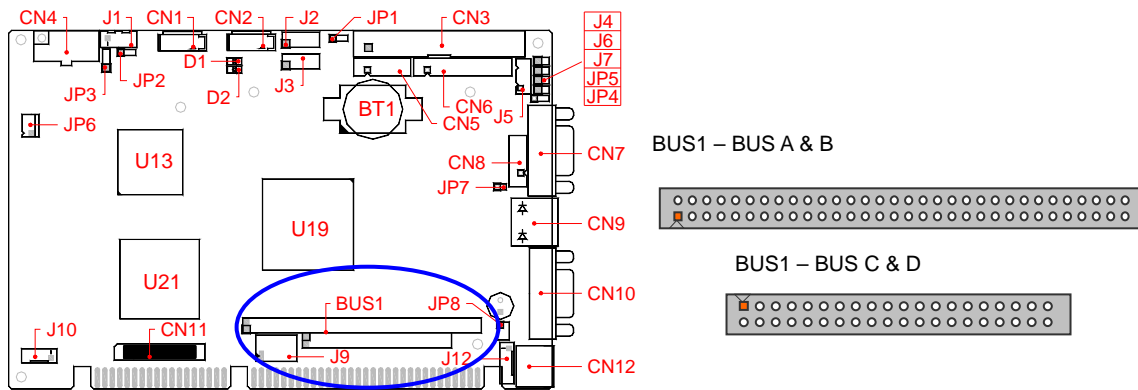


□ **DIMM1: DIMM Socket for DDR2 SDRAM Modules**

You may extend additional memory to FB2606 See as following figure and rear pictures. The 200 pin So-DIMM socket supports 512 MB and 2GB of DDR2-400/533 RAM modules.



□ **BUS1: PC/104 Bus Connectors**



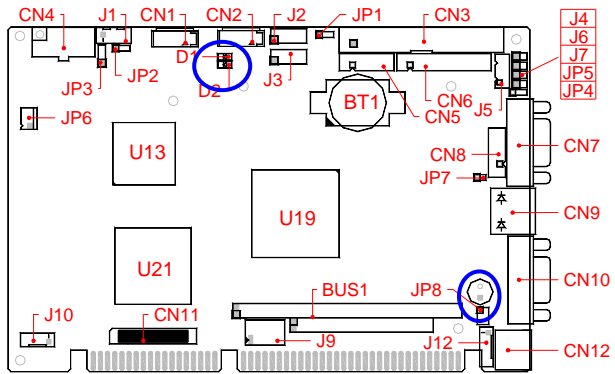
**PC/104 A&B Pin**

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	-IOCHK	A17	SA14	B1	Ground	B17	-DACK1
A2	SD7	A18	SA13	B2	RSTDRV	B18	DRQ1
A3	SD6	A19	SA12	B3	+5V	B19	-Refresh
A4	SD5	A20	SA11	B4	IRQ9	B20	BUSCLK
A5	SD4	A21	SA10	B5	--	B21	IRQ7
A6	SD3	A22	SA9	B6	DRQ2	B22	IRQ6
A7	SD2	A23	SA8	B7	--	B23	IRQ5
A8	SD1	A24	SA7	B8	-ZWS	B24	IRQ4
A9	SD0	A25	SA6	B9	+12V	B25	IRQ3
A10	IORDY	A26	SA5	B10	KEY	B26	-DACK2
A11	AEN	A27	SA4	B11	-SMEMW	B27	TC
A12	SA19	A28	SA3	B12	-SMEMR	B28	ALE
A13	SA18	A29	SA2	B13	-IOW	B29	+5V
A14	SA17	A30	SA1	B14	-IOR	B30	OSC
A15	SA16	A31	SA0	B15	-DACK3	B31	Ground
A16	SA15	A32	Ground	B16	DRQ3	B32	Ground

**PC/104 C& D Pin**

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
C1	GND	C11	MEMW#	D1	Ground	D11	-DACK#5
C2	SBHE	C12	SD8	D2	MEMCS16#	D12	DREQ5
C3	LA23	C13	SD9	D3	IOCS16#	D13	DACK#6
C4	LA22	C24	SD10	D4	IRQ10	D14	DREQ6
C5	LA21	C25	SD11	D5	IRQ11	D15	DACK#7
C6	LA20	C26	SD12	D6	IRQ12	D16	DREQ7
C7	LA19	C27	SD13	D7	IRQ15	D17	VCC
C8	LA18	C28	SD14	D8	IRQ14	D18	-
C9	LA17	C29	SD15	D9	DACK#0	D19	GND
C10	MEMR#	C20	KEY	D10	DREQ0	D20	GND

□ **BZ1, LED-D1/D2: On-Board Buzzer, Power LED & HDD/CF LED**



## Chapter 3 Installing CRT/ LCD/VIDEO Display

This chapter describes the configuration and installation procedure of LCD, VGA (CRT) displays. Both VGA (CRT) and LVDS LCD displays may be used at the same time. However, each type of LCD requires different BIOS setting. This section describes the configuration and installation procedure using display.

- LVDS LCD Flat Panel Display
- VGA (CRT) & LVDS LCD Display



VGA (CRT) Monitor



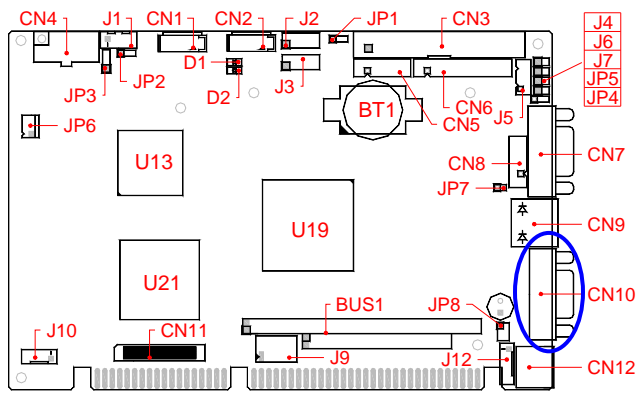
LCD Display

## CRT DISPLAY

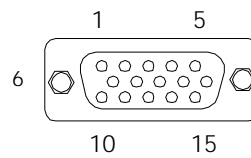
The FB2606 supports a VGA (CRT) colored monitor. It can be connected to create a compact video solution for the industrial environment. It allows a maximum VGA (CRT) resolution of 2048X1536 (QVGA). The following table and figure illustrate the pin definition of CN10:

### □ CN10: VGA Connector

The CN10 is use to a standard VGA connector (DB15).



CN10



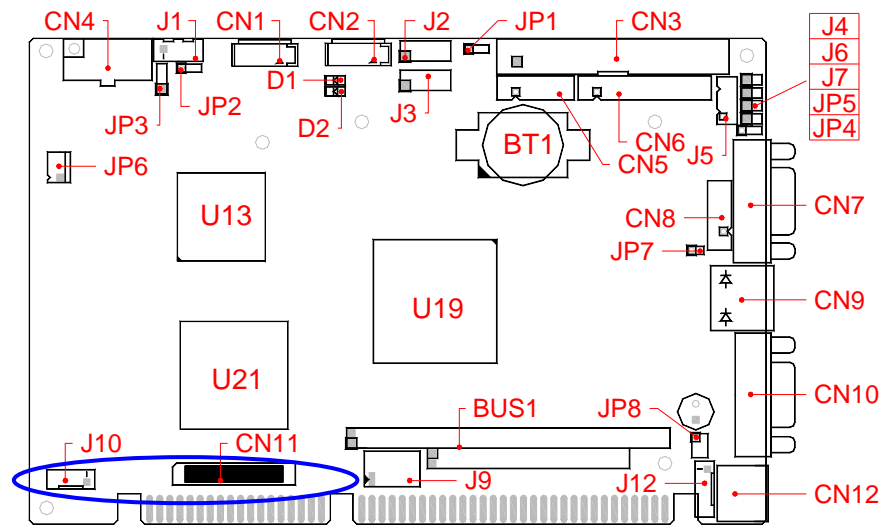
DB15	Signal
1	Red
2	Green
3	Blue
13	Hsync
14	Vsync
12	DDC Data
15	DDC Clock
5 & 10	Digital Ground
6,7,8	Analog Ground
Others	Not Used

## LCD DISPLAY

The board can support 18-bit LVDS LCD or 24-bit dual channel LVDS LCD, Using the BIOS setting for different types of LCD pane, then set your system properly and configures BOS setting for the right type of LCD panel you are using.



LCD

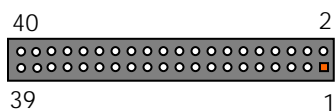


**NOTE:** Be careful with the pin orientation when installing connectors and the cables. A wrong connection can easily destroy your LCD panel. The pin 1 of the cable connectors is indicated with a sticker and the pin1 of the ribbon cable usually has a different color.

□ **CN11 & J10: LVDS LCD Connector and Power Connector**

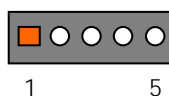
CN11 supports LVDS LCD signals, and the J10 is the power connector for inverter board.

CN11



Pin	Signal	Pin	Signal
1	VDD(+3.3V)	2	VDD(+3.3V)
3	Ground	4	Ground
5	VCC(+5V)	6	VDD(+5V)
7	LDC-A0	8	LDC-B0
9	LDC+A0	10	LDC+B0
11	Ground	12	Ground
13	LDC-A1	14	LDC-B1
15	LDC+A1	16	LDC+B1
17	Ground	18	Ground
19	LDC-A2	20	LDC-B2
21	LDC+A2	22	LDC+B2
23	Ground	24	Ground
25	LCK-A	26	LCK-B
27	LCK+A	28	LCK+B
29	Ground	30	Ground
31	LDC-CLK	32	LDC-Data
33	Ground	34	Ground
35	N.C	36	N.C
37	N.C	38	N.C
39	N.C	40	N.C

J10



Pin	Signal
1	+12V
2	Ground
3	ENBLK
4	CTBLK
5	VCC

**NOTE:** Be careful with the pin orientation when installing LCD connector and the cable. If any trouble occurs when connecting FB2606 with LCD panels, you could contact technical support division of FabiaTech Corporation.

## Chapter 4 BIOS Setup

This chapter describes the BIOS setup.

### Overview

BIOS are a program located on a Flash memory chip on a circuit board. It is used to initialize and set up the I/O peripherals and interface cards of the system, which includes time, date, hard disk drive, the ISA bus and connected devices such as the video display, diskette drive, and the keyboard. This program will not be lost when you turn off the system.

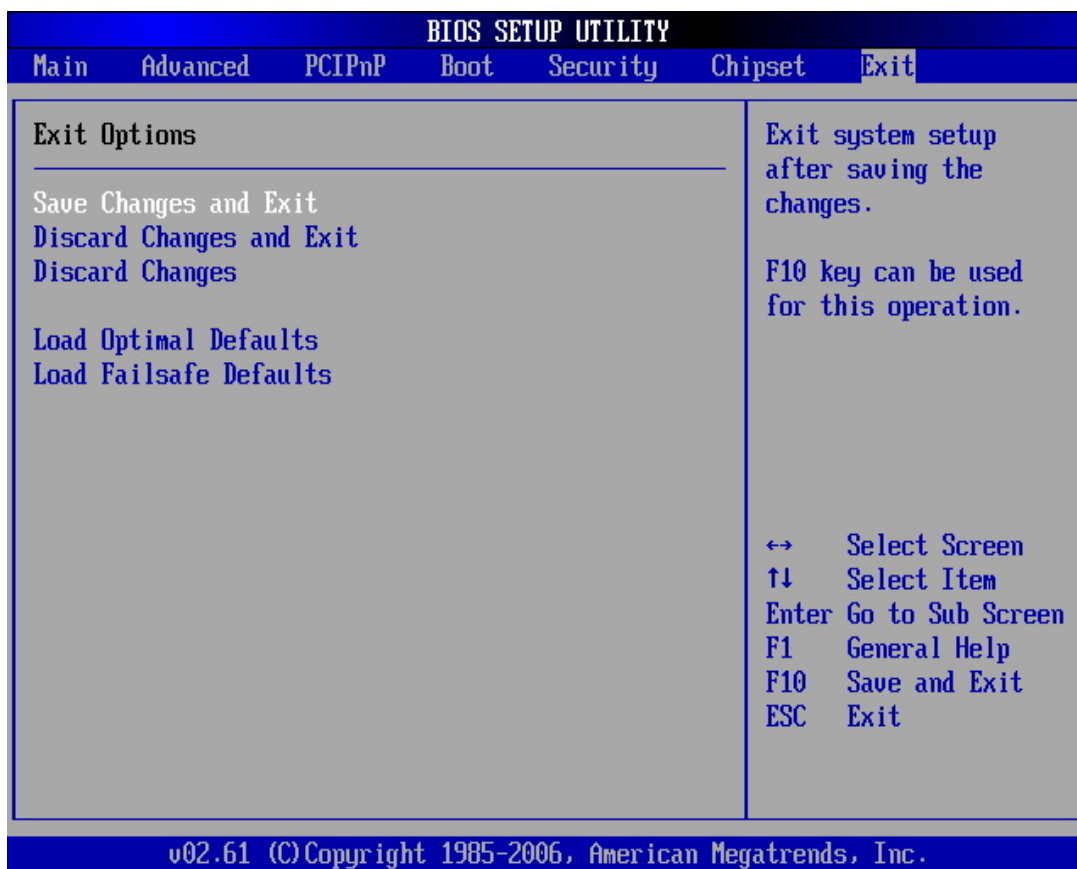
The BIOS provides a menu-driven interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

The BIOS default values ensure that the system will function at its normal capability. In the worst situation the user may have corrupted the original settings set by the manufacturer.

All the changes you make will be saved in the system RAM and will not be lost after power-off.

When you start the system, the BIOS will perform a self-diagnostics test called Power On Self Test (POST) for all the attached devices, accessories, and the system. Press the [Del] key to enter the BIOS Setup program, and then the main menu will show on the screen.

**Note:** Change the parameters when you fully understand their functions and subsequence.



□ **BIOS Functions**

On the menu, you can perform the following functions

1. Main
2. Advanced
  - CPU Configuration
  - IDE Configuration
  - SuperIO Configuration
  - Hardware Health Configuration
  - ACPI
  - APM Configuration
  - MPS Configuration
  - USB Configuration
3. PCIPnP
4. Boot
  - Boot Settings Configuration
  - Boot Device Priority
  - Hard Disk Drives
  - CD/DVD Drivers
5. Security
  - Change Supervisor Password
  - Change User Password
  - Clear User Password

- Boot Sector Virus Protection
- 6. Chipset
  - North Bridge Configuration
  - South Bridge Configuration
- 7. Exit
  - ❑ Save Changes and Exit: Exit system setup after saving the changes. F10 key can be used for this operation.
  - Discard Changes and Exit: Exit system setup without saving any changes. ESC key can be used for this operation.
  - Discard Changes: Discard changes down so far any of the set questions. F7 key can be used this operation.
  - Load Optimized Default: to auto configure the system according to optimal setting with pre-defined values. This is also the factory default setting of the system when you receive the board.
  - Load Fail-Safe Default: to configure the system in fail-safe mode with predefined values.

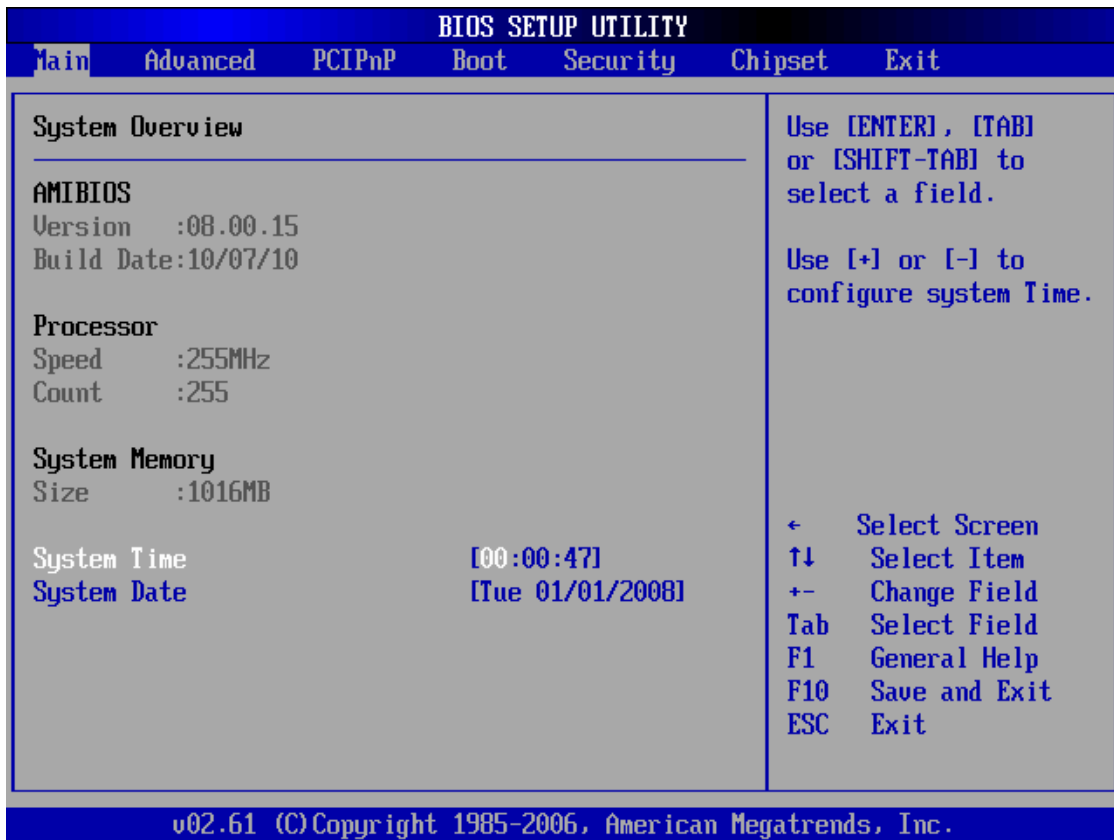
### Keyboard Convention

On the BIOS, the following keys can be used to operate and manage the menu:

Item	Function
ESC	To exit the current menu or message
Page Up/Page Down	To select a parameter
F1	To display the help menu if you do not know the purpose or function of the item you are going to configure
F8	Fail-Safe Default
F9	Optimized Default
F10	Save and exit
UP/Down Arrow Keys	To go upward or downward to the desired item

## Main Setup

This section describes basic system hardware configuration, system clock setup and BIOS version information. If the CPU board is already installed in a working system, you will not need to select this option anymore.



### ❑ System Memory

This option is display-only which is determined by POST (Power On Self Test) of the BIOS.

### ❑ System Date & Time Setup

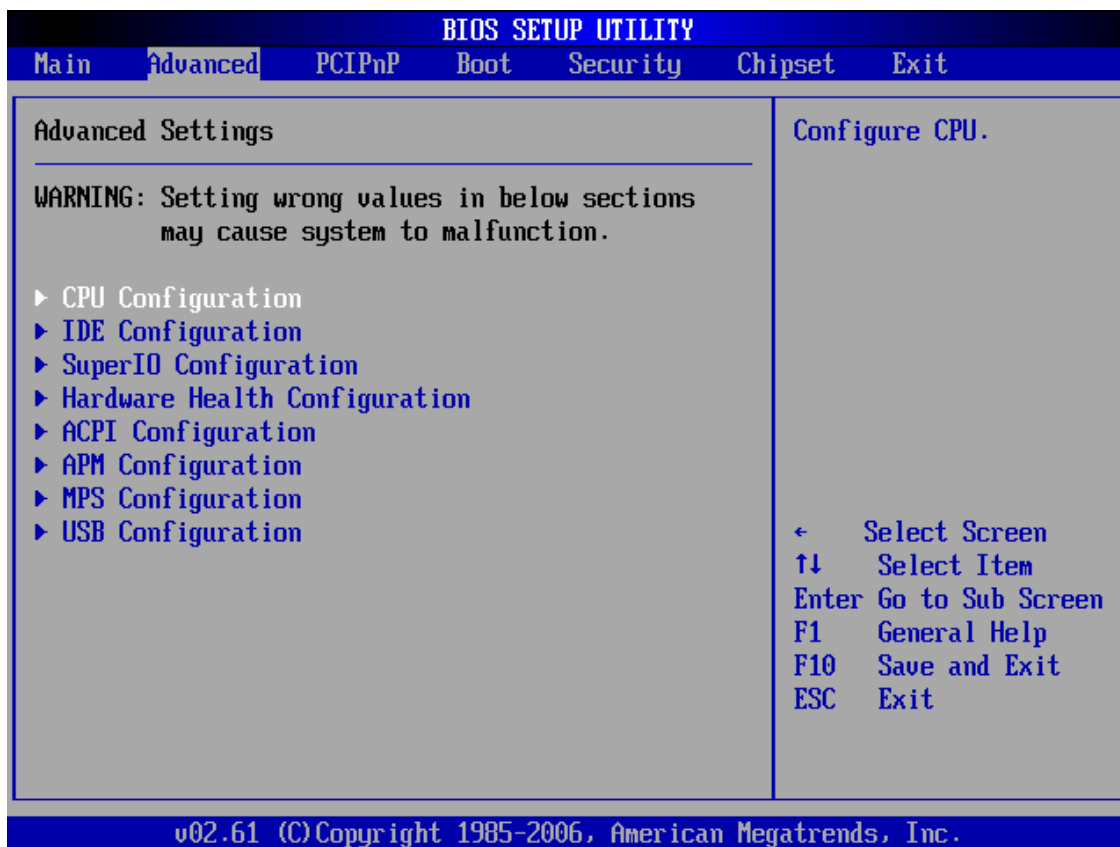
Highlight the <Date> field and then press the [Page Up] / [Page Down] or [+]/ [-] keys to set the current date. Follow the month, day and year format.

Highlight the <Time> field and then press the [Page Up] / [Page Down] or [+]/ [-] keys to set the current date. Follow the hour, minute and second format.

The user can bypass the date and time prompts by creating an AUTOEXEC.BAT file. For information on how to create this file, please refer to the MS-DOS manual.

## Advanced Setup

Select the *Advanced* tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages



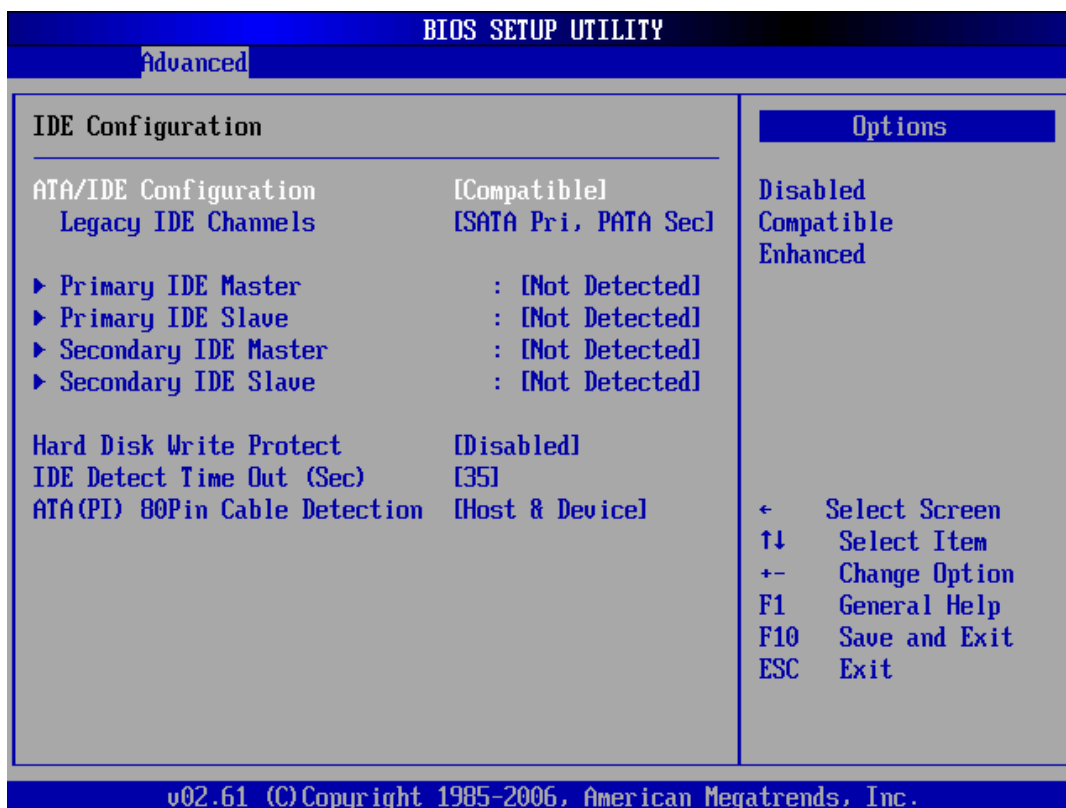
### ➤ CPU Configuration

You can use this screen to select options for the CPU information. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.

**Note:** The CPU Configuration setup screen varies depending on the installed processor.

➤ **IDE Configuration**

You can use this screen to select options for the IDE Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the *IDE Configuration* screen is shown below.



□ **ATA/IDE Configuration**

This item specifies the ATA/IDE channels used by the onboard PATA/SATA IDE controller depend on the operation system (OS) that installed. When installed DOS, WIN95/98/ME Will can set to compatible mode. And set to Enhanced mode if you are using native OS, like Windows-XP/2k

**Available Options:** Disabled, Compatible, and Enhanced

**Default setting:** Compatible

■ **Legacy IDE Channels**

This field is when set to Compatible mode; you can select the SATA Only,SATA Pri\_ PATA Sec or PATA Only.

**Available Options:** STAT Only, SATA Pri, PATA\_Sec, and PATA Only

**Default setting:** SATA Pri, PATA\_Sec

#### ❑ **Primary/Secondary IDE Master/Slave**

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship, which is determined by the cabling configuration used to attach them to the controller. Your system supports one IDE controller – a primary – so you have the ability to install up to two separate hard disks.

#### **LBA/Large Mode**

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. The Optimal and Fail-Safe default setting is *Auto*

#### **Hard Disk Type**

The BIOS supports various types for user settings, The BIOS supports <Pri Master>, <Pri Slave>, so the user can install up to two hard disks. For the master and slave jumpers, please refer to the hard disk's installation descriptions and the hard disk jumper settings.

You can select <AUTO> under the <TYPE> and <MODE> fields. This will Enabled auto detection of your IDE drives during boot up. This will allow you to change your hard drives (with the power off) and then power on without having to reconfigure your hard drive type. If you use older hard disk drives, which do not support this feature, then you must configure the hard disk drive in the standard method as described above by the <USER> option.

#### **PIO MODE**

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to affect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by them. This is simpler and more efficient (and faster). Your system supports five modes, numbered from 0 to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

#### **BLOCK (Multi-Sector Transfer)**

This option allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

#### **S.M.A.R.T**

This field is used to activate the S.M.A.R.T (System Management and Reporting Technologies) function for S.M.A.R.T HDD drives. This function requires an application that can give S.M.A.R.T message.

#### **32 Bit Data Transfer**

This option sets the 32-bit data transfer option. The Optimal and Fail-Safe default setting is *enabled*.

❑ **Hard Disk Write Protect**

Set this option to protect the hard disk drive from being overwritten. The Optimal and Fail-Safe default setting is *disabled*.

**Available Options:** Disabled, Enabled

**Default setting:** Disabled

❑ **IDE Detect Time Out (Sec.)**

Set this option to stop the AMIBIOS from searching for IDE devices within the specified number of seconds. Basically, this allows you to fine-tune the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all IDE disk drives attached is found.

**Available Options:** 0, 5, 10, 15, 20, 25, 30, and 35

**Default setting:** 35

❑ **ATA(PI) 80 Pin Cable Detection**

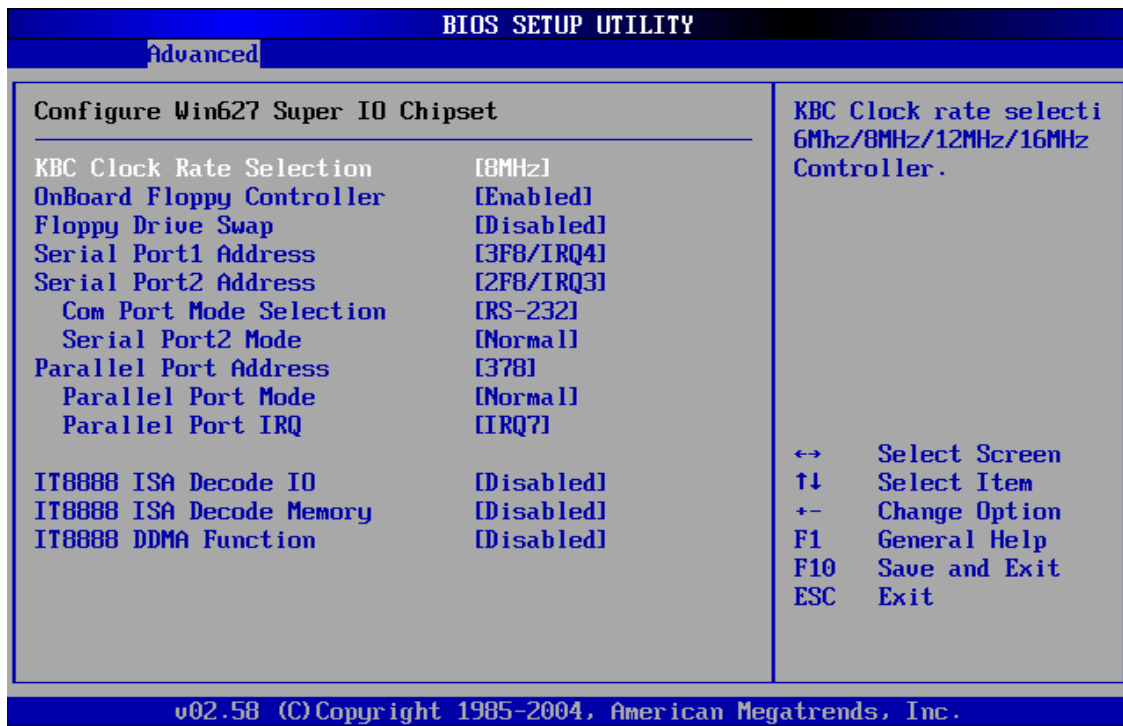
Set this option to select the method used to detect the ATA (PI) 80 pin cable. The use of an 80-conductor ATA cable is mandatory for running Ultra ATA/66, Ultra ATA/100 and Ultra ATA/133 IDE hard disk drives. The standard 40-conductor ATA cable cannot handle the higher speeds.

**Available options:** Host & Device, Host, and Device

**Default setting:** Host & Device

➤ **SuperIO Chipset - Configuration Win627 Super IO Chipset**

This section describes the function of Super I/O settings.



❑ **KBC Clock Rate Selection**

This field is select Keyboard clock rate selecting 6MHz/8MHz/12MHz/16MHz Controller.

**Available Options:** 6MHz, 8MHz, 12MHz and 16MHz

**Default setting:** 12MHz

❑ **OnBoard Floppy Controller**

This field enables the floppy drive controller.

**Available Options:** Disabled, and Enabled

**Default setting:** Enabled

❑ **Floppy Drive Swap**

The field reverses the drive letter assignments of your floppy disk drives in the Swap A, B setting, otherwise leave on the default setting of **Disabled** (No Swap). This works separately from the BIOS Features floppy disk swap feature. It is functionally the same as physically interchanging the connectors of the floppy disk drives. When the function's setting is **<Enabled>**, the BIOS swapped floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A under DOS.

**Available options:** Disabled, Enabled

**Default setting:** Disabled

**Serial Port 1 Address**

These fields select the I/O port address for each Serial port.

**Available Options:** Disabled, 3F8H/IRQ4, 3E8H/IRQ4, 2F8H/IRQ4 and 2E8H/IRQ3.

**Default setting:** 3F8H/IRQ4

**Serial Port 2 Address**

These fields select the I/O port address for each Serial port.

**Available Options:** Disabled, 3F8H/IRQ4, 3E8H/IRQ4, 2F8H/IRQ4 and 2E8H/IRQ3.

**Default setting:** 2F8H/IRQ3

***Com Port Mode Selection***

These fields item can select RS-232, RS-422 and RS-485 of select port 2.

**Available Options:** RS-232, RS-422 and RS485

**Default setting:** RS-232

**Parallel Port Address**

This field selects the I/O port address for parallel port.

**Available Options:** Disabled, 378, 278, and 3BCH

**Parallel Port Mode**

This field specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes that adhere to the IEEE P1284 specifications.

**Available Options:** Normal, Bi-Dir, ECP, EPP, and ECP+EPP

**Default setting:** Normal

**Parallel Port IRQ**

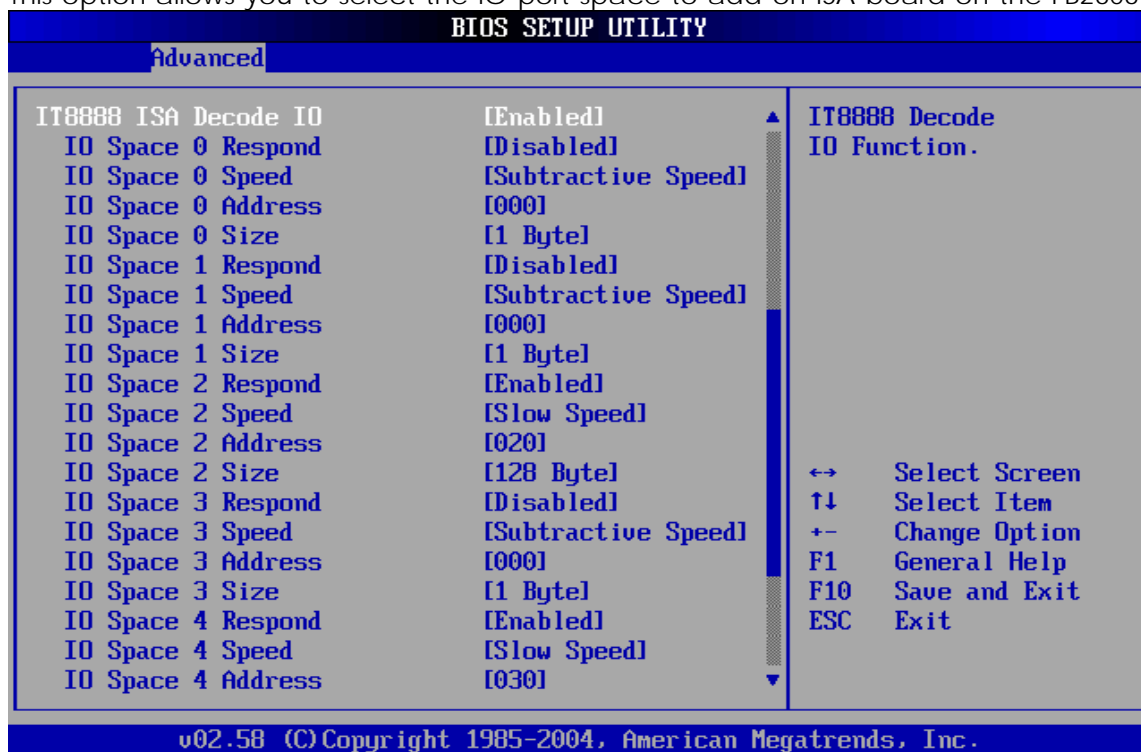
This field specifies the IRQ for the parallel port.

**Available Options:** IRQ5 and IRQ7

**Default setting:** IRQ7

➤ **ITE8888 ISA Decode IO**

This option allows you to select the IO port space to add on ISA board on the FB2606.



❑ **Decode I/O Space 0~4**

These fields are used for the enable configuration and the positive decode IO Space.

**Available Options:** Disabled and Enable

**Default setting:** Disable

❑ **Decode I/O Speed 0~4**

This field is used for the decoding speed for IO Space.

**Available Options:** Subtractive Speed, Medium Speed, Slow Speed and Fast Speed.

**Default setting:** Subtractive Speed

❑ **Decode I/O Addr. 0~4 [15:4]**

These fields is used for the configuration IO Space

**Available Options:** Min= (001) -Max (FFF)

**Default setting:** (001)

❑ **Decode I/O Size 0~4**

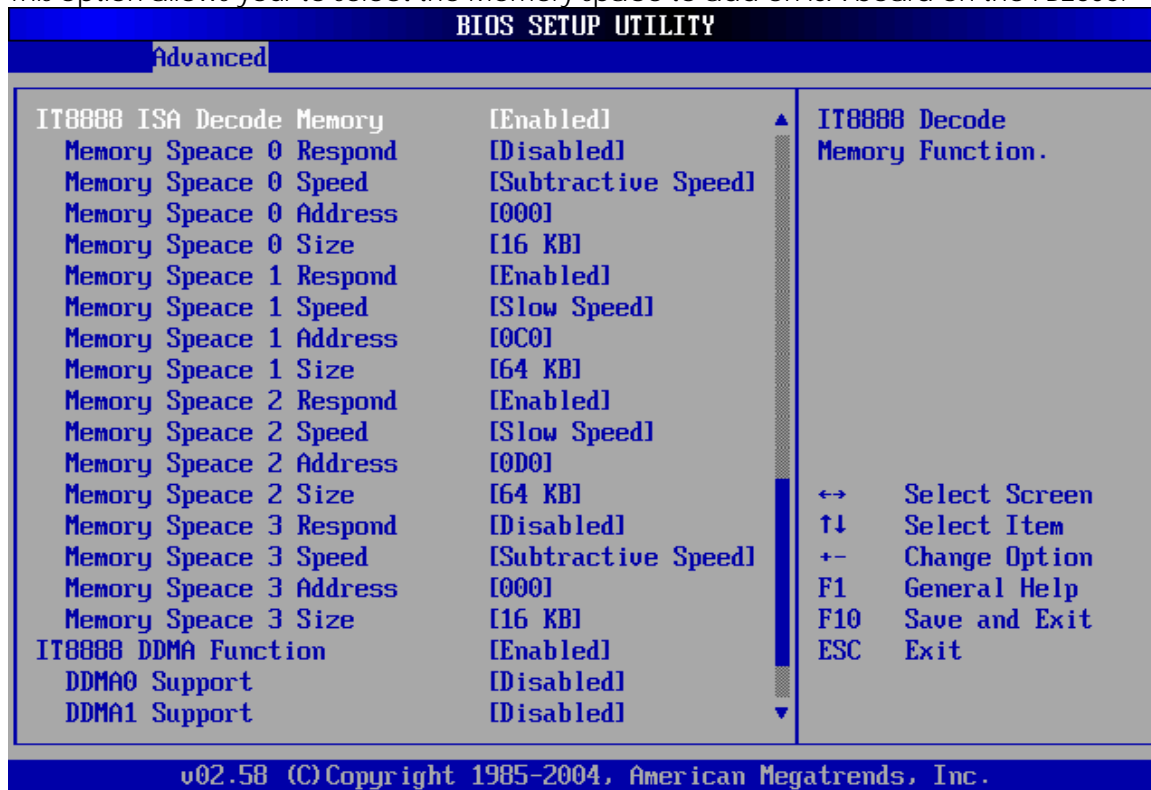
This field is used for the configuration IO Space size.

**Available Options:** 1 Bytes, 2 Bytes, 4 Bytes, 8 Bytes, 16 Bytes, 32 Bytes, 64 Bytes and 128Byte.,

Default setting: 1 Bytes

➤ **ITE8888 ISA Decode Memory**

This option allows your to select the Memory space to add on ISA board on the FB2606.



❑ **Decode Memory Space 0~4**

These fields are used for the enable configuration and the positive decode Memory Space.

**Available Options:** Disabled and Enable

**Default setting:** Disable

❑ **Decode Memory Speed 0~4**

This field is used for the decoding speed for memory Space.

**Available Options:** Subtractive Speed, Medium Speed, Slow Speed and Fast Speed.

**Default setting:** Subtractive Speed

❑ **Decode Memory Addr. 0~4 [23:12]**

These fields are used for the configuration Memory Space.

**Available Options:** Min= (001) -Max (FFF)

**Default setting:** (001)

❑ **Decode Memory Size 0~4**

This field is used for the configuration memory Space size.

**Available Options:** 16 KB, 32 KB, 64 KB, 128 KB, 256 KB, 512 KB, 1 MB and 2 MB

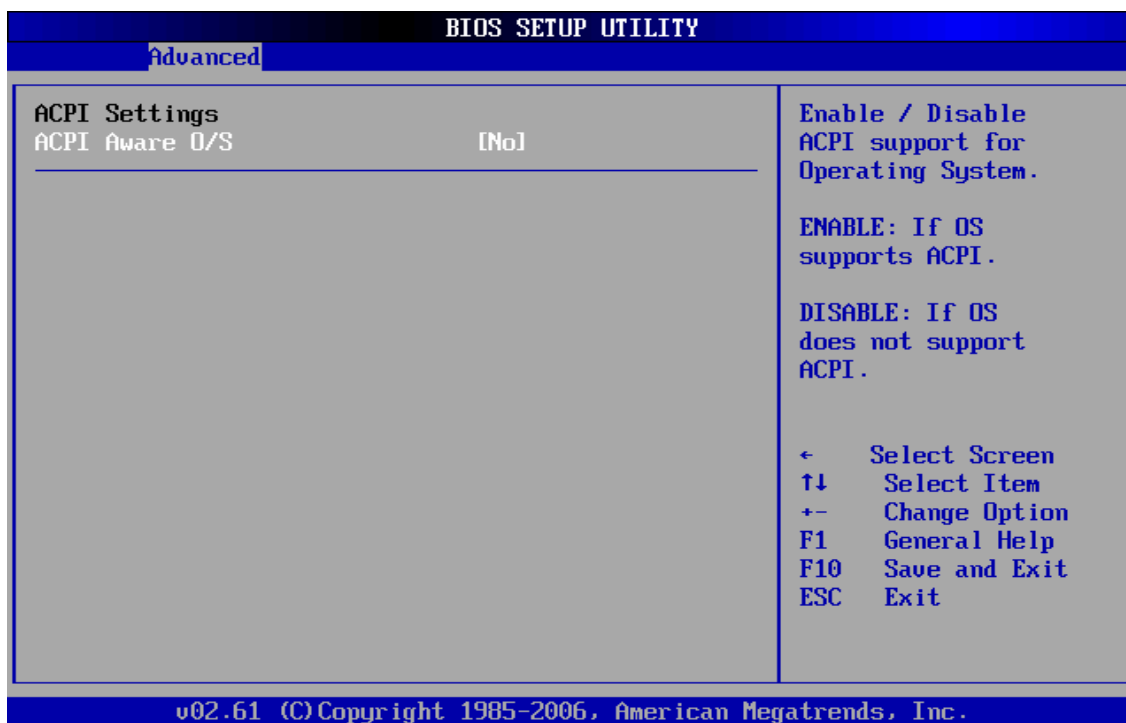
Default setting: 16 KB

➤ **Hardware Health Configuration**

On the Hardware Monitor Setup screen, you can monitor the system temperature, CPU voltage, and VCC voltage...

BIOS SETUP UTILITY	
Advanced	
<b>Hardware Health Configuration</b>	Enables Hardware Health Monitoring Device.
H/W Health Function [Enabled]	
<b>Hardware Health Event Monitoring</b>	
SYSTEM Temperature1	:39°C/102°F
OPTION (Front Panel)	:38°C/100°F
CPU Temperature	:40°C/104°F
CPU VCORE	:1.080 V
UCC3.3	:3.419 V
UCC1.8	:1.870 V
UCC1.5	:1.532 V
UCCP	:1.064 V
← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.	

➤ **Advanced ACPI Settings**



❑ **ACPI Aware O/S**

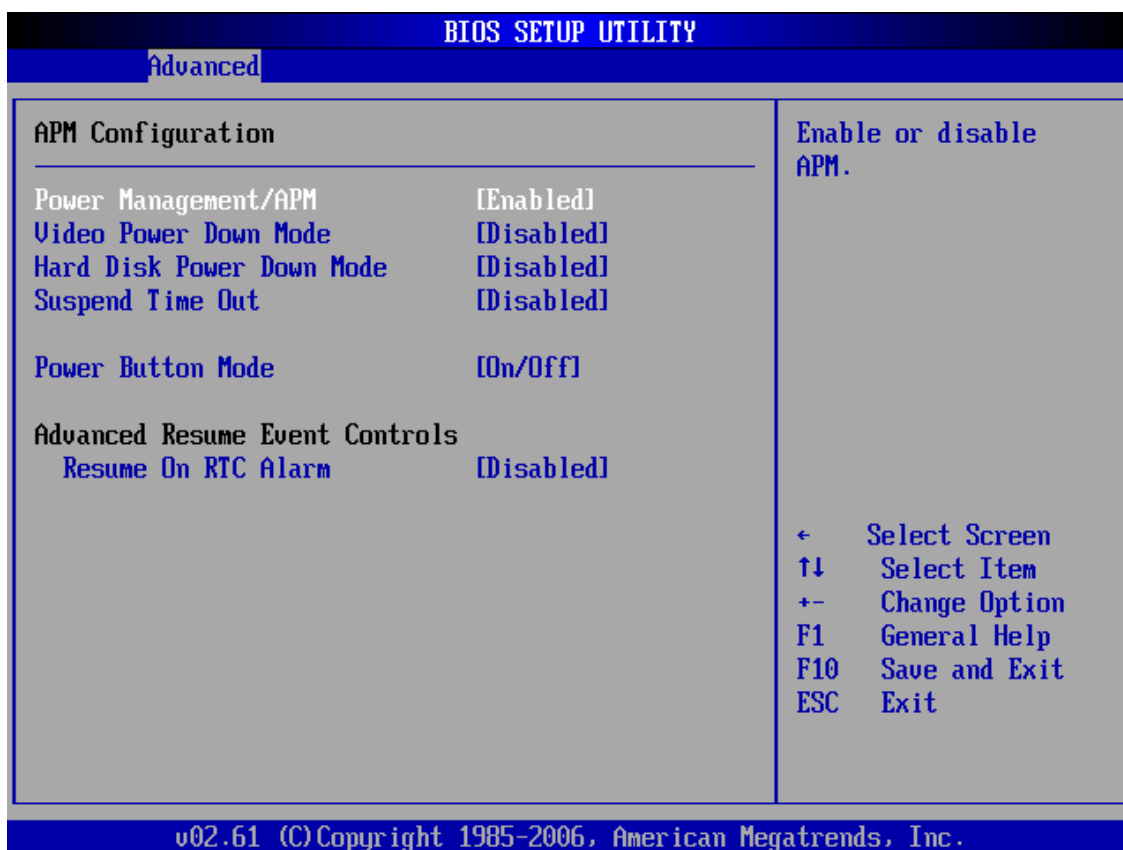
This field specifies allow you set this value to utilize the ACPI (Advanced Configuration and Power Interface) specification.

**Available Options:** Yes, and No

**Default setting:** Yes

➤ **APM Configuration**

You can use this screen to select options for the USB Configuration.



❑ **Power Manager /APM**

Select Enabled to activate the chipset Power Management and APM (Advanced Power Management) features.

**Available Options:** Disabled and Enabled

**Default setting:** Enabled

❑ **Video Power Down Mode**

This field specifies the power conserving state that video subsystem enters after the specified period of display inactivity has expired.

**Available Options:** Disabled, and Suspend

**Default setting:** Disabled

**Hard Disk Power Down Mode**

This field specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired.

**Available Options:** Disabled, and Suspend

**Default setting:** Disabled

**Suspend Time Out**

This field specifies the length of time the system waits before it enters suspend mode.

**Available Options:** Disabled, 1 Minute, 2 Minute, 4 Minute, and 8 Minute, up to 60 Minute.

**Default setting:** Disabled

**Power Button Mode**

This option specifies go into On/Off or Suspend when power button is pressed.

**Available Options:** On/Off, and Suspend.

**Default setting:** On/Off

**Resume On RTC Alarm**

This field specifies the RTC alarm to be turned off by extra software.

**Available Options:** Disabled, Enabled

**Default setting:** Disabled

■ ***RTC Alarm Date (Days)***

This field specifies the date of the RTC alarm.

**Available Options:** Every day, and 01 ~ 31

**Default setting:** 15

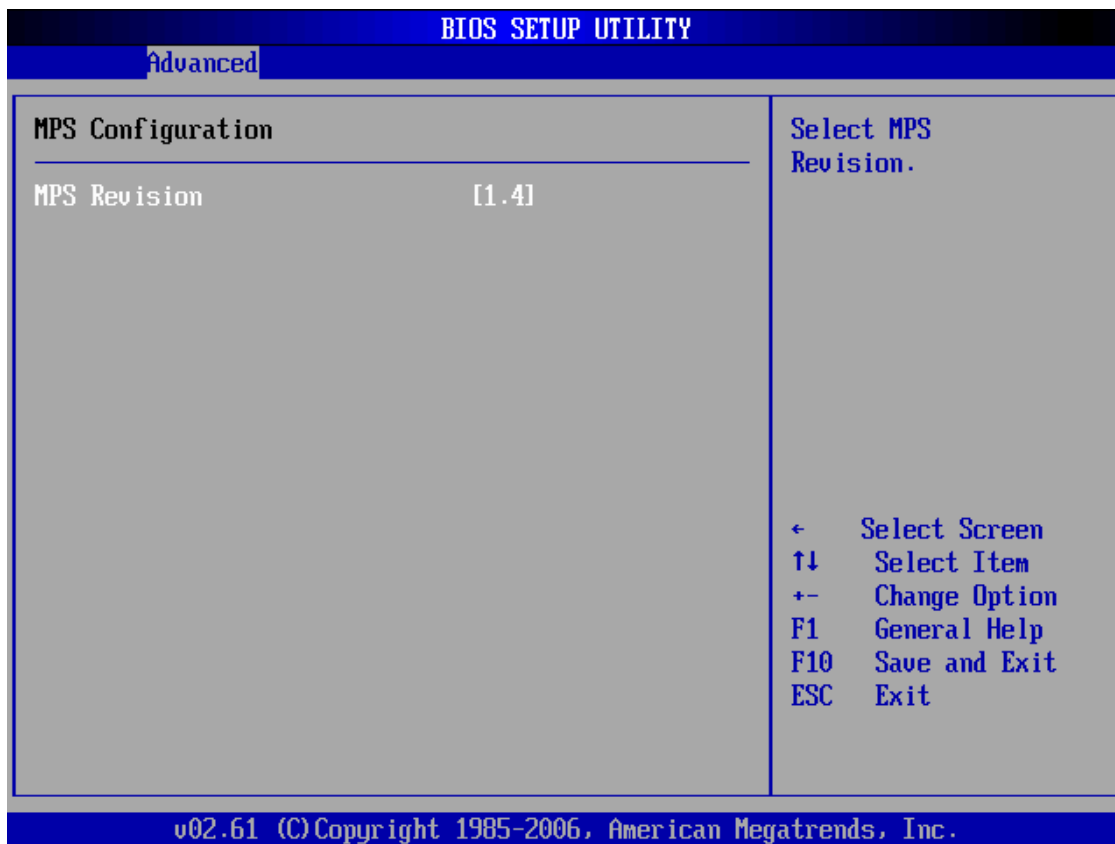
■ ***System Time (hh:mm:ss)***

This field specifies the hour/ minute/second of the RTC alarm.

**Available Options:** 1-24/0-60/0-60

Default setting: 12:30:30

➤ **MPS Configuration**



□ **MPS Revision**

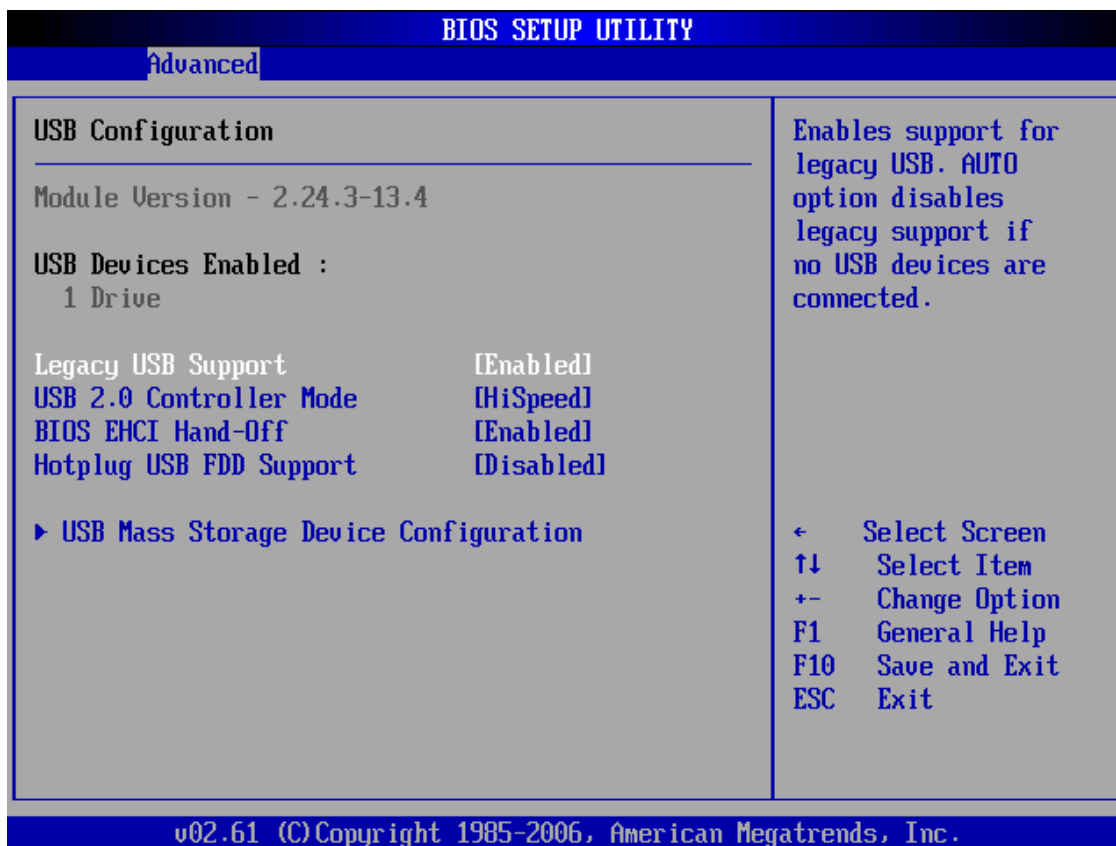
This field is select MPS Revision.

**Available Options:** 1.1, and 1.4

**Default setting:** 1.4

➤ **USB Configuration**

You can use this screen to select options for the USB Configuration.



❑ **Legacy USB Support**

Legacy USB Support refers to the USB mouse and USB keyboard support. Normally if this option is not enabled; any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB drivers loaded on the system. Set this value to Enabled or Disabled the Legacy USB Support.

**Available Options:** Disabled, Auto, and Enabled

**Default setting:** Enabled

❑ **USB 2.0 Controller Mode**

This field is configures the USB 2.0 controllers in High speed (480Mbps) or Full speed (12Mbps).

**Available Options:** HiSpeed, and FullSpeed

**Default setting:** FullSpeed

❑ **BIOS ECHI Hand-Off**

This is a workaround for OS without ECHI Hand-Off support. The ECHI ownership change should claim by ECHI driver.

**Available Options:** Enabled, and Disabled

**Default setting:** Enabled

❑ **Hotplug USB FDD Support**

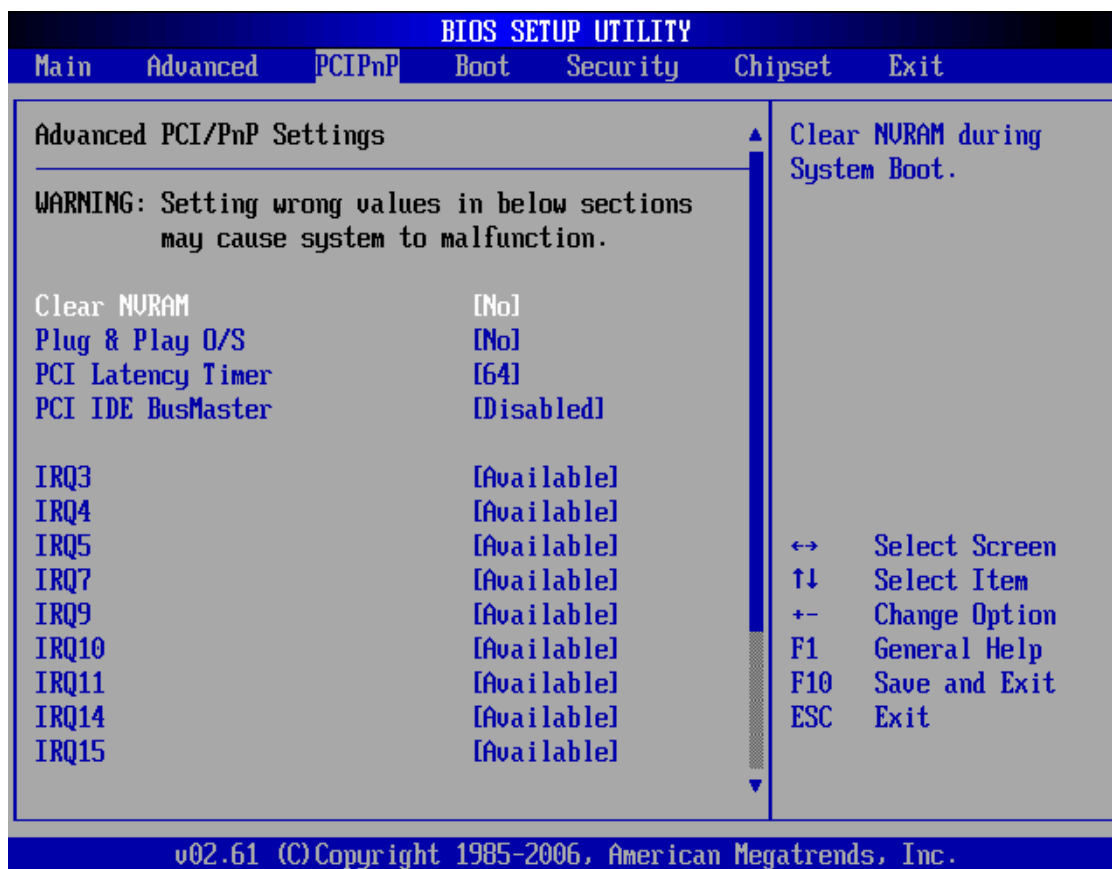
A dummy FDD device is created that will be associated with the hot plugged FDD later. Auto option creates this dummy device only if there is no USB FDD present.

**Available Options:** Enabled, Disabled and Auto

**Default setting:** Disabled

## PCIPnP Setup

Select the *PCI/PnP* tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.



### ❑ Clear NVRAM

Clear NVRAM during system boot.

**Available Options:** Yes, No

**Default setting:** No

### ❑ Plug and Plug Aware O/S

Set to Yes to inform BIOS that the operating system can handle Plug and Play (PnP) devices.

**Available Options:** Yes, No

**Default setting:** No

❑ **PCI Latency Timer**

This field specifies the latency timings (in PCI clock) PCI devices installed in the PCI expansion bus.

**Available Options:** 32, 64, 96, 128, 160,192, 224, and 248

**Default setting:** 64

❑ **PCI IDE BusMaster**

This option is to specify that the IDE controller on the PCI local bus have bus-mastering capability.

**Available Options:** Enabled, Disabled

**Default setting:** Disabled

❑ **IRQ 3 –15**

When I/O resources are controlled manually, you can assign each system interrupt as one of the following types, based on the type of device using the interrupt:

Available: Specified IRQ is available to the used by PCI/PnP devices.

Reserved: Specified IRQ is reserved for used by Legacy ISA devices.

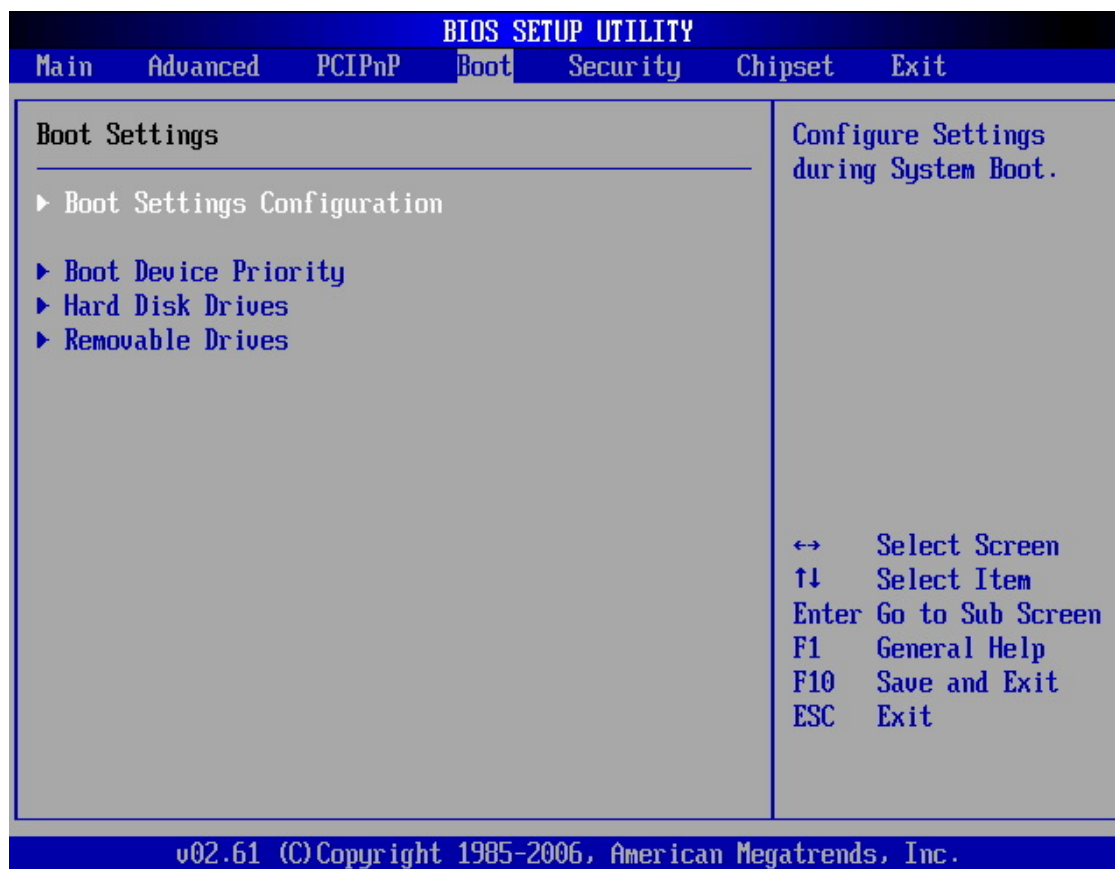
**Available Options:** Available and Reserved

**Default setting:** Available

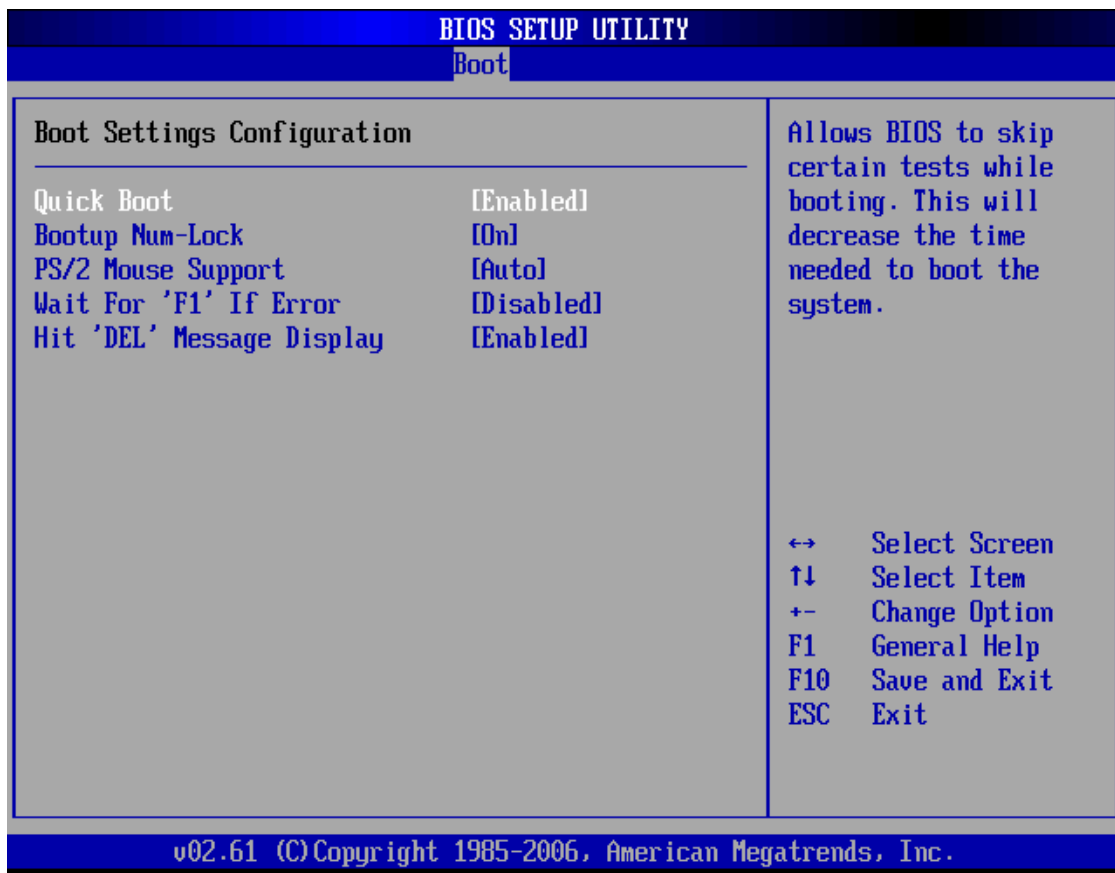
## Boot Setup

Select the *Boot* tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the <Arrow> keys. All Boot Setup options are described in this section. Select an item on the Boot Setup screen to access the sub menu for:

- Boot Setting Configuration
- Boot Device Priority
- Hard disk drives
- Removable Drivers



➤ **Boot Setting Configuration**



❑ **Quick Boot**

This field is used to activate the quick boot function of the system. When set to Enabled,

1. BIOS will not wait for up to 40 seconds if a Ready signal is not received from the IDE drive, and will not configure its drive.
2. BIOS will not wait for 0.5 seconds after sending a RESET signal to the IDE drive.
3. You cannot run BIOS Setup at system boot since there is no delay for the Hit, Del. To run Setup message.

**Available Options:** Disabled, Enabled

**Default setting:** Enabled

❑ **Boot Up Num-Lock**

This field is used to activate the Num Lock function upon system boot. If the setting is on, after a boot, the Num Lock light is lit, and user can use the number key.

**Available options:** On, Off

**Default setting:** On

**PS/2 Mouse Support**

The PS/2 mouse function is optional. Before you configure this field, make sure your system board supports this feature. The setting of **Enabled** allows the system to detect a PS/2 mouse on boot up. If detected, IRQ12 will be used for the PS/2 mouse. IRQ 12 will be reserved for expansion cards if a PS/2 mouse is not detected. **Disabled** will reserve IRQ12 for expansion cards and therefore the PS/2 mouse will not function.

**Available options:** Disabled, Enabled and Auto

**Default setting:** Auto

**Wait for 'F1' If Error**

AMIBIOS POST error messages are followed by:

Press <F1> to continue

If this field is set to **Disabled**, the AMIBIOS does not wait for you to press the <F1> key after an error message.

**Available options:** Disabled, Enabled

**Default setting:** Disabled

**Hit 'DEL' Message Display**

Set this field to **Disabled** to prevent the message as follows:

Hit 'DEL' if you want to run setup

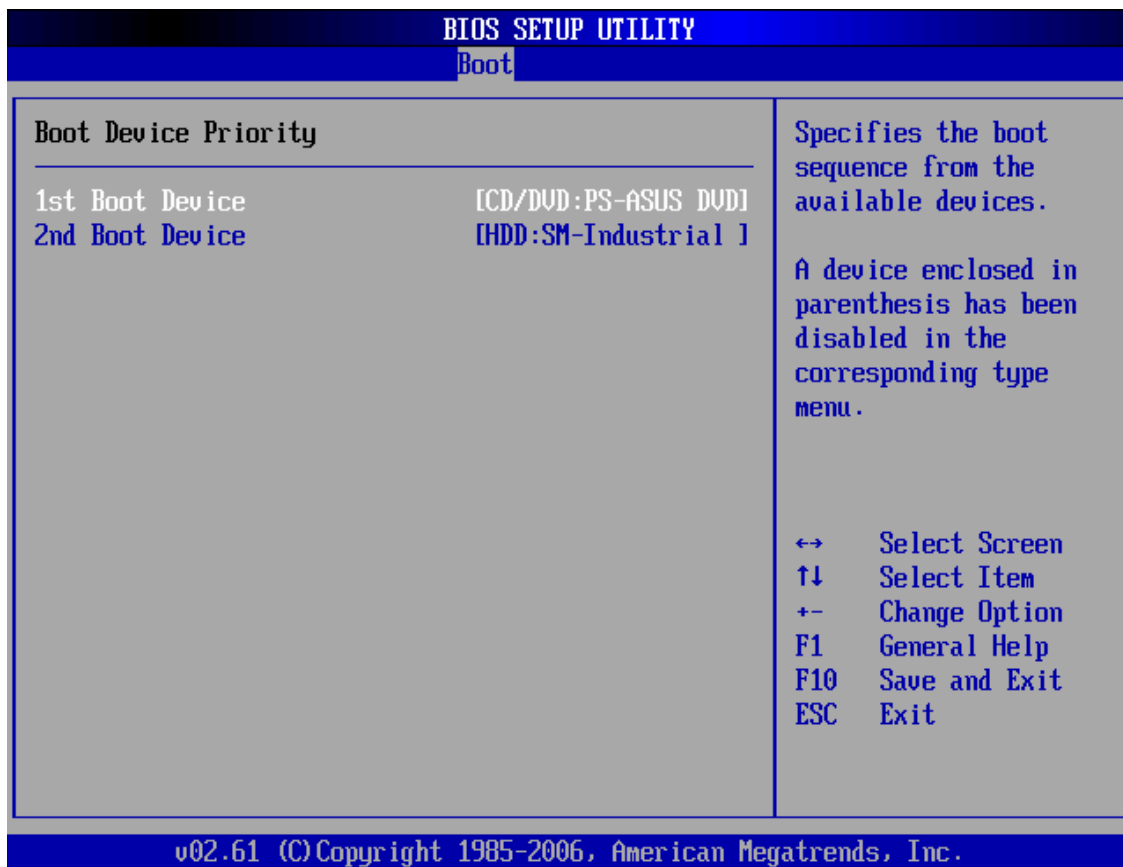
It will prevent the message from appearing on the first BIOS screen when the computer boots.

**Available options:** Disabled, Enabled

**Default setting:** Enabled

➤ **Boot Device**

Use this screen to specify the order in which the system checks for the device to boot from. To access this screen, select Boot Device Priority on the Boot Setup screen and press <Enter>.



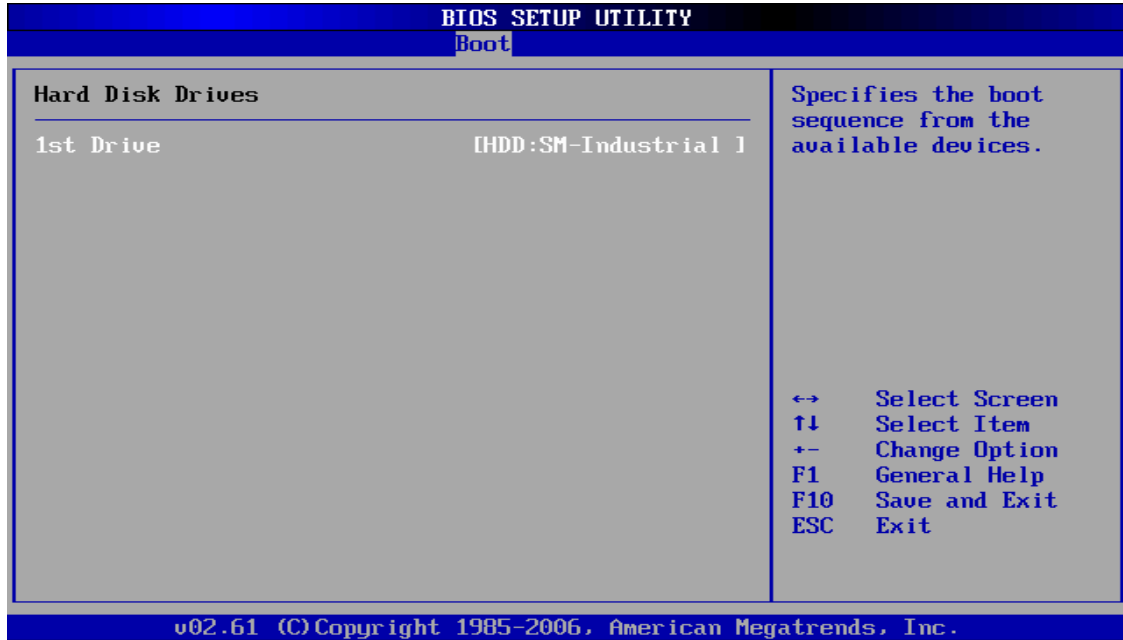
□ **First /Second /Third Hard Disk Boot Device**

Set the boot device options to determine the sequence in which the computer checks which device to boot from. The settings are *Removable Dev.*, *Hard Drive*, or *ATAPI CDROM*.

**Note:** When you select a boot category from the boot menu, a list of devices in that category appears. For example, if the system has three hard disk drives connected, then the list will show all three hard disk drives attached

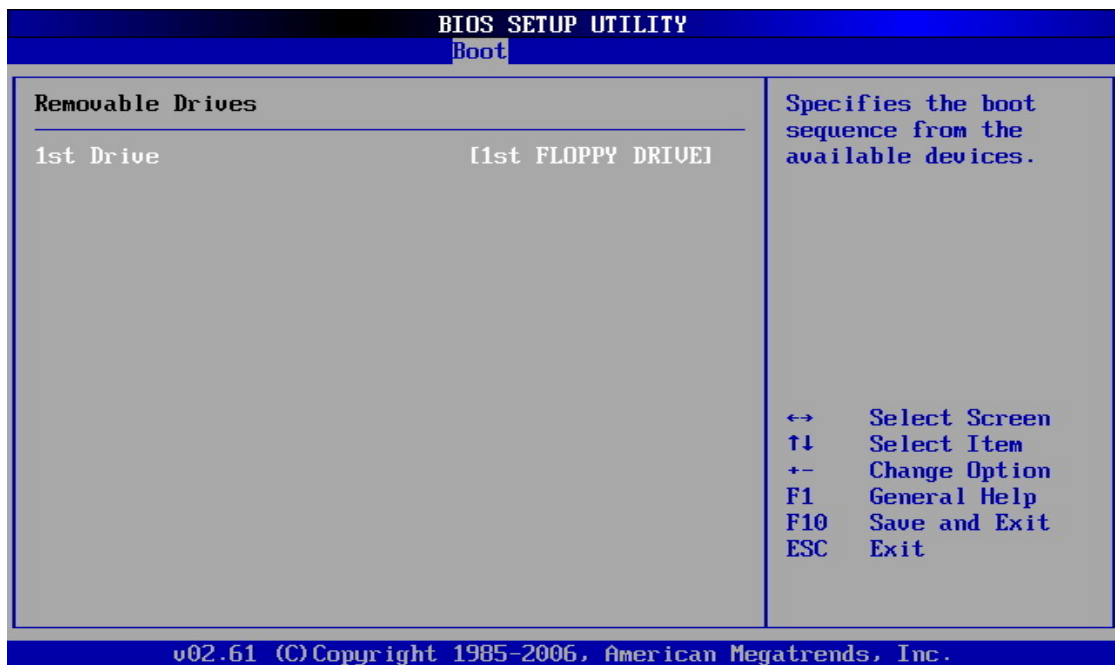
➤ **Hard Disk Drives**

Use this screen to view the hard disk drives in the system. To access this screen, select Hard disk drives on the Boot Setup screen and press <Enter>.



➤ **Removable Drives**

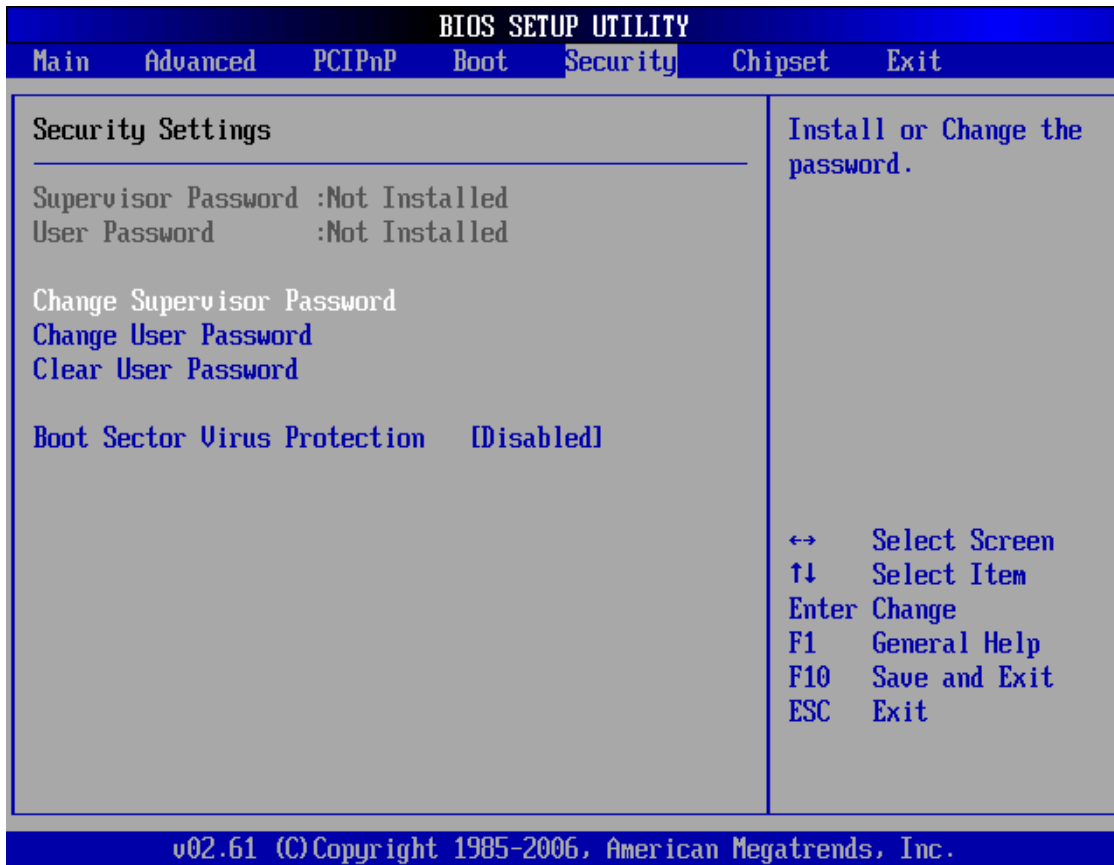
Use this screen to view the removable drives in the system. To access this screen, select removable drives on the Boot Setup screen and press <Enter>.



## Security setup

There are two security passwords: Supervisor and User. Supervisor is a privileged person that can change the User password from the BIOS. According to the default setting, both access passwords are not set up and are only valid after you set the password from the BIOS.

- Change Supervisor Password
- Change User Password
- Clear User Password
- Boot Sector Virus Protection



To set the password, please complete the following steps.

1. Select **Change Supervisor Password**.
2. Type the desired password (up to 6 character length) when you see the message, "Enter New Supervisor Password."
3. Then you can go on to set a user password (up to 6 character length) if required. Note that you cannot configure the User password until the Supervisor password is set up.
4. Enter Advanced BIOS Features screen and point to the Security Option field.

5. Select System or Setup.
  - ✧ **Always:** a visitor who attempts to enter BIOS or operating system will be prompted for password.
  - ✧ **Setup:** a visitor who attempts to the operating system will be prompted for user password. You can enter either User password or Supervisor password.
6. Point to **Save Settings and Exit** and press Enter.
7. Press Y when you see the message, "Save Current Settings and Exit (Y/N)?"

Note: it is suggested that you write down the password in a safe place to avoid that password may be forgotten or missing.

**Clear User Password**

Select Clear User Password from the Security Setup menu and press <Enter>. Clear New Password > [OK] [Cancel] appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>.

**Password Check**

This field enables password checking every time the computer is powered on or every time the BIOS Setup is executed. If **Always** is chosen, a user password prompt appears every time and the BIOS Setup Program executes and the computer is turned on. If **Setup** is chosen, the password prompt appears if the BIOS executed.

**Available options:** Setup, Always

**Default setting:** Setup

**Boot Sector Virus Protection**

This option is near the bottom of the Security Setup screen. The Optimal and Fail-Safe default setting is *disabled*

Enabled: Set this value to prevent the Boot Sector Virus Protection. This is the default setting.

Disabled: Select Enabled to enable boot sector protection, displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. You may have to type N several times to prevent the boot sector write. Boot Sector Write!

Possible VIRUS: Continue (Y/N)? \_

The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard disk drive Service:

Format!!!

Possible VIRUS: Continue (Y/N)?

## Chipset Setup

This section describes the configuration of the board's chipset features.

- North Bridge Configuration
- South Bridge Configuration



➤ **North Bridge Configuration**

You can use this screen to select options for the North Bridge Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



❑ **DRAM Frequency**

This specifies the SDRAM memory clock frequency.

**Available Options:** Auto, 400MHz, and 533MHz

**Default setting:** Auto

❑ **Configure DRAM Timing by SPD**

SPD represents Serial Presence Detect. It is an 8-bit, 2048 bits EEPROM, built on the SDRAM for 100 MHz frequencies. If the installed SDRAM supports SPD function, select SPD. If not, you can select based on other access time of the SDRAM.

**Available Options:** Disabled and Enabled

**Default setting:** Enabled

#### ❑ Internal Graphics Mode Select

This field is share memory architecture (SMA) for frame buffer memory. SMA allows system memory to be efficiently share by the host CPU and allocated depending on user preference, application requirements, and total size of system memory.

**Available Options:** Disabled, 1MB, and 8MB

**Default setting:** 8MB

#### ❑ Video Function Configuration

##### ■ DVMT Mode Select

This field is the *DVMT mode* is memory that is dynamically allocated based on memory requests made by application and are released back to the system once the requesting application has been terminated. *Fixed mode* is non-contiguous page locked memory allocated during driver initialization to provide a static amount of memory.

**Available Options:** Fixed Mode, Combo Mode and DVMT Mode

**Default setting:** DVMT Mode

##### ■ DVMT/FIXED Memory

This field specifies allows you to select the maximum amount of graphics memory to be shared with the system memory.

**Available Options:** 64MB, 128MB and Maximum DVMT

**Default setting:** 128MB

##### ■ Boot Display Device

This field specifies which VGA display will be used when the system is boot. You can select the LFP (LVDS Flat Panel LCD) or the CRT + LFP booting on the VGA Display.

**Available Options:** CRT, LFP and CRT+LFP

**Default setting:** CRT

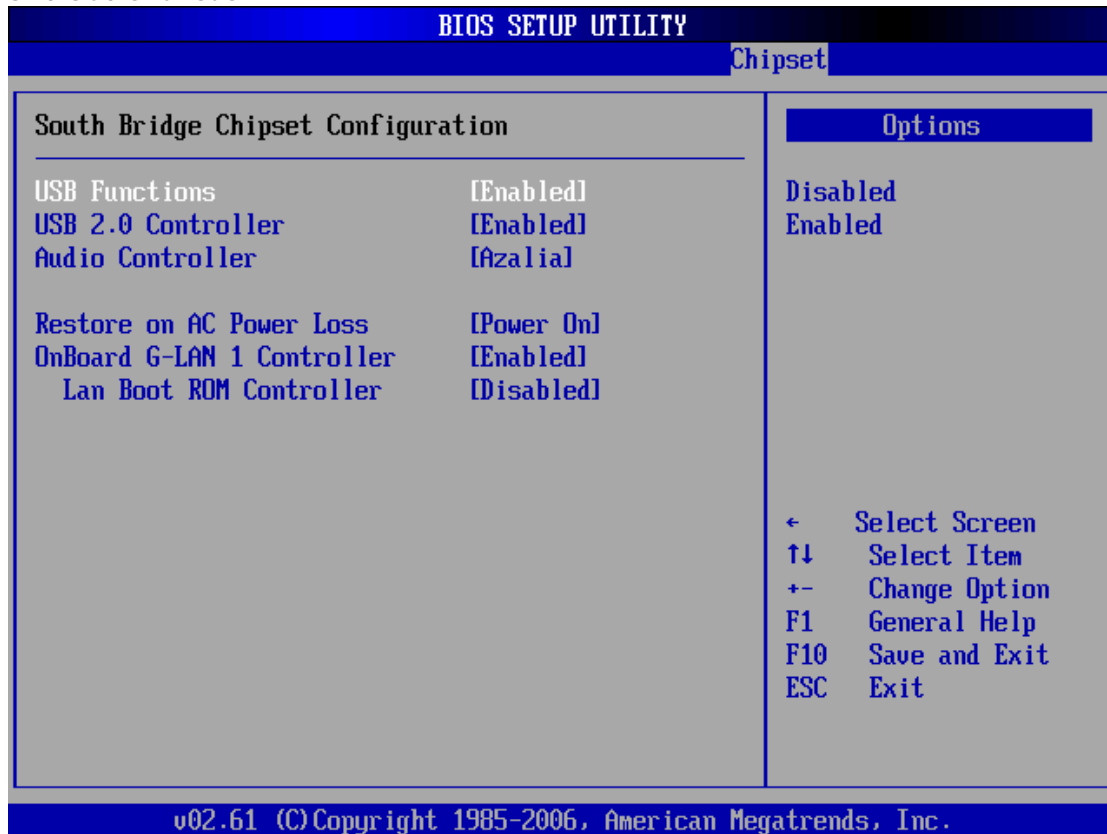
##### ✧ Plat Panel Display

When use the LCD the field specifies which select display resolution for different LVDS TFT LCD display type.

**Available Options:** See the BIOS Flat Panel Display Table.

➤ **South Bridge Configuration**

You can use this screen to select options for the South Bridge Configuration. South Bridge is a chipset on the motherboard that controls the basic I/O functions, LAN port, and audio function.



❑ **USB Function**

Select Enabled, if a USB device is installed to the system. If Disabled are selected, the system will not be able to use a USB device.

**Available Options:** Disabled, and Enabled

**Default setting:** Enabled

❑ **USB 2.0 Controller**

This field is select Enabled or Disabled the USB 2.0 controllers

**Available Options:** Disabled, Enabled

**Default setting:** Enabled

❑ **Audio Controller**

This field specifies the internal Audio Control.

**Available Options:** Disabled and Azalia

**Default setting:** Azalia

❑ **Restore On AC Power Lose**

This field specifies the option controls how the PC will behave once power is restored following a power outage (or other unexpected or ungraceful shutdown). The "Last State" option returns the PC to the state in effect at the time the power outage or shutdown occurred. Assign this option the "Power On" value to reboot automatically; assign the "Power Off" value to leave the machine powered down.

**Available Options:** Power Off, Power On, and Last State

**Default setting:** Power Off

❑ **On Board G-LAN Controller**

This field specifies the Enabled or Disabled of the onboard LAN chip.

**Available Options:** Disabled, and Enabled

**Default setting:** Enabled

■ ***LAN Boot ROM Controller***

This field specifies the PXE boot ROM of the onboard LAN chip.

**Available Options:** Disabled, and Enabled

**Default setting:** Disabled



## Chapter 5 Software Installation

The enclosed CD diskette includes FB2606 VGA, Audio, System, and LAN driver. To install and configure you FB2606 system, you need to perform the following steps.

### System Driver

#### WIN 2000/XP Driver

Installs 945GSE Chipset, IRQ Routing, USB, AGP Driver and ISA IDE Bus Master Drive.

- Step 1: To install the 945GSE driver, insert the CD ROM into the CD ROM device, and enter DRIVER>SysChip>ICH7.
- Step 2: Execute Setup.exe file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.

Yes, I want to restart my computer now. Installation is done!

No, I will restart my computer later.

System must be restart then complete the installation.

**Note:** In the Syschip>ICH7 directory, a Readme.txt file is included to provide installation information.

## VGA Driver

### WIN 2000/XP Driver

- Step 1: To install the VGA driver, insert the CD ROM into the CD ROM device, and enter DRIVER>VGA>945GSE>WIN2K\_XP.
- Step 2: Execute SETUP.EXE file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.  
Yes, I want to restart my computer now. Installation is done!  
No, I will restart my computer later.  
System must be restart then complete the installation.
- Step 5: In the WINDOWS2000/XP, you can find the <DISPLAYL> icon located in the {CONTROL PANEL} group.
- Step 6: Adjust the <Refresh Rate>, <Font size> and <Resolution>.

**Note:** In the DRIVER>VGA>945GSE>WIN2K\_XP directory, a Readme.txt file is included to provide installation information.

## Audio Driver

### WIN 2000/XP Driver

- Step 1: To install the AUDIO driver, insert the CD ROM into the CD ROM device, and enter DRIVER>AUDIO>ALC888>WIN2K&XP.
- Step 2: Execute SETUP.exe file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.  
Yes, I want to restart my computer now. Installation is done!  
No, I will restart my computer later.  
System must be restart then complete the installation.

**Note:** In the DRIVER>AUDIO>ALC888>WIN2K&XP directory, a Readme.txt file is included to provide installation information.

## **LAN Driver (RTL 8111C)**

### **WIN 2000/XP Driver**

- Step 1: To install the LAN driver, insert the CD ROM into the CD ROM device, and enter DRIVER>LAN>RTL8111C. If your system is not equipped with a CD ROM device, copy the LAN driver from the CD ROM to CF.
- Step 2: Execute setup.exe file.

## **BIOS Flash Utility**

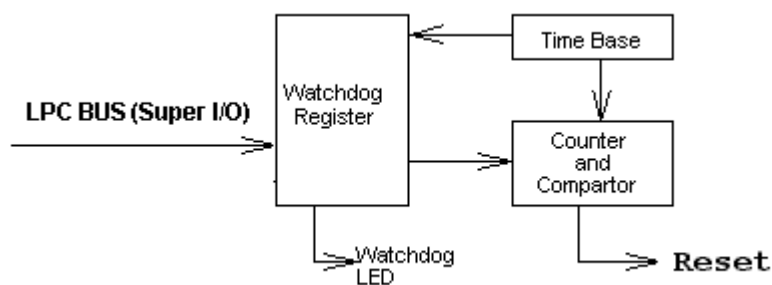
In the <UTILITY> directory, there is the Afu409.EXE file.

- Step 1: Use the Afu409.EXE program to update the BIOS setting.
- Step 2: And then refer to the chapter "BIOS Setup", as the steps to modify BIOS.
- Step 3: Now the CPU board's BIOS loaded with are the newest program; user can use it to modify BIOS function in the future, when the BIOS add some functions.

## Watchdog Timer

This section describes how to use the Watchdog Timer, including disabled, enabled, and trigger functions.

The system is equipped with a programmable time-out period watchdog timer. You can use your own program to enable the watchdog timer. Once you have enabled the watchdog timer, the program should trigger the I/O every time before the timer times out. If your program fails to trigger or disable this timer before it times out, e.g. because of a system hang-up, it will generate a reset signal to reset the system. The time-out period can be programmed to be set from 1 to 255 seconds or minutes.



### Watchdog Timer Setting

The watchdog timer is a circuit that may be used from your program software to detect system crashes or hang-ups. The watchdog timer is automatically disabled after reset.

Once you have enabled the watchdog timer, your program must trigger the watchdog timer every time before it times out. After you trigger the watchdog timer, it will be set to non-zero value to watchdog counter and start to count down again. If your program fails to trigger the watchdog timer before time-out, it will generate a reset pulse to reset the system.

The factor of the watchdog timer time-out constant is approximately 1 second. The period for the watchdog timer time-out is between 1 to FF timer factors.

If you want to reset your system when watchdog times out, the following table listed the relation of timer factors between time-out periods.

Time Factor	Time-Out Period (Seconds)	Time-Out Period (Minutes)
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
"	"	"
"	"	"
"	"	"
FF	FF	FF

### Watchdog Timer Enabled

To enable the watchdog timer, you have to output a byte of timer factor to the watchdog register whose address is 2Eh and data port is 2fH. The following is an Assemble program, which demonstrates how to enable the watchdog timer and set the time-out period at 28 seconds.

```
-----  
; Enter the extended function mode, interruptible double-write  
-----  
Mov    dx, 2eh          ; Enter to extended function mode  
Mov    al, 87h  
Out    dx, al  
Out    dx, al  
Mov    al, 07h  
Out    dx, al  
-----  
; Logical device 8, configuration register CRF5 Bit 3, CRF6 Bit 0~7  
-----  
Mov    dx, 2fh  
Mov    al, 08h          ; Select Logical Device 8 of watchdog timer  
Out    dx, al  
Mov    dx, 2eh  
Mov    al, 0f5h         ; Set second as counting unit  
Out    dx, al  
Mov    dx, 2fh  
In     al, dx  
Or     al, c0           ; Trigger P/W LED.  
And    al, not c8h      ; Set Second.  
; And    al, c8h        ; Set Minute.  
Out    dx, al  
Mov    dx, 2eh  
Mov    al, 0f6h  
Out    dx, al  
Mov    dx, 2fh  
Mov    al, 28h         ; Set timeout interval as 28seconds and start counting  
Out    dx, al  
-----  
; Exit extended function mode  
-----  
Mov    dx, 2eh  
Mov    al, 0aah  
Out    dx, al
```

### Watchdog Timer Trigger

After you enable the watchdog timer, your program must write the same factor as enabling to the watchdog register at least once every time-out period to its previous setting. You can change the time-out period by writing another timer factor to the watchdog register at any time, and you must trigger the watchdog before the new time-out period in next trigger.

### Watchdog Timer Disabled

To disable the watchdog timer, simply write a 00H to the watchdog register.

```
-----  
; Enter the extended function mode, interruptible double-write  
-----  
Mov    dx,2eh          ; Enter to extended function mode  
Mov    al,87h  
Out    dx,al  
Out    dx,al  
  
-----  
; Logical device 8, configuration register CRF5 Bit 3(Sec./Min.), CRF6 Bit 0~7 (Count.)  
-----  
Mov    al,07h  
Out    dx,al  
Mov    dx,2fh  
Mov    al,08h          ; Select Logical Device 8 of watchdog timer  
Out    dx,al  
Mov    dx,2eh  
Mov    al,0f5h         ;Set second as counting unit  
Out    dx,al  
Mov    dx,2fh  
In     al,dx  
And    al,not c8h      ;Set Second or Minute.  
Out    dx,al  
Mov    dx,2eh  
Mov    al,0f6h  
Out    dx,al  
Mov    dx,2fh  
Mov    al,00h          ; Set Watchdog Timer Disabled  
Out    dx,al  
  
-----  
; Exit extended function mode  
-----  
Mov    dx,2eh          ;Exit the extended function mode  
Mov    al,0aah  
Out    dx,al
```

## Programming RS-485

The majority communicative operation of the RS-485 is in the same of the RS-232. When the RS-485 precedes the transmission, which needs control the TXC signal, and the installing, steps are as follows:

Step 1: Enable TXC

Step 2: Send out data

Step 3: Waiting for data empty

Step 4: Disable TXC

Note: Please refer to the section of the "Serial Ports" in the Chapter 5 "[Technical Reference](#)" for the detail description of the COM port's register.

### □ Initialize COM port

Step 1: Initialize COM port in the receiver interrupt mode, and /or transmitter interrupt mode. (All of the communication protocol buses of the RS-485 are in the same.)

Step 2: Disable TXC (transmitter control), the bit 0 of the address of offset+4 just sets "0".

NOTE: Control the system "DTR" signal to the RS-485 TXC communication.

### **Send out one character (Transmit)**

Step 1: Enabled TXC signal, and the bit 0 of the address of offset+4 just sets "1".

Step 2: Send out the data. (Write this character to the offset+0 of the current COM port address)

Step 3: Wait for the buffer's data empty. Check transmitter holding register (THRE, bit 5 of the address of offset+5), and transmitter shift register (TSRE, bit 6 of the address of offset+5) are all sets must be "0".

Step 4: Disabled TXC signal, and the bit 0 of the address of offset+4 sets "0"

### **Send out one block data (Transmit – the data more than two characters)**

Step 1: Enabled TXC signal, and the bit 0 of the address of offset+4 just sets "1".

Step 2: Send out the data. (Write all data to the offset+0 of the current COM port address)

Step 3: Wait for the buffer's data empty. Check transmitter holding register (THRE, bit 5 of the address of offset+5), and transmitter shift register (TSRE, bit 6 of the address of offset+5) are all sets must be "0".

Step 4: Disabled TXC signal, and the bit 0 of the address of offset+4 sets "0"

### **Receive data**

The RS-485's operation of receiving data is in the same of the RS-232's.

### **Basic Language Example**

#### **a. Initial 86C450 UART**

```
10      OPEN "COM1:9600, m, 8, 1" AS #1 LEN=1
20      REM Reset DTR
30      OUT &H3FC, (INP (%H3FC) AND &HFA)
```

40        RETURN

**b. Send out one character to COM1**

10        REM Enabled transmitter by setting DTR ON

20        OUT &H3FC, (INP (&H3FC) OR &H01)

30        REM Send out one character

40        PRINT #1, OUTCHR\$

50        REM Check transmitter holding register and shift register

60        IF ((INP (&H3FD) AND &H60) >0) THEN 60

70        REM Disabled transmitter by resetting DTR

80        OUT &H3FC, (INP (&H3FC) AND &HEF)

90        RETURN

**c. Receive one character from COM1**

10        REM Check COM1: receiver buffer

20        IF LOF (1) <256 THEN 70

30        REM Receiver buffer is empty

40        INPSTR\$"

50        RETURN

60        REM Read one character from COM1: buffer

70        INPSTR\$=INPUT\$(1, #1)

80        RETURN

**NOTE:** The RS-485 of the FB2606 uses COM2. If you want to program it and hardware setup, please refer to the [Hardware Setup](#) for COM2 address setup.

## J5 - TTL I/O Software programming example

The following example is written in Intel 8086 assembly language. It assumes that the IO port address is located at 2Eh and data port is located at 2Fh. The following is an Assemble program, which demonstrates how to read/write the TTL IO ports.

```
-----  
; Enter the extended function mode, interruptible double-write  
-----  
    Mov     dx,2eh  
    Mov     al,87h  
    Out     dx,al  
    Out     dx,al  
-----  
; Logical device 7, configuration registers CRF1 Bit 0, 1, 2, 3 (J5-Pin1, 2, 3, 4 GPO1, 2, 3, 4)  
-----  
    Mov     dx,2eh  
    Mov     al,07h  
    Out     dx,al    ;point to Logical Device Number Reg.  
    Mov     dx,2fh  
    Mov     al,07h  
    Out     dx,al    ; select logical device 7  
    Mov     dx,2eh  
    Mov     al,0f1H  
    Out     dx,al    ; select CRF1  
    Mov     dx,2fh  
    Mov     al,0f0h  ; Bit 0, 1, 2, 3 with value 0. (Write GPO-1, 2, 3, 4 is active to low.)  
; Mov     al,0ffh  ; Bit 0, 1, 2, 3 with value 1. (Write GPO-1, 2, 3, 4 is active to high.)  
    Out     dx,al  
-----  
; Logical device 7, configuration registers CRF1 Bit 4, 5, 6, 7(J5-Pin5, 6, 7, 8 /GPI 1, 2, 3, 4)  
-----  
    Mov     dx,2eh  
    Mov     al,07h  
    Out     dx,al    ; point to Logical Device Number Reg.  
    Mov     dx,2fh  
    Mov     al,07h  
    Out     dx,al    ; select logical device 7  
    Mov     dx,2eh  
    Mov     al,0f1h  
    Out     dx,al    ; select CRF1  
    Mov     dx,2fh  
    In      al,dx    ; Bit 4, 5, 6, 7 with state value. (Read GPI1, 2, 3, 4 states.)  
-----  
; Exit extended function mode  
-----  
    Mov     dx,2eh  
    Mov     al,0aah  
    Out     dx,al
```



## Chapter 6 Technical Reference

This section outlines the errors that may occur when you operate the system, and also gives you the suggestions on solving the problems.

Topic include:

- Trouble Shooting for Post Beep & Error Messages
- Technical Reference

### Trouble Shooting for Post Beep and Error Messages

The following information informs the Post Beep & error messages. Please adjust your systems according to the messages below. Make sure all the components and connectors are in proper position and firmly attached. If the errors still exist, please contact with your distributor for maintenance.

#### ❑ POST BEEP

Currently there are two kinds of beep codes in BIOS setup.

- One indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps.
- The other indicates that an error has occurred in your DRAM. This beep code consists of a constant single long beep.

#### ❑ CMOS BATTERY FAILURE

When the CMOS battery is out of work or has run out, the user has to replace it with a new battery.

❑ **CMOS CHECKSUM ERROR**

This error informs that the CMOS has corrupted. When the battery runs weak, this situation might happen. Please check the battery and change a new one when necessary.

❑ **DISK BOOT FAILURE**

When you can't find the boot device, insert a system disk into Drive A and press < Enter >. Make sure both the controller and cables are all in proper positions, and also make sure the disk is formatted. Then reboot the system.

❑ **DISKETTE DRIVES OR TYPES MISMATCH ERROR**

When the diskette drive type is different from CMOS, please run setup or configure the drive again.

❑ **ERROR ENCOUNTERED INITIALIZING HARD DRIVE**

When you can't initialize the hard drive, ensure the following things:

1. The adapter is installed correctly
2. All cables are correctly and firmly attached
3. The correct hard drive type is selected in BIOS Setup

❑ **ERROR INITIALIZING HARD DISK CONTROLLER**

When this error occurs, ensure the following things:

1. The cord is exactly installed in the bus.
2. The correct hard drive type is selected in BIOS Setup
3. Whether all of the jumpers are set correctly in the hard drive

❑ **FLOPPY DISK CONTROLLER ERROR OR NO CONTROLLER PRESENT**

When you cannot find or initialize the floppy drive controller, please ensure the controller is in proper BIOS Setup. If there is no floppy drive installed, ensure the Diskette Drive selection in Setup is set to NONE.

❑ **KEYBOARD ERROR OR NO KEYBOARD PRESENT**

When this situation happens, please check keyboard attachment and no keys being pressed during the boot. If you are purposely configuring the system without a keyboard, set the error halt condition in BIOS Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot procedure.

❑ **MEMORY ADDRESS ERROR**

When the memory address indicates error. You can use this location along with the memory map for your system to find and replace the bad memory chips.

❑ **MEMORY SIZE HAS CHANGED**

Memory has been added or removed since last boot. In EISA mode, use Configuration Utility to re-configure the memory configuration. In ISA mode enter BIOS Setup and enter the new memory size in the memory fields.

❑ **MEMORY VERIFYING ERROR**

It indicates an error verifying a value is already written to memory. Use the location along with your system's memory map to locate the bad chip.

❑ **OFFENDING ADDRESS MISSING**

This message is used in connection with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

❑ **REBOOT ERROR**

When this error occurs that requires you to reboot. Press any key and the system will reboot.

❑ **SYSTEM HALTED**

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

## Technical Reference

### Physical and Environmental

Power Supply Voltage: +5V/+5%,+12V/+5%

Temperature: Operating 0°C ~ 60°C (32~140°F)

Relative humidity 0 % to 90 % non-condensing

### Real-Time Clock and Non-Volatile RAM

The FB2606 contains a real-time clock compartment that maintains the date and time in addition to storing configuration information about the computer system. It contains 14 bytes of clock and control registers and 114 bytes of general purpose RAM. Because of the use of CMOS technology, it consumes very little power and can be maintained for long periods of time using an internal Lithium battery. The contents of each byte in the CMOS RAM are listed below:

Address	Description
00	Seconds
01	Second alarm
02	Minutes
03	Minute alarm
04	Hours
05	Hour alarm
06	Day of week
07	Date of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown status byte
10	Diskette drive type byte, drive A and B

Address	Description
11	Fixed disk type byte, drive C
12	Fixed disk type byte, drive D
13	Reserved
14	Equipment byte
15	Low base memory byte
16	High base memory byte
17	Low expansion memory byte
18	High expansion memory byte
19-2D	Reserved
2E-2F	2-byte CMOS checksum
30	Low actual expansion memory byte
31	High actual expansion memory byte
32	Date century byte
33	Information flags (set during power on)
34-7F	Reserved for system BIOS

**CMOS RAM Map**

Register	Description
00h -10h	Standard AT-compatible RTC and Status and Status Register data definitions
11h – 13h	Varies
14h	Equipment Bits 7-6 Number of Floppy Drives 00 1 Drive 01 2 Drives Bits 5-4 Monitor Type 00 Not CGA or MDA 01 40x25 CGA 01 2 Drives 80x25 CGA Bits 3 Display Enabled 0 Disabled 1 Enabled Bit 2 Keyboard Enabled 00 Not CGA or MDA 01 40x25 CGA 01 2 Drives 80x25 CGA Bit 1 Math Coprocessor Installed 0 Absent 1 Present Bit 0 Floppy Drive Installed 0 Disabled 1 Enabled
15h	Base Memory (in 1KB increments), Low Byte
16h	Base Memory (in 1KB increments), High Byte
17h	IBM-compatible memory (in 1KB increments), Low Byte
18h	IBM-compatible memory (in 1KB increments), High Byte (max 15 MB)
19h-2Dh	Varies
2Eh	Standard CMOS RAM checksum, high byte
2Fh	Standard CMOS RAM checksum, low byte
30h	IBM-compatible Extended Memory, Low Byte (POST) in KB
31h	IBM-compatible Extended Memory, High Byte (POST) in KB
32h	Century Byte
33h	Reserved. Do not use
34h	Reserved. Do not use
35h	Low byte of extended memory (POST) in 64 KB
36h	High byte of extended memory (POST) in 64 KB
37h-3Dh	Varies
3Eh	Extended CMOS Checksum, Low Byte (including 34h-3Dh)
3Fh	Extended CMOS Checksum, High Byte (including 34h-3Dh)

## 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 on the Industrial CPU Card.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 071h	Real Time Clock, NMI
078h - 07Bh	TTL I/O
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
170h - 177h	IDE Interface
1F0h - 1F7h	IDE Interface
2F8h - 2FFh	Serial Port #2(COM2)
2B0h - 2DFh	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
3B0h - 3BFh	Monochrome & Printer adapter
3C0h - 3CFh	EGA adapter
3D0h - 3DFh	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)
4D0h - 4D1h	System Board Resource
800h - 8FFh	System Board Resource
A00h - A08H	System Board Resource
CF8h - CFFh	System Board Resource
E000h-EFFh	USB/ VGA Controller

### Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial CPU Card. 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 Industrial CPU Card.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	USB#0/#1
IRQ6	FDD
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	SM-BUS/VGA
IRQ10	LAN1
IRQ11	USB#2/#3
IRQ12	PS2 Mouse
IRQ13	FPU
IRQ14	Primary IDE
IRQ15	Secondary IDE (CF)

## Serial Ports

The ACEs (Asynchronous Communication Elements ACE1 to ACE2) are used to convert parallel data to a serial format on the transmit side and convert serial data to parallel on the receiver side. The serial format, in order of transmission and reception, is a start bit, followed by five to eight data bits, a parity bit (if programmed) and one, one and half (five-bit format only) or two stop bits. The ACEs are capable of handling divisors of 1 to 65535, and produce a 16x clock for driving the internal transmitter logic.

Provisions are also included to use this 16x clock to drive the receiver logic. Also included in the ACE a completed MODEM control capability, and a processor interrupt system that may be software tailored to the computing time required to handle the communications link.

The following table is a summary of each ACE accessible register

DLAB	Port Address	Register
0	Base + 0	Receiver buffer (read)
		Transmitter holding register (write)
0	Base + 1	Interrupt enable
X	Base + 2	Interrupt identification (read only)
X	Base + 3	Line control
X	Base + 4	MODEM control
X	Base + 5	Line status
X	Base + 6	MODEM status
X	Base + 7	Scratched register
1	Base + 0	Divisor latch (least significant byte)
1	Base + 1	Divisor latch (most significant byte)

❑ **Receiver Buffer Register (RBR)**

Bit 0-7: Received data byte (Read Only)

❑ **Transmitter Holding Register (THR)**

Bit 0-7: Transmitter holding data byte (Write Only)

❑ **Interrupt Enable Register (IER)**

Bit 0: Enable Received Data Available Interrupt (ERBFI)

Bit 1: Enable Transmitter Holding Empty Interrupt (ETBEI)

Bit 2: Enable Receiver Line Status Interrupt (ELSI)

Bit 3: Enable MODEM Status Interrupt (EDSSI)

Bit 4: Must be 0

Bit 5: Must be 0

Bit 6: Must be 0

Bit 7: Must be 0

□ **Interrupt Identification Register (IIR)**

Bit 0: "0" if Interrupt Pending

Bit 1: Interrupt ID Bit 0

Bit 2: Interrupt ID Bit 1

Bit 3: Must be 0

Bit 4: Must be 0

Bit 5: Must be 0

Bit 6: Must be 0

Bit 7: Must be 0

□ **Line Control Register (LCR)**

Bit 0: Word Length Select Bit 0 (WLS0)

Bit 1: Word Length Select Bit 1 (WLS1)

WLS1	WLS0	Word Length
0	0	5 Bits
0	1	6 Bits
1	0	7 Bits
1	1	8 Bits

Bit 2: Number of Stop Bit (STB)

Bit 3: Parity Enable (PEN)

Bit 4: Even Parity Select (EPS)

Bit 5: Stick Parity

Bit 6: Set Break

Bit 7: Divisor Latch Access Bit (DLAB)

□ **MODEM Control Register (MCR)**

Bit 0: Data Terminal Ready (DTR)

Bit 1: Request to Send (RTS)

Bit 2: Out 1 (OUT 1)

Bit 3: Out 2 (OUT 2)

Bit 4: Loop

Bit 5: Must be 0

Bit 6: Must be 0

Bit 7: Must be 0

□ **Line Status Register (LSR)**

Bit 0: Data Ready (DR)

Bit 1: Overrun Error (OR)

Bit 2: Parity Error (PE)

Bit 3: Framing Error (FE)

Bit 4: Break Interrupt (BI)

Bit 5: Transmitter Holding Register Empty (THRE)

Bit 6: Transmitter Shift Register Empty (TSRE)

Bit 7: Must be 0

□ **MODEM Status Register (MSR)**

Bit 0: Delta Clear to Send (DCTS)

Bit 1: Delta Data Set Ready (DDSR)

Bit 2: Training Edge Ring Indicator (TERI)

Bit 3: Delta Receive Line Signal Detect (DSLSD)

Bit 4: Clear to Send (CTS)

Bit 5: Data Set Ready (DSR)

Bit 6: Ring Indicator (RI)

Bit 7: Received Line Signal Detect (RSLD)

□ **Divisor Latch (LS, MS)**

	LS	MS
Bit 0:	Bit 0	Bit 8
Bit 1:	Bit 1	Bit 9
Bit 2:	Bit 2	Bit 10
Bit 3:	Bit 3	Bit 11
Bit 4:	Bit 4	Bit 12
Bit 5:	Bit 5	Bit 13
Bit 6:	Bit 6	Bit 14
Bit 7:	Bit 7	Bit 15

Desired Baud Rate	Divisor Used to Generate 16x Clock
300	384
600	192
1200	96
1800	64
2400	48
3600	32
4800	24
9600	12
14400	8
19200	6
28800	4
38400	3
57600	2
115200	1

## Parallel Ports

### ❑ Register Address

Port Address	Read/Write	Register
Base + 0	Write	Output data
Base + 0	Read	Input data
Base + 1	Read	Printer status buffer
Base + 2	Write	Printer control latch

### ❑ Printer Interface Logic

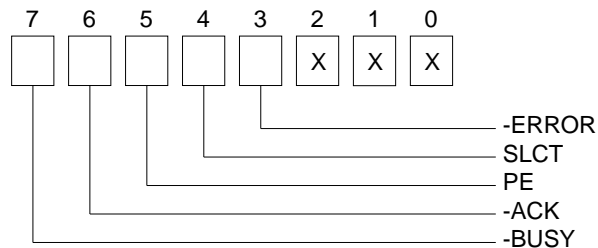
The parallel portion of the Winbond 83627 makes the attachment of various devices that accept eight bits of parallel data at standard TTL level.

### ❑ Data Swapper

The system microprocessor can read the contents of the printer's Data Latch through the Data Swapper by reading the Data Swapper address

### ❑ Printer Status Buffer

The system microprocessor can read the printer status by reading the address of the Printer Status Buffer. The bit definitions are described below:

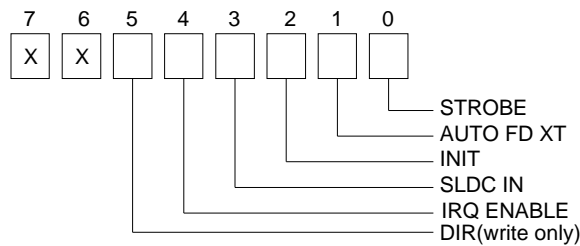


NOTE: X represents not used.

- Bit 7: This signal may become active during data entry, when the printer is off-line during printing, or when the print head is changing position or in an error state. When Bit 7 is active, the printer is busy and cannot accept data.
- Bit 6: This bit represents the current state of the printer's ACK signal. A 0 means the printer has received the character and is ready to accept another. Normally, this signal will be active for approximately 5 microseconds before receiving a BUSY message stops.
- Bit 5: A 1 means the printer has detected the end of the paper.
- Bit 4: A 1 means the printer is selected.
- Bit 3: A 0 means the printer has encountered an error condition.

□ **Printer Control Latch & Printer Control Swapper**

The system microprocessor can read the contents of the printer control latch by reading the address of printer control swapper. Bit definitions are as follows:



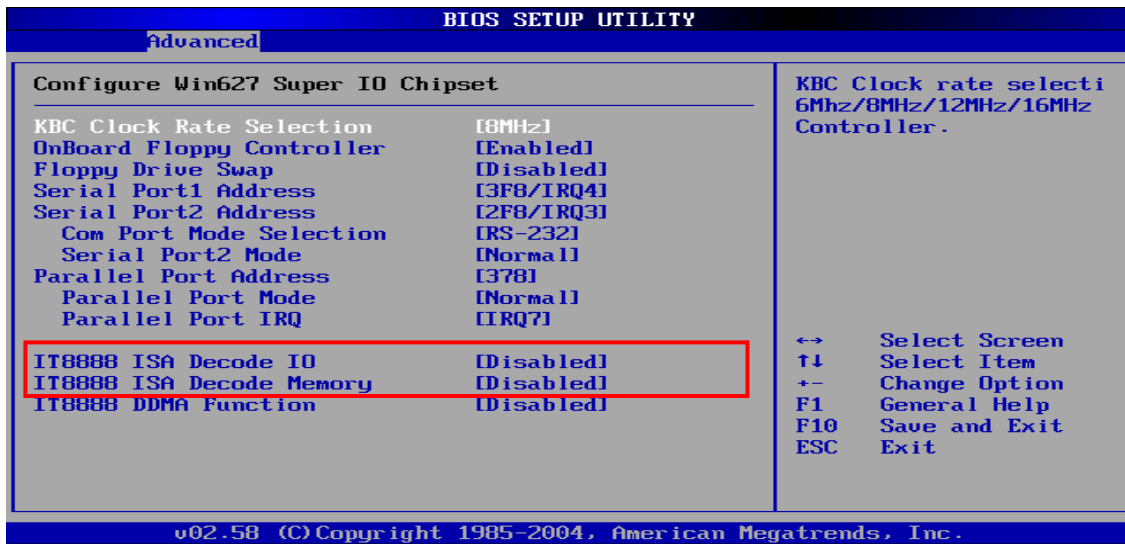
NOTE: X represents not used.

- Bit 5: Direction control bit. When logic 1, the output buffers in the parallel port are disabled allowing data driven from external sources to be read; when logic 0 they work as a printer port. This bit is write-only.
- Bit 4: A 1 in this position allows an interrupt to occur when ACK changes from low state to high state.
- Bit 3: A 1 in this bit position selects the printer.
- Bit 2: A 0 starts the printer (50 microseconds pulse, minimum).
- Bit 1: A 1 causes the printer to line-feed after a line is printed.
- Bit 0: A 0.5 microsecond minimum highly active pulse clocks data into the printer. Valid data must be present for a minimum of 0.5 microseconds before and after the strobe pulse.

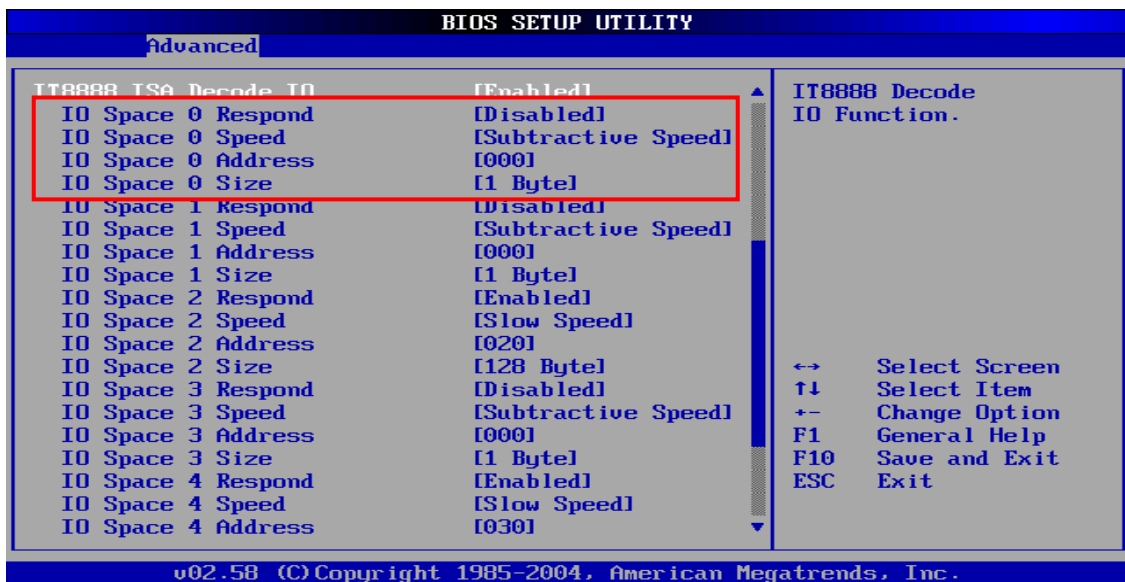
## How to configure I/O port resource

Prepare your I/O or ROM/RAM add-on card, adjust the I/O port and memory address(Please refer to Chapter 5 "I/O Port address Map", to ward off the IO Port address) , if the I/O port of your add-on card is 200H~207H and ROM/RAM memory space is D000:0 ~D3FF:0 (16K)Segment, the following steps are for you to set up the I/O or memory resources manually.

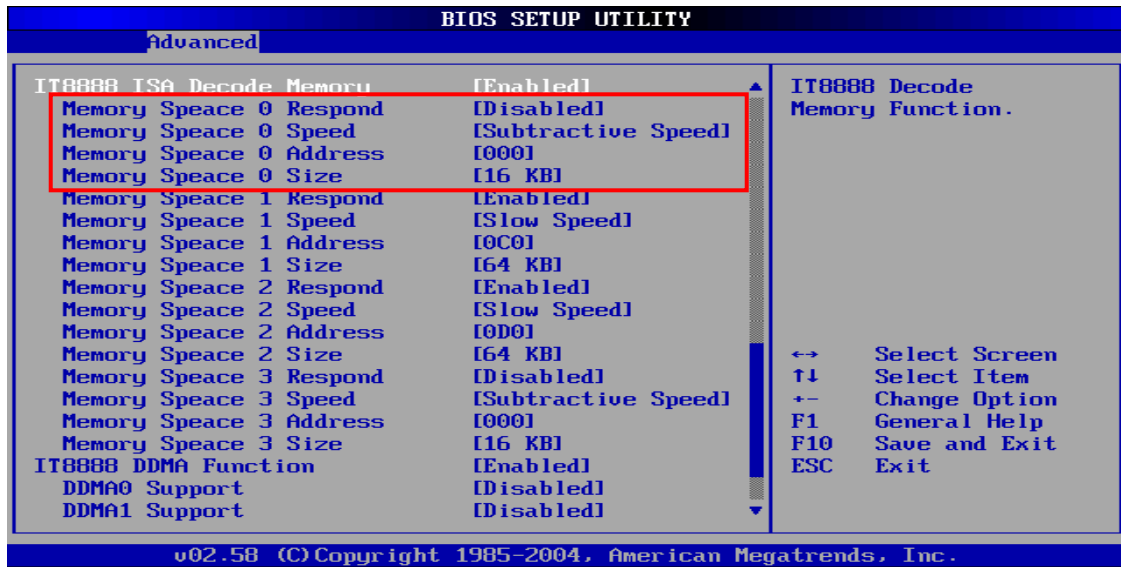
1. Booting the FB2606 CPU board and get into the BIOS CMOS SETUP >Select the Advanced >, and then select IT8888 ISA Decode IO.



2. Select the "Decode I/O Space 0 "; enable this function and adjust the "Decode I/O Speed 0" function. And then select the medium speed and adjust the "Decode I/O Addr. 0 [15:4] fill the 020h (200h Port), then set "Decode I/O Size" in option of the 8 bytes.



- Return to Advanced > then select IT8888 ISA Decode Memory screen, Select the "Decode Memory Space 0 "; enable this function and adjust the "Decode Memory Speed 0" function. And then select the medium speed and then adjust the "Decode Memory Addr. 0 [23:12] fill the 0D0h (D000:0 Memory Segment), then set "Decode Memory Size" in the option of 16 K8.



- Save above BIOS CMOS SETUP (F10), and restart the system.
- Add you add-on card to FB2606 CPU card of ISA Backplane.

**Note:** If the wrong selection of I/O ports or memory space conflicts on the FB2606 system board, you can clean CMOS setup by the J7.

# Appendix

## Dimension

