

FabiaTech Corporation

IPC Solution

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PCI/104

3'5 CPU Board

Low Power Series

FB2631 User's Manual

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If you have problems or difficulties in using the system or setting up the relevant devices, and software that are not explained in this manual, please contact our service engineer for service, or send email to support@fabiatech.com.

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If your board requires servicing, contact the dealer from whom you purchased the product for service information. You can help assure efficient servicing of your product by following these guidelines:

- ❑ A list of your name, address, telephone, facsimile number, or email address where you may be reached during the day
- ❑ Description of you peripheral attachments
- ❑ Description of your 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.fabiatech.com

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Chapter 1 Introducing the FB2631 System

Overview

The FB2631 is a VIA Eden (V4)™ Low power processor, all in one, 3'5 embedded CPU board. This user's manual provides information on the physical features, installation, and BIOS setup of the FB2631.

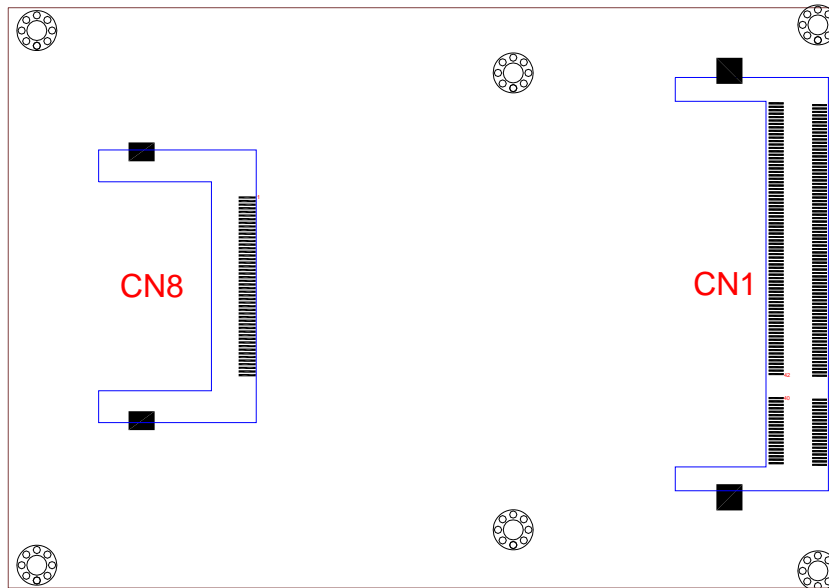
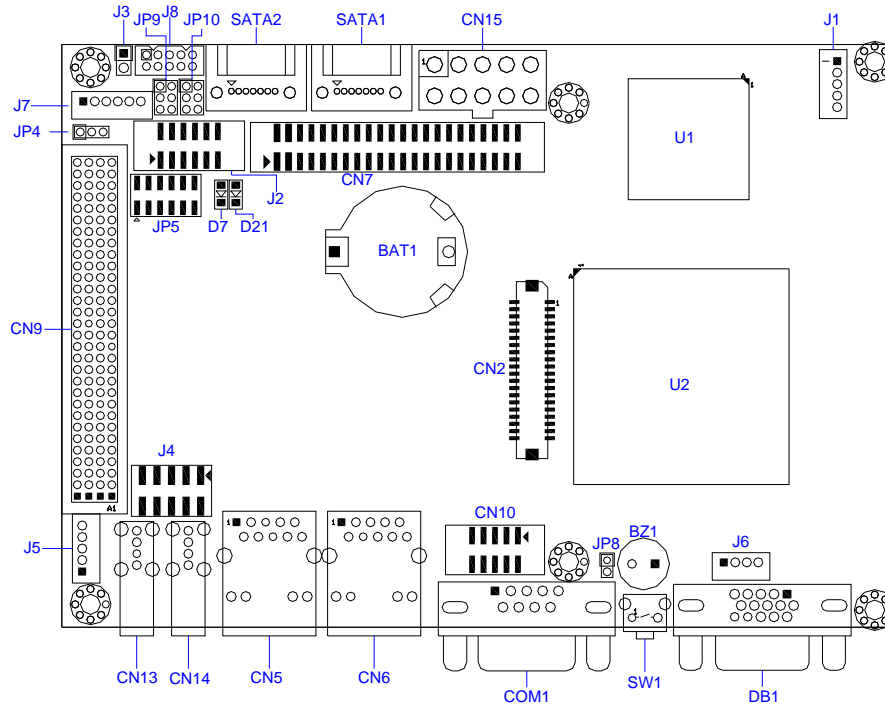
Built to unleash the total potential of the VIA Eden (V4)™ Low power processor, the FB2631 is a single board computer capable of handling today's demanding requirements. Able to support 1GHz CPU, this unit supports two 10/100/1000M interface network ports, audio, So-DIMM socket supports up to 1GB DDR2 RAM, four USB2.0 ports, and a supports VGA/LCD/TV controller.

Each FB2631 has two ports for I/O communications. One RS-232 and one RS232 / RS422/RS485 ports are available. There is also a watchdog timer that can be configured from software to automatically reset the system. And for easy configuration, AMI BIOS are available.

Power management is also featured to lower the rate of consumption. The unit supports doze mode, <Suspend Mode> and <Standby mode> as well as it adheres to the "Green Function" standard.

The FB2631 is perfect for POS and POI applications, network systems, panel / MMI's, order entry kiosks, test equipment, OEM projects or as a motherboard for a panel PC. The unit is only 145.0x102.0mm, offering unparalleled performance in a very small footprint.

Layout



Specifications

- ❑ VIA Eden (V4) 1GHz and 128KB or above L2 cache inside the CPUs.
- ❑ Supporting One 200 pin So-DIMM socket for up to 1GB DDR2-400/533 RAM.
- ❑ Two Realtek 8110SC chipset 10M/100/1000M Ethernet with RJ-45 ports.
- ❑ CX700M supports CRT /LVDS/TV interface use UMA VRAM up to 128MB.
- ❑ Supports one RS-232 and one RS232/RS422/RS485 ports.
- ❑ Four USB V2.0 ports and one PATA IDE and two SATA interface.
- ❑ Compact Flash socket for 3.3V Compact Flash and Micro Drives.
- ❑ PS/2 compatible keyboard and mouse interface.
- ❑ Four TTL input lines and four TTL out lines.
- ❑ Providing speaker and hard disk access LED.
- ❑ Software programmable watchdog timer.
- ❑ Providing one HD Codec audio function.
- ❑ Flash BIOS with easy upgrade utility.
- ❑ Expansion PCI/104 Bus
- ❑ Power requirement: +5V only, 3.2A maximum (1GHz CPU).
- ❑ 3.5" disk size, 145mmx102mm (5.7" x 4.0")

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 FB2631 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 FB2631 is not supplied from us, please make sure the specification of the cable(s) is compatible with the FB2631 system.

Note: After FB2631 is installed, it is recommended that you keep the diskette or CD that contains drivers and document files, and keep the document copies, or unused cables in the carton for future use.

The following lists the accessories that may be included in your FB2631 package. Some of the accessories are optional shipped only upon order.

- One FB2631 All-In-One CPU board
- One SATA adapter cable
- One serial ports adapter cable
- One PS2 keyboard and mouse port adapter cable
- One ATX power to Mini-ATX power cable
- One FB4706X Audio/USB adapter board
- One S-Video (TV-out) adapter cable
- One compact disc containing manual file in PDF format and necessary drivers and utilities

Chapter 2 Hardware Installation

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

Before Installation

Before you install the system, 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 generated by man's physical touch. It may do damage to the board circuit.
2. Install any connector, module, or add-on board; 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. When you connect the connectors and memory modules, be careful with the pin orientations.

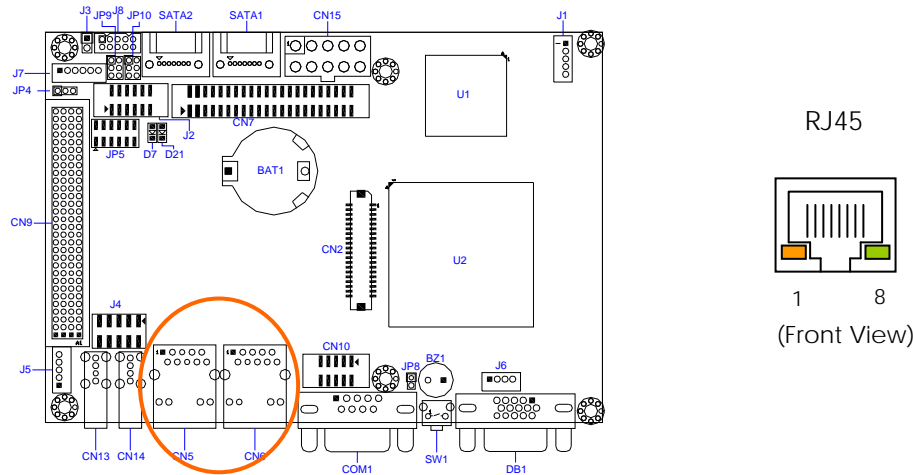
Hardware Features

The following list is for the setup of the connectors and jumpers of the FB2631.

Item	Description
CN1	DDR2 So-DIMM Socket (200-pin)
CN2	LCD Connector with LVDS signals (DF13-40-pin)
CN5, CN6	LAN#1,LAN#2 -LAN connector (RJ45)
CN7	IDE 2 hard disk connector (IDC- 44-pin 2.0mm)
CN8, JP4	Compact Flash Socket and Master/Slave Select
CN9	PCI/104 connector (4*30-pin)
CN10	RS-232 port 2 connector (IDC-10-pin 2.0mm)
CN13,CN14	USB 0/1# connector
CN15	Mini-ATX Power Connector (10-Pin Mini-ATX)
J1	Power Connector for LVDS LCD inverter board #1 (JST-5-pin)
J2	AMR connector for provides HD signals for Audio function (IDC-12-pin)
J3	PWR-SW header (2-pin)
J4	USB 2/3# Connector header (10-pin)
J5	Power Connector for LVDS LCD inverter board #2 (JST-5-pin)
J6	TV-Out Connector Header (JST-4-pin)
J7	Keyboard and Mouse connector (JST-6-pin)
J8	TTL I/O header (JST-10-pin)
JP5	Select Headless (AT or ATX)Power mode /TV-Out or CRT /WOL
JP8	AT or ATX Power mode Select
JP9	Clear CMOS data header/ PCI/104 VI/O voltage select
JP10	3.3V/5V LCD Select
BZ1	On board Buzzer
COM1	COM1 connector (D-SUB -9-pin)
DB1	CRT Connector with (D-SUB 15 pin)
SW1	Reset Button
SATA1/SATA2	SATA HDD Connector

□ **CN5, CN6: RJ45 LAN Connector with LED indicators**

The RJ45 connector with 2 LED's for LAN. The left side LED (orange) indicates data which is being accessed and the right side LED (green) indicates on-line status. (On indicates on-line and off indicates off-line). The following lists the RJ45 pin assignments

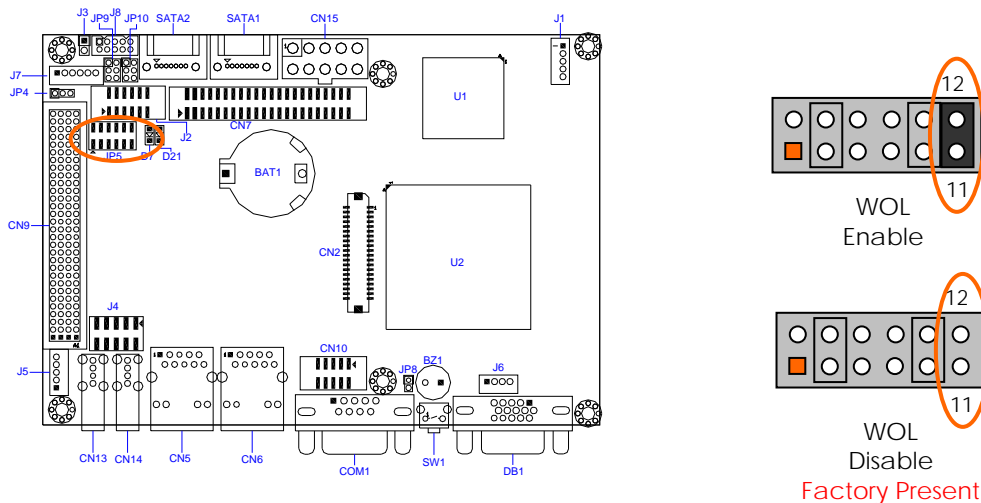


The following list the pin assignments of LAN port

Pin	Signal	Pin	Signal
1	TPTX+	5	TPTX1-
2	TPTX -	6	TPRX -
3	TPRX+	7	TPRX1+
4	TPTX1+	8	TPRX1-

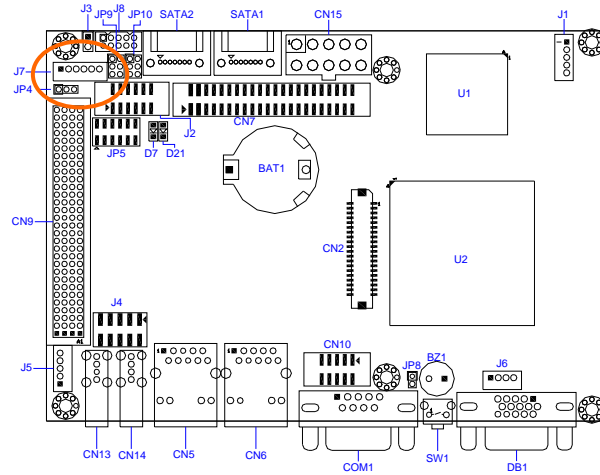
➤ **JP5: WOL (Wake On LAN)**

If WOL (Wake On LAN) is used, please short JP5- 11, 12 pin with jumper. It's power up the system when a wakeup packet or signal is received through the on board LAN.

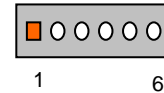


□ **J7: Keyboard/Mouse Connector**

J7 is a 6-pin 2.0mm JST connector, use the included KB/MS adapter cables you can attach standard PS/2 type keyboard and mouse.

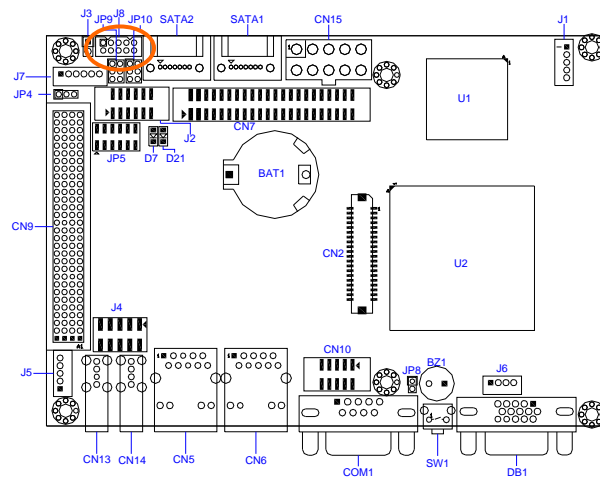


J7

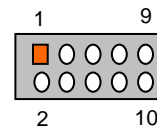


Pin	Signal
1	Mouse Data
2	Keyboard Data
3	Ground
4	VCC
5	Mouse Clock
6	Keyboard Clock

□ **J8: TTL I/O Connector**



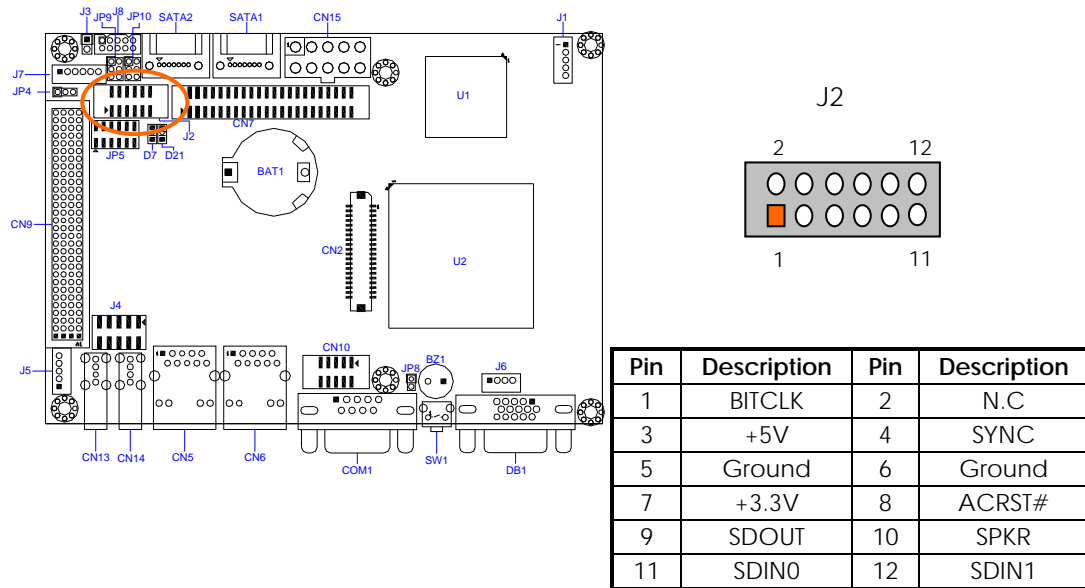
J8



Pin	TTL Lines	Bit Location	Pin	TTL Lines	Bit Location
1	Output Line 0	Bit 4 of A22h	2	Output Line 1	Bit 5 of A22h
3	Output Line 2	Bit 6 of A22h	4	Output Line 3	Bit 7 of A22h
5	Input Line 0	Bit 0 of A22h	6	Input Line 1	Bit 1 of A22h
7	Input Line 2	Bit 2 of A22h	8	Input Line 3	Bit 3 of A22h
9	Ground	-	10	Ground	-

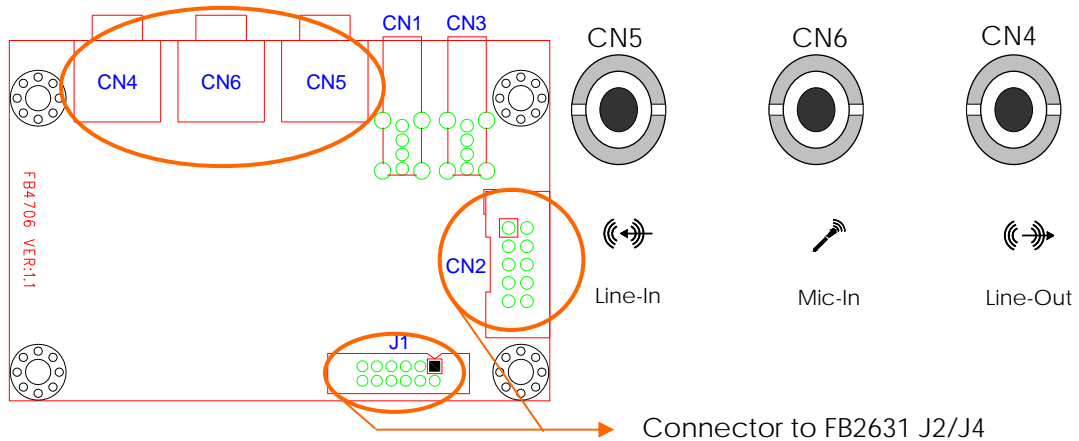
□ **J2: Audio Connector**

J2 is a 12-pin 2.0mm IDC connector with HD Codec signals for Audio. Use the included Audio cable and FB4706x adapter board for your Audio applications.



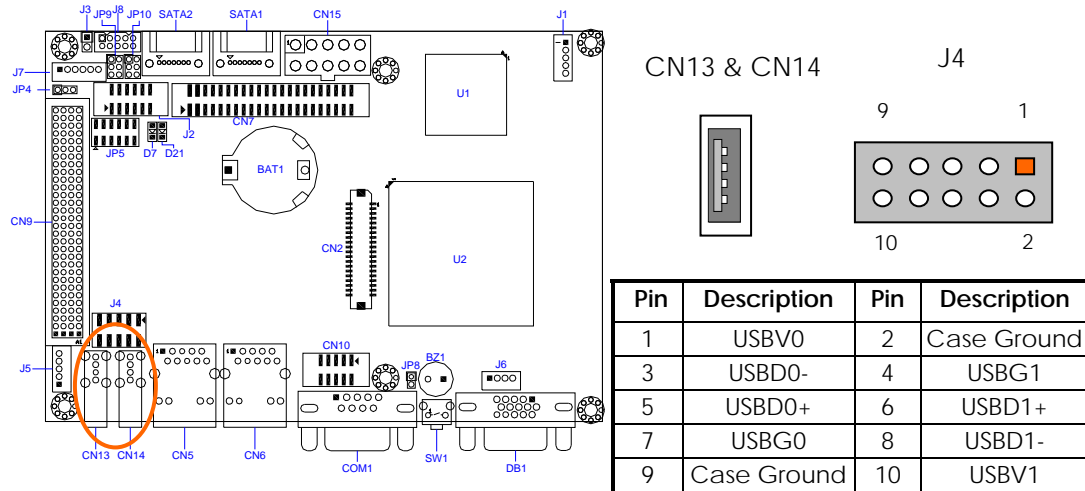
➤ **FB4706x: Provides Audio and USB Board**

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, CN2 cable from FB2631 J2 and J4. The following figure shows these Audio connectors on FB4706x board:



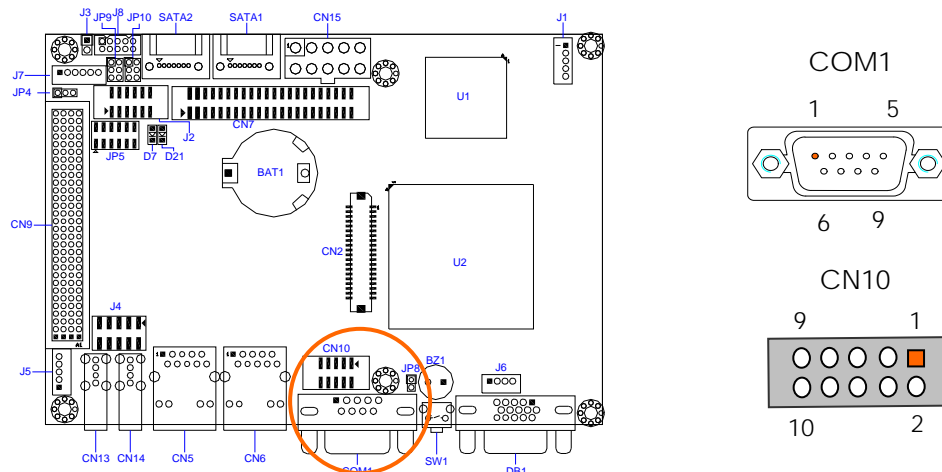
□ **CN13, CN14: USB Connector**

The FB2631 supports a four port USB connector. Any USB device can be attached to USB ports with plug-and-play supported. The CN13 and CN14 port is USB # 1/2 and the J4 is USB # 3/4 is J4 use the USB adapter cable or FB4706X board, you can attach up to 4 USB devices.



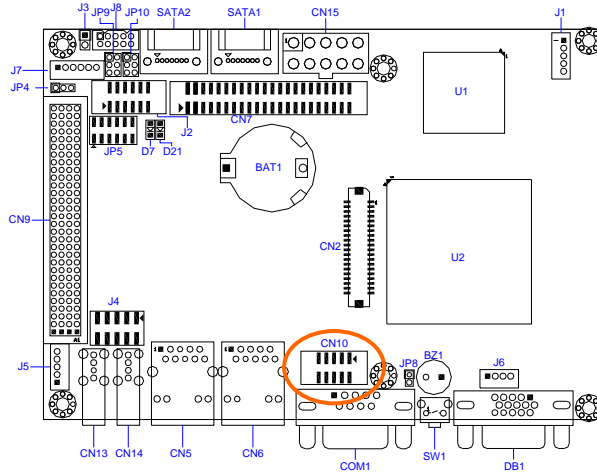
□ **COM1 & CN10: Serial Port Connectors**

The COM1 connector is 9-pin D-type male connector. The serial port 2 adapter cables are used to transfer 10-pin 2.0mm IDC connector into standard DB9 connectors.



➤ **CN10: Serial Port 2**

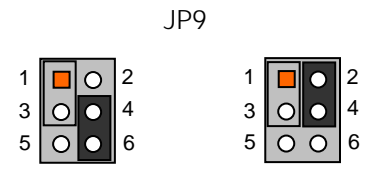
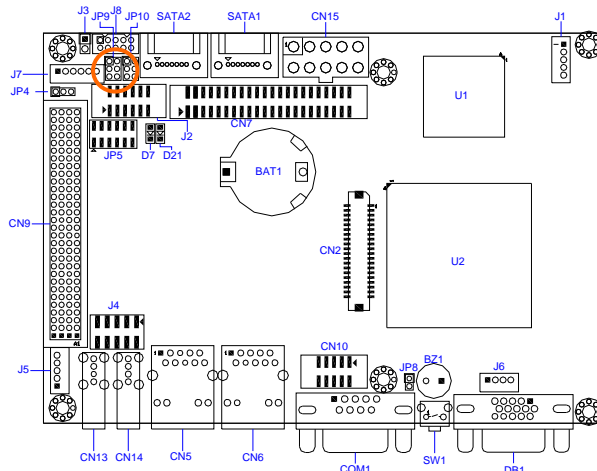
The CN10 is 10-pin 2.0mm IDC connectors. The included serial port adapter cables are used to transfer 10-pin 2.0mm IDC into standard DB-9 connector, the following tables show the signal connections of connector. The Serial port 2 is designed for multiple proposes. Use BIOS setting select the RS-232, RS422 or RS-485.



DB-9	CN8	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		

□ **JP9: Clear CMOS Data**

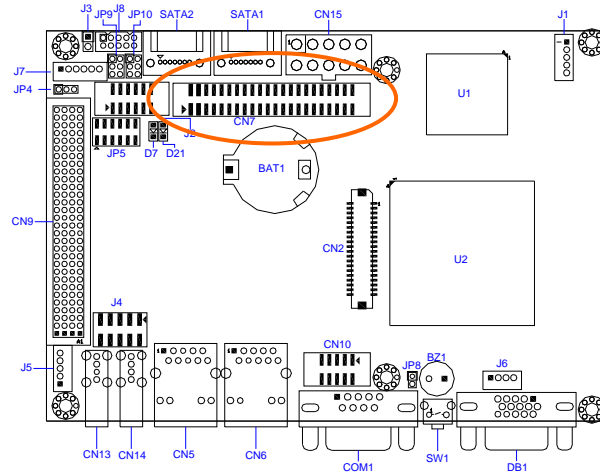
You can use JP9 to clear CMOS data. The CMOS stores information like system date, time, boot up device, password, IRQ... which are set up with the BIOS. To clear the CMOS, set JP9 to 4-6 and then return to 2-4 before system powers off. The default setting is 2-4.



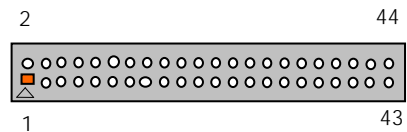
Clear CMOS Data Normal Operation
Factory Present

□ **CN7: IDE hard Disk Connectors**

CN7 is 44-pin 2.0mm IDC connectors. Use the included hard disk cables to attach up to two 2.5" hard disk drives.



CN7 – Hard disk connector



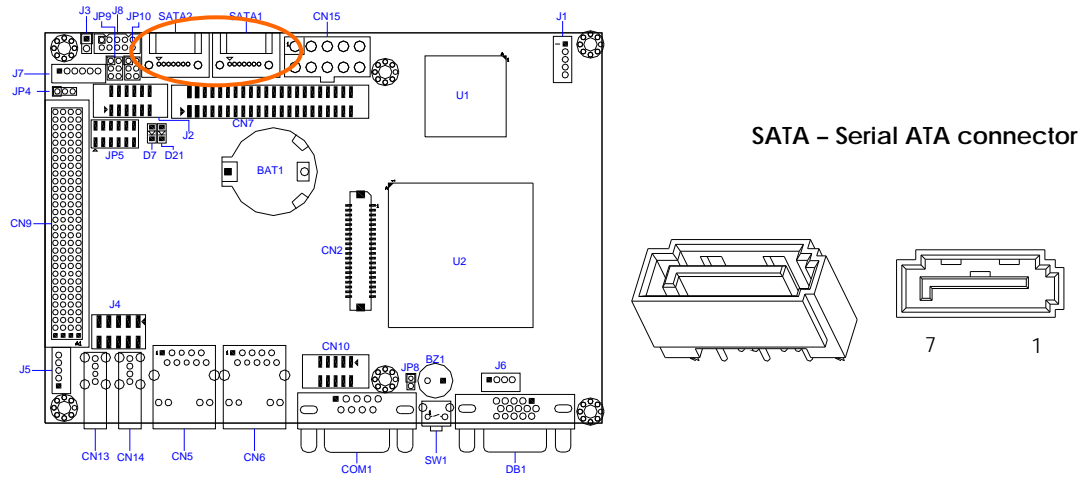
The following table lists the pin description of CN7.

Pin	Description	Pin	Description
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 A	24	GROUND
25	-IOR A	26	GROUND
27	IDEIORDYA	28	GROUND
29	-DACKA	30	GROUND
31	AIN T	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
41	VCC	42	VCC
43	GROUND	44	Not Used

Note: Be careful with the pin orientation when installing connectors and the cables. A wrong connection can easily destroy your hard disk. CN7 is used to connect a 2.5" HDD with included 44-pin flat-cable or 44-pin DiskOnModule directly.

□ **SATA1/SATA2: Serial ATA hard Disk Connector**

This connector is for SATA hard disk Use the SATA cables to attach up to two SATA hard disk drives.

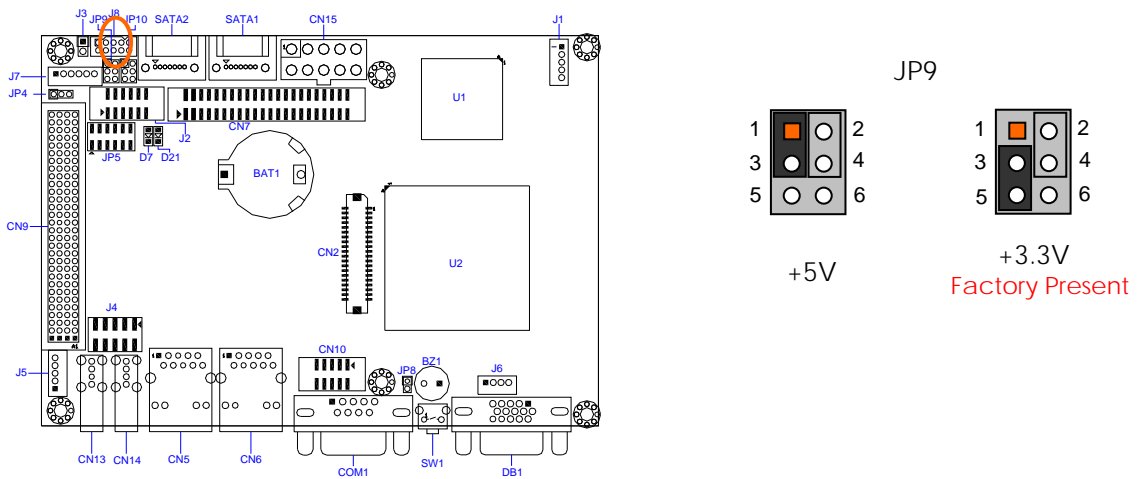


The following table lists the pin description of SATA.

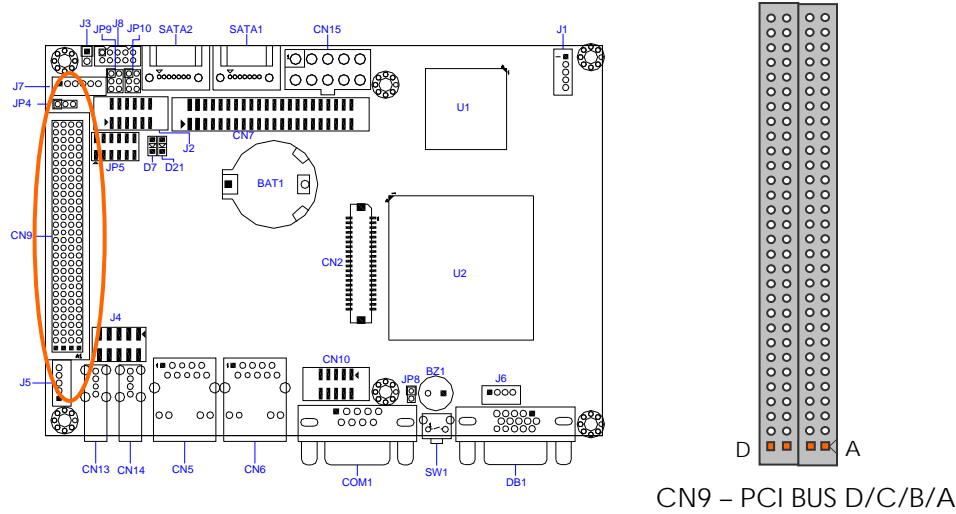
Pin	Signal
1	GROUND
2	SATA-TXP
3	STAT-TXN
4	GROUND
5	SATA-RXN
6	STAT-RXP
7	GND

□ **JP9: VI/O Voltage Select**

The JP9 can select 3.3V or 5V power source of VI/O with PCI/104, set JP9 to 3-5 the VI/O pin power source is 3.3V.



□ CN9: PCI/104 Bus Connectors

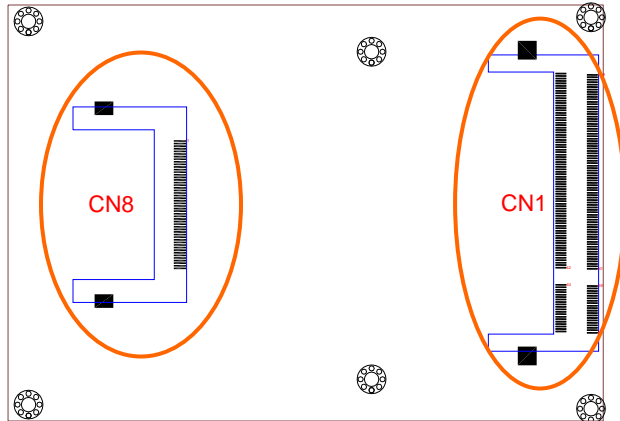


PCI/104 A, B & C, D Pin

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	GND	B1	-	C1	+ 5V	D1	AD0
A2	VI/O*	B2	AD2	C2	AD1	D2	+ 5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	CBE0#	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VI/O*	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+ 3.3V	B8	CBE1#	C8	AD15	D8	+ 3.3V
A9	SERR#	B9	GND	C9	-	D9	PAR
A10	GND	B10	PERR#	C10	+ 3.3V	D10	GND
A11	STOP#	B11	+ 3.3V	C11	LOCK#	D11	GND
A12	+ 3.3V	B12	TRDY#	C12	GND	D12	DEVSEL#
A13	FRAME#	B13	GND	C13	IRDY#	D13	+ 3.3V
A14	GND	B14	AD16	C14	+ 3.3V	D14	CBE2#
A15	AD18	B15	+ 3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+ 3.3V	B17	AD23	C17	AD22	D17	+ 3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	CBE3#	C19	VI/O*	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+ 5V	C21	AD28	D21	AD27
A22	+ 5V	B22	AD30	C22	GND	D22	AD31
A23	REQA	B23	GND	C23	REQB#	D23	VI/O*
A24	GND	B24	REQC	C24	+ 5V	D24	GNT0#
A25	GNTA#	B25	VI/O*	C25	GNTB#	D25	GND
A26	+ 5V	B26	PCICLK0	C26	GND	D26	PCICLK1
A27	PCICLK2	B27	+ 5V	C27	PCICLK3	D27	GND
A28	GND	B28	INTD#	C28	+ 5V	D28	PCIRST#
A29	+12V	B29	INTA#	C29	INTB#	D29	INTC#
A30	-12V	B30	REQD	C30	GNTB#	D30	GND

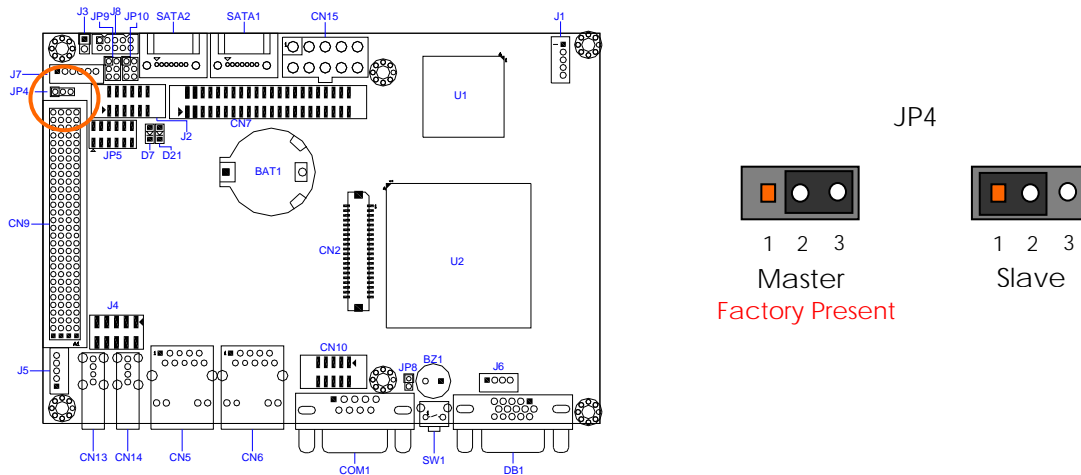
□ **CN1: So-DIMM Socket**

The CN1- DIMM socket on the solder side accepts 128MB to 1GB of DDR2 400/533 RAM modules



□ **CN8 & JP4: Compact Flash Socket and Master/Slave Select**

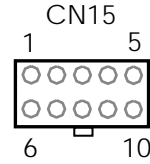
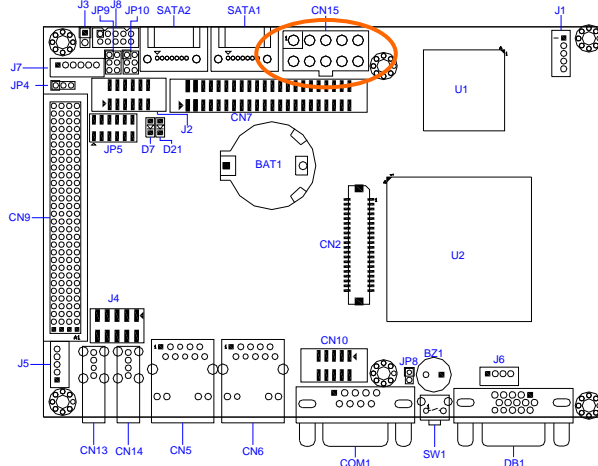
The Compact Flash socket CN8 (on the solder side) is optional and supports 3.3V Compact Flash and Micro Drives. JP4 is used to select master/slave device of this socket. Be sure to ward off the same master/slave setting with which connects to IDE (CN7) connector, if you use CN7 and CN8 simultaneously.



Note: The Compact Flash socket supports 3.3V Compact Flash and Micro Drives. The JP4 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.

□ **CN15: Mini-ATX Power Connector (10-pin 2.54mm ATX Connector)**

The connector connecting Mini-ATX power supply, you can connect CN15 to ATX power supply, and connect J3 to a push button switch as soft power switch.

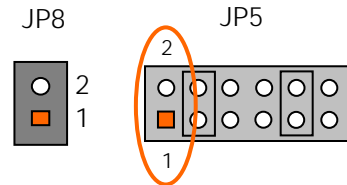
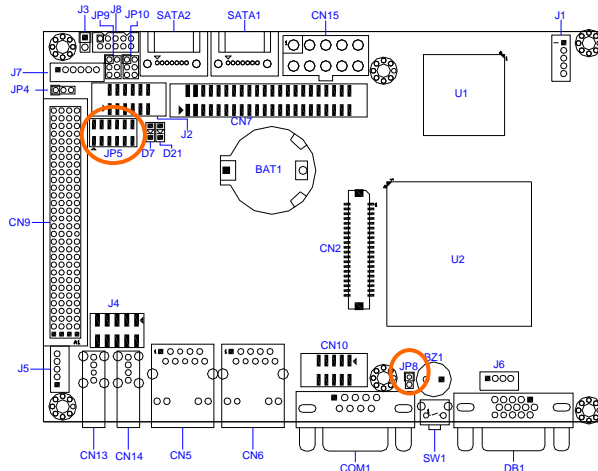


Note: This power connector is ideal for standalone applications.

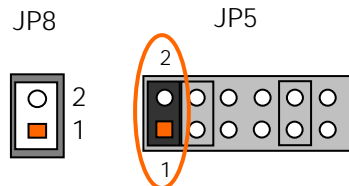
Pin	Signal	Pin	Signal
1	PS_ON	6	5V Standby
2	Ground	7	+5V
3	Ground	8	+5V
4	+12V	9	-12v
5	+3.3V	10	Ground

➤ **JP8 & JP5: AT/ATX Power Supply Select**

If non-ATX power supply is used, please short JP8 and JP5 1, 2 pin with jumper and you don't need to connect J3.



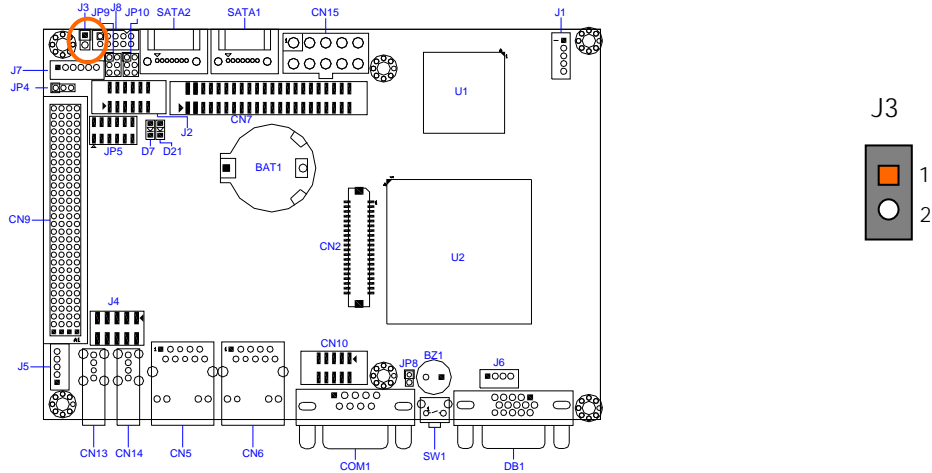
Open: ATX Power Supply
Factory Present



Close: AT (PS2)-Power Supply

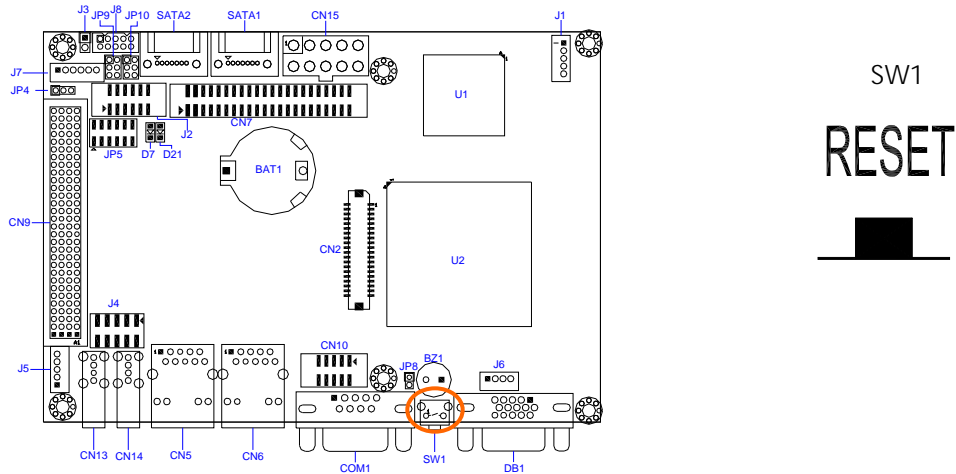
➤ **J3: PWE-SW (ATX-Power Only)**

The J3 is a 2 pin connecting to PWE-SW; It's Pushing the PWE-SW button once will switch the CPU board to on and off. It's depending on system BIOS (Power Management Setup) or OS setting. Pushing the power button while in the on mode for more than 4 seconds will turn the system off.



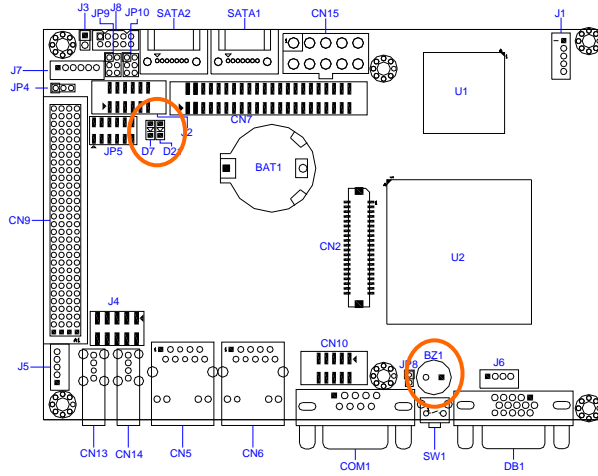
➤ **SW1: Reset Switch**

The SW1 is Reset push button for system reset; Push and release the button will cause hard ware reset of CPU board and restart system booting.



□ **BZ1 & LED Indicators: Onboard Buzzer & Power/PATA/SATA LED's**

The Power, PATA and SATA HDD LED's have two distinctive statuses: Off for inactive operation and blinking light for activity. The D21 for SATA and HDD and D7 is for power status LED's.



Chapter 3 Installing CRT/ LCD/VIDEO Display

This chapter describes the configuration and installation procedure of LCD, CRT and TV-Out displays. Both CRT and LCD displays or TV-Out and LCD 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.

- CRT & LVDS LCD Display
- TV-OUT & LVDS LCD Display



TV Display



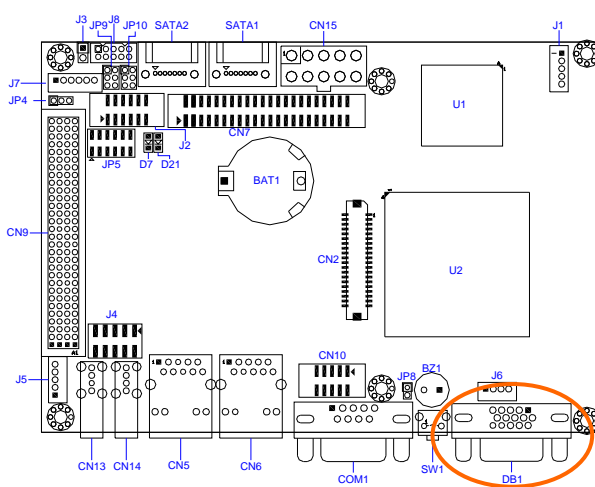
CRT Monitor



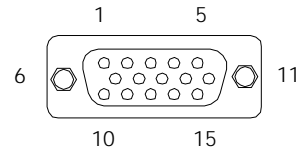
LCD Display

CRT DISPLAY

The FB2631 supports a CRT colored monitor. It can be connected to create a compact video solution for the industrial environment. 64MB simulated VRAM allows a maximum CRT resolution of 1920X1200 with 24 bpp. The following table and figure illustrate the pin definition of DB1:



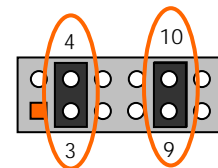
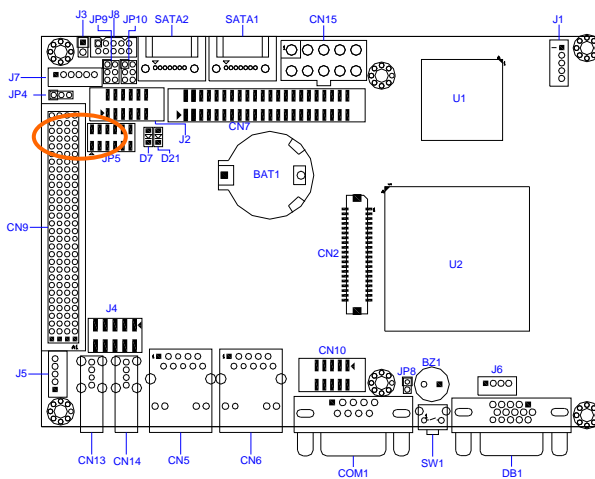
DB1



Pin	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

□ JP5: CRT Mode

The JP5 pin 3, 4 and 9, 10 is select CRT mode + LCD simultaneously. If you system is connect the CRT and LCD, You need set the jumper to 3, 4 close and 9, 10 close.



CRT Mode
Factory Present

TV-Out DISPLAY

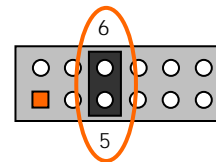
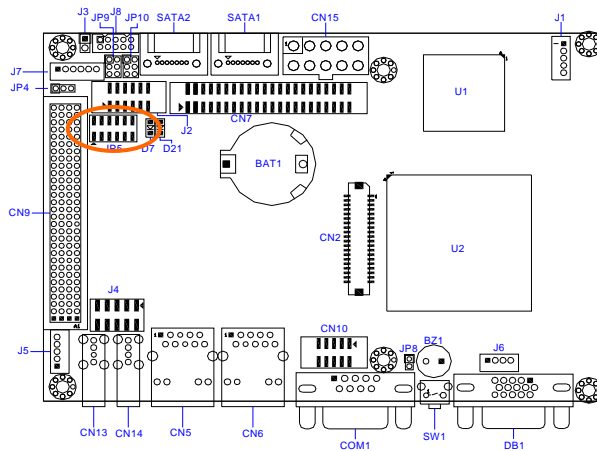
The board supports a TV-Out. It can be connected to TV Monitor.



TV- Display

□ JP5: TV-Out Mode

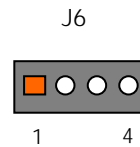
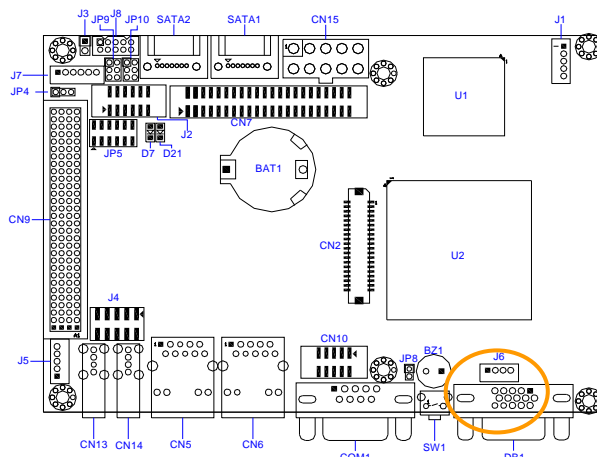
The JP5 pin 5, 6 is select TV-out mode + LCD simultaneously. If you system is connect the TV-Out and LCD, You need set the jumper to 5, 6 close.



TV-Out Mode

□ J6: S-Video Header

The J6 is a 4-pin 2.0mm JST connector, use the included S-video adapter cables (RCA Jack) connect to TV display.



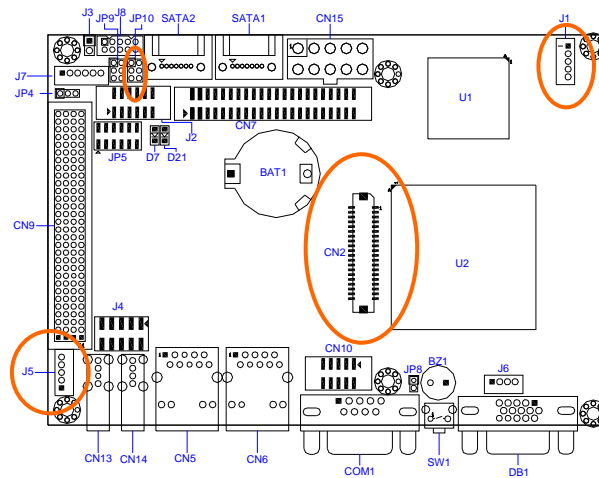
Video-Out
NTSC/PAL

LCD DISPLAY

The board can support 24bit LVDS LCD and 48-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.



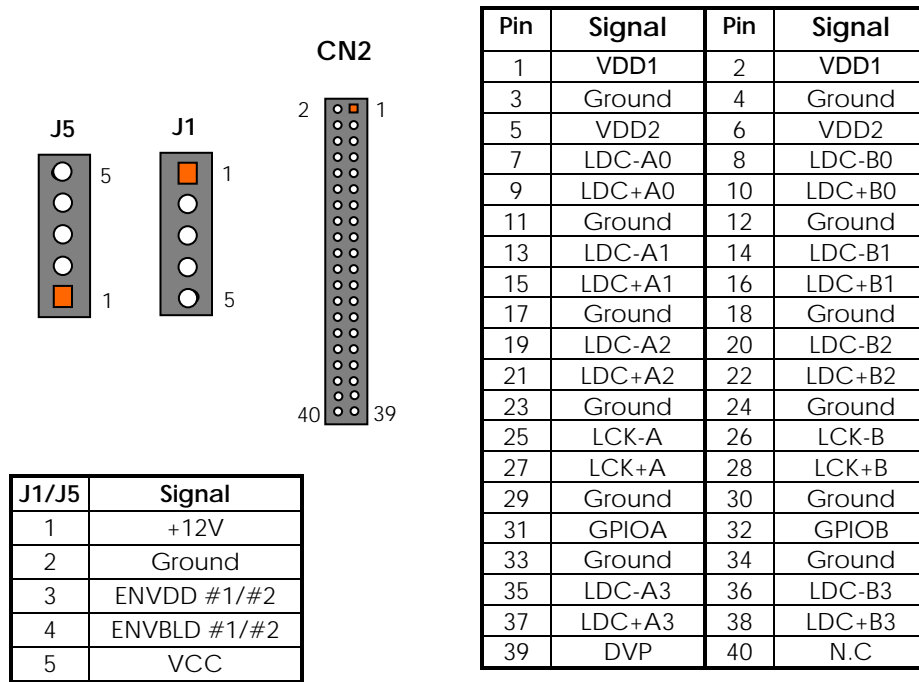
LCD



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.

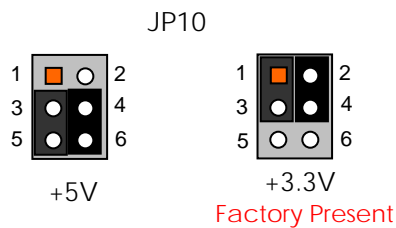
□ **CN2, J1/J5: LCD Connector & Power Connector**

CN2 is a LVDS LCD interface connector, and J1/J5 is the power connector for inverter board. The pin assignments are listed in the following table.



➤ **JP10: Select LCD Voltage Input**

The JP10 can select to 3.3V or 5V VDD1 and VDD2 pin for LCD input voltage, set JP10 to 1-3, 2-4 the VDD1 and VDD2 pin power source is 3.3V. T



NOTE: Be careful with the pin orientation when installing LCD connector and the cable. If any trouble occurs when connecting FB2631 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.

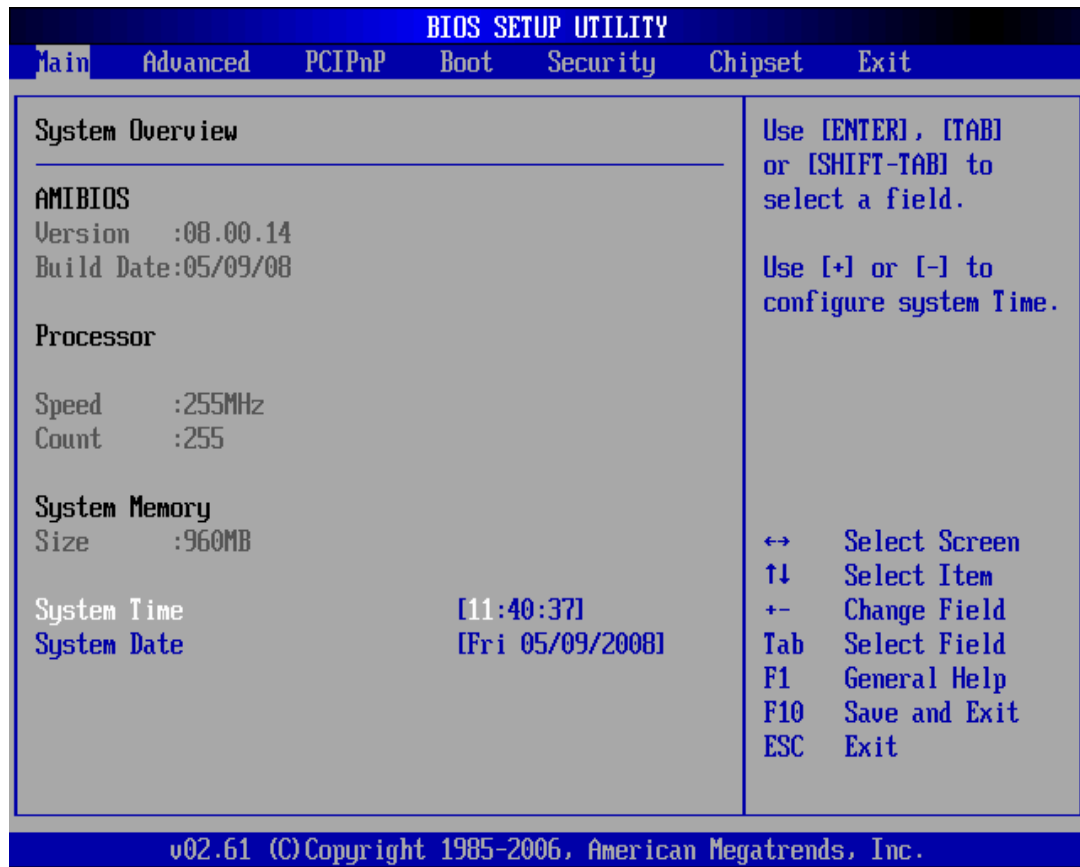
The BIOS provides a menu-driven interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

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 Configuration
 - APM 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
 - NorthBridge VIA CX700 Configuration
 - SouthBridge VIA CX700 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.

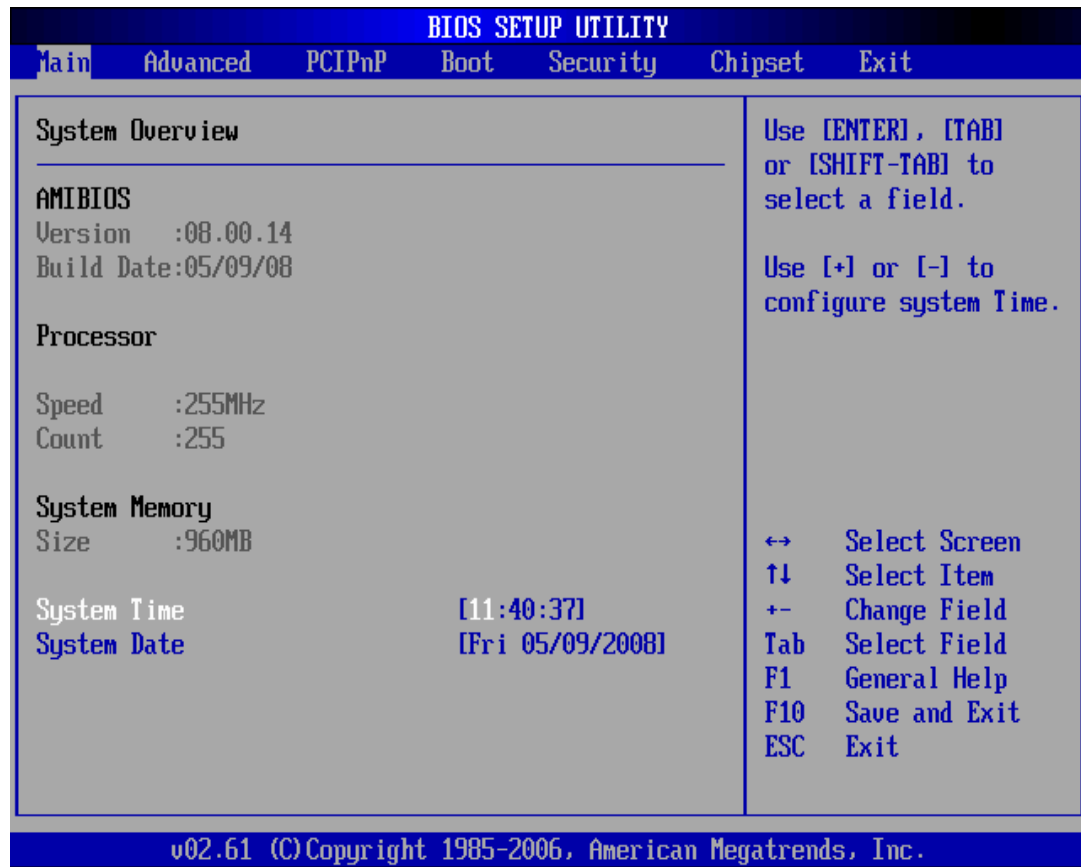
Keyboard Convention

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

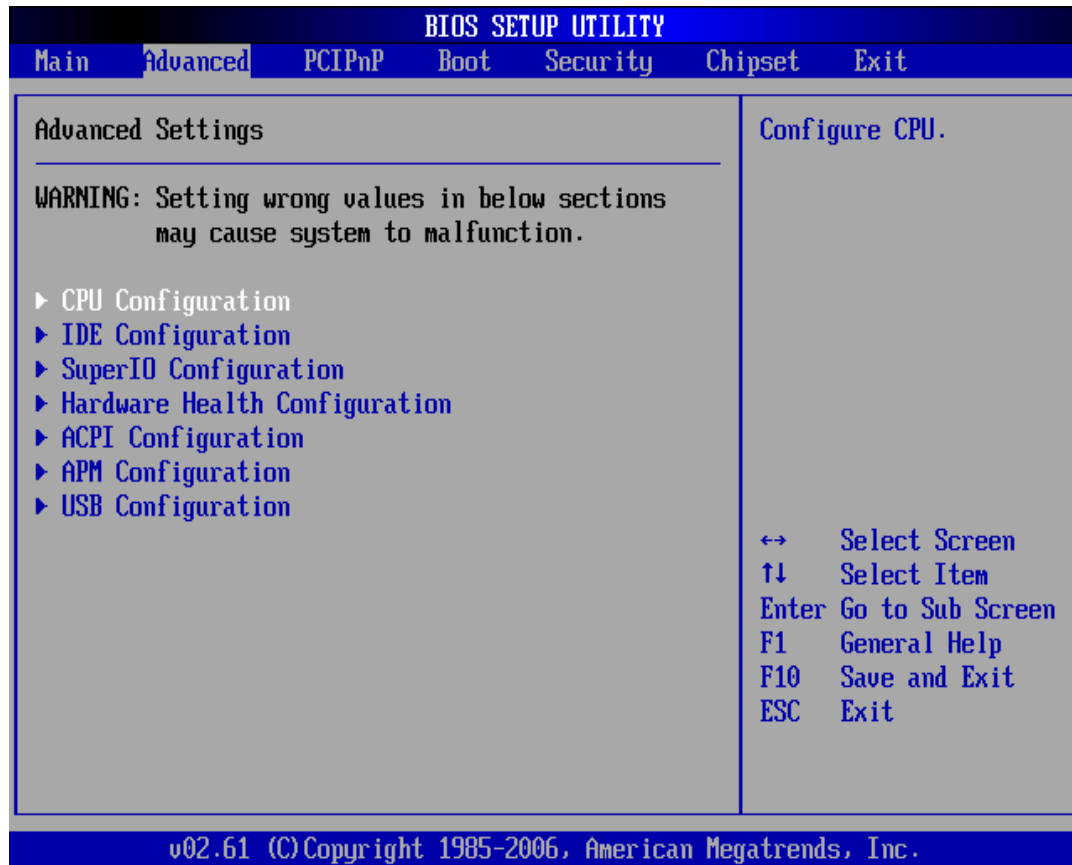
Highlight the <Date> field and then press the [Page Up] / [Page Down] or [+]/ [-] keys to set the current date. Follow the month, day and year format.

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



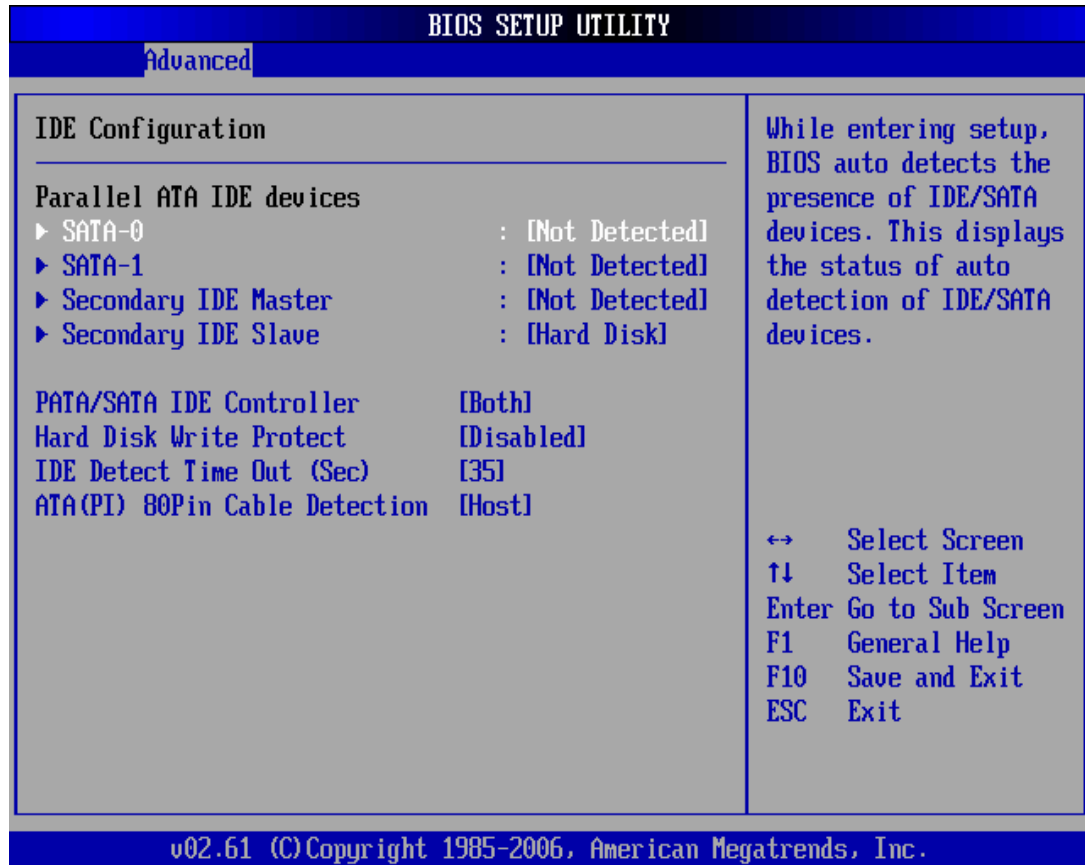
➤ CPU Configuration

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.



◆ **SATA-0<1>/IDE Secondary 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 enable 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*.

◆ PATA/SATA IDE Controller

This item specifies the ATA/IDE channels used by the onboard PATA/SATA IDE controller.

Available Options: SATA, IDE, Disable, and Both

Default setting: Both

◆ 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: Disable

◆ **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

◆ **Onboard SATA-IDE**

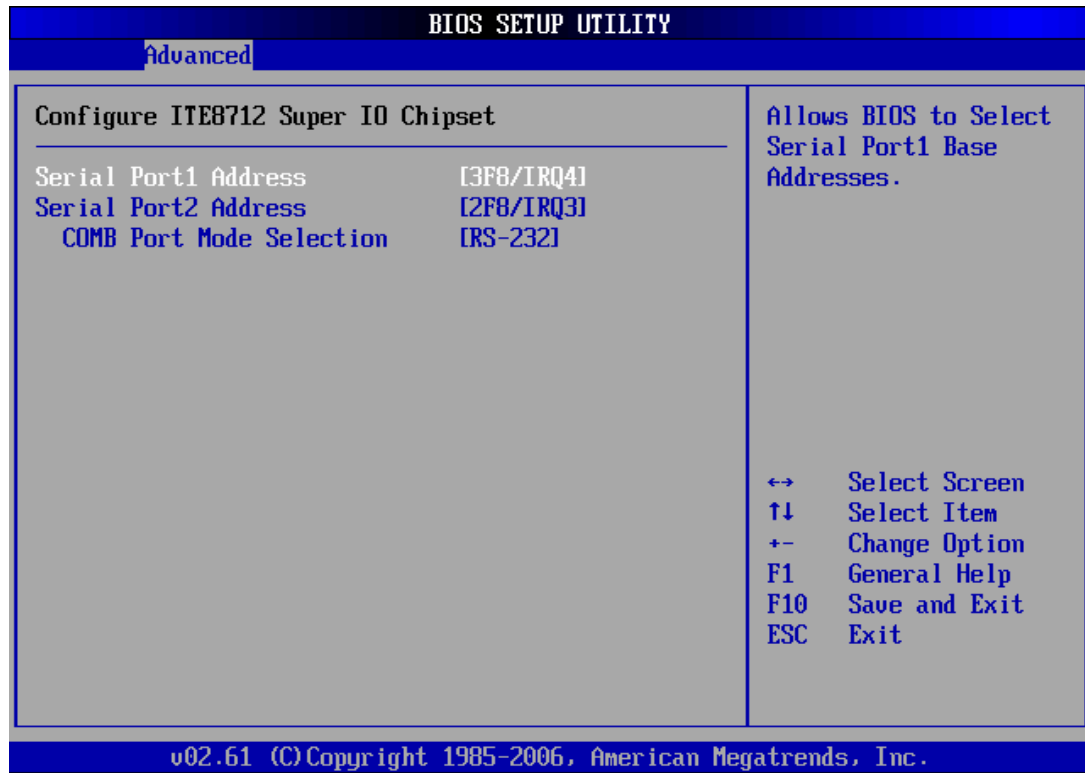
This item specifies the ATA/IDE channels used by the onboard PATA/SATA IDE controller.

Available Options: SATA, IDE

Default setting: SATA

➤ **SuperIO Chipset - Configuration WIN627 Super IO Chipset**

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



◆ **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

■ **COMB 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

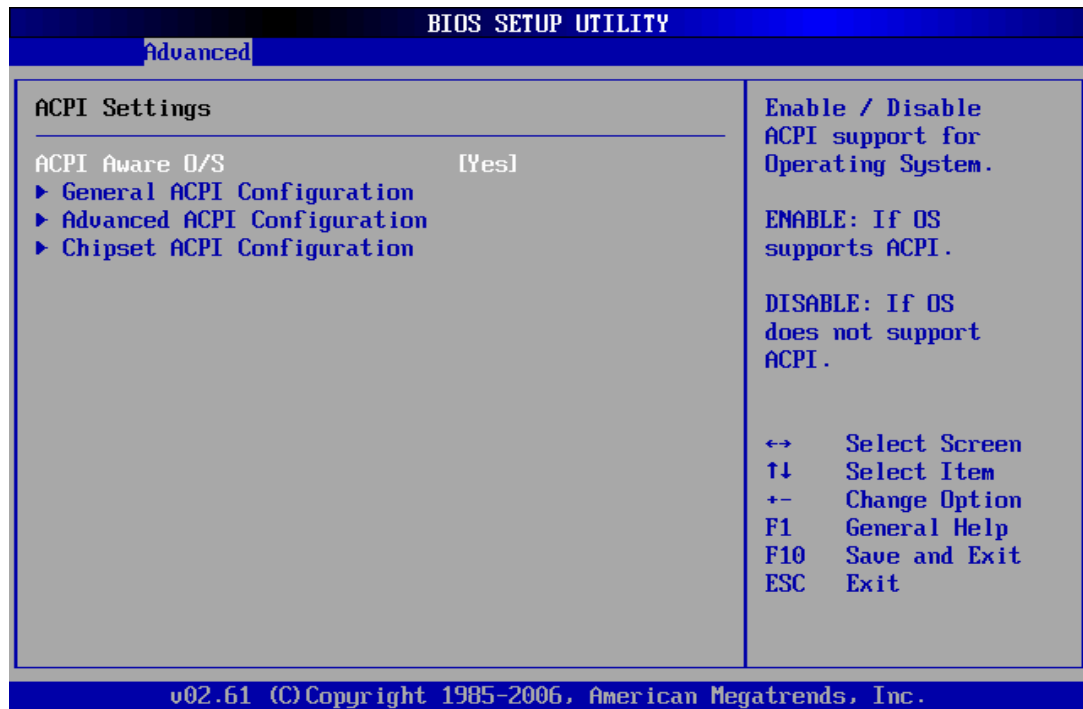
Default setting: RS-232

➤ **Hardware Health Configuration**

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

BIOS SETUP UTILITY	
Advanced	
Hardware Health Configuration	
H/W Health Function	[Enabled]
SYSTEM Temperature	:37°C/98°F
EXT Temperature	:-55°C/-131°F
CPU Temperature	:70°C/158°F
CPU FAN	:5487 RPM
CPU VCORE	:0.960 V
UCC1.5	:1.568 V
UCC1.8	:1.760 V
UCC2.5	:2.480 V
UCC3.3	:3.232 V
UCC	:4.865 V
VBAT	:2.640 V
Enables Hardware Health Monitoring Device.	
↔ 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

■ **General ACPI Configuration**

Suspend Mode

This field specifies allow you select the ACPI states used for system suspend.

Available Options: S1 (POS), S3 (STR), and AUTO

Default setting: Yes

■ **Advanced ACPI Configuration**

ACPI Version Feature

Set this value to allow or prevent the system to be compliant with the ACPI Specification.

Available Options: ACPIv1.0, ACPIv2.0, and ACPIv3.0

Default setting: ACPIv1.0

AMI OEMB Table

Set this value to allow the ACPI BIOS to add a pointer to an OEMB table in the Root System Description Table (RSDT) table.

Available Options: Enable, and Disable

Default setting: Enable

■ **Chipset ACPI Configuration**

APIC ACPI SCI IRQ

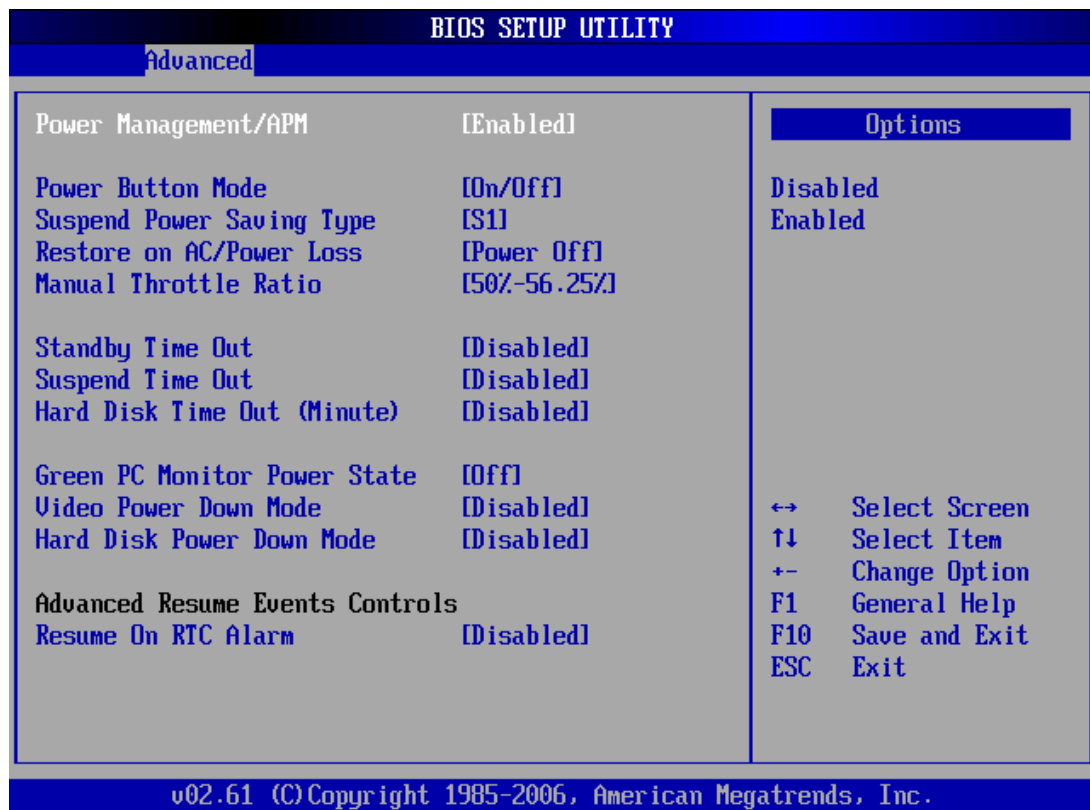
Allows you to enable or disable the internal I/O APIC and Multiprocessor Tables. (Disable the APIC ACPI SCI IRQ may require the O.S. to be reinstalled)

Available Options: Disable, and Enable

Default setting: Disable

➤ **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: Disable and Enable

Default setting: Enable

◆ **Power Button Mode**

This option specifies how the externally mounted power button on the front of the computer chassis is used.

Available Options: Standby, Suspend, and On/Off

Default setting: On/Off

◆ **Suspend Power Saving Type**

Set this value to allow the Suspend Power Saving type to be specified.

Available Options: S1, and C3

Default setting: C3

◆ **Restore On AC/Power Loss**

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

◆ **Manual Throttle Ration**

In a power management state, the BIOS can throttle the CPU clock to reduce power consumption. For example, a throttle ratio of 50% means the clock is turned off half of its normal operational time.

Available Options: 0~6.25%, 18.75~25%, 50%~56.25%, 75%~87.5%, and up to 97.5%

Default setting: 50%~56.25%

◆ **Standby Time Out**

This field specifies the length of a period of system inactivity (like hard disk or video) while in full power on state. When this length of time expires, the system enters Standby power state.

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

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

◆ **Hard Disk Time Out (Minute)**

This option specifies the amount of time the hard disk drive can be inactive before the computer enters a power-conserving state specified in the Hard Disk Drive Power Down Mode option.

Available Options: Disabled, 1 Minute, 2 Minute, and 3 Minute, up to 15 Minute.

Default setting: Disabled

◆ **Green PC Monitor Power State**

This option specifies the power state that the green PC-compliant video monitor enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired.

Available Options: Standby, Suspend, and Off

Default setting: Off

◆ **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, Standby, 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, Standby, Suspend

Default setting: Disabled

◆ **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

➤ **USB Configuration**

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



◆ **USB 1.1 Ports Configuration**

Set this value to allow the system to enable or disable the onboard USB ports. The Optimal and Fail-Safe default setting is 4 USB Ports.

Available Options: 2 USB Ports, 4 USB Ports and Disabled

Default setting: 4 USB Ports

◆ **USB 2.0 Ports Enable**

This field is Enables USB controllers. Select Enable, 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: Enable, and Disabled

Default setting: Enable

◆ **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 enable or disable the Legacy USB Support.

Available Options: Disabled, Enabled and AUTO

Default setting: Auto

◆ **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: Hispeed

◆ **BIOS ECHI Hand-Off**

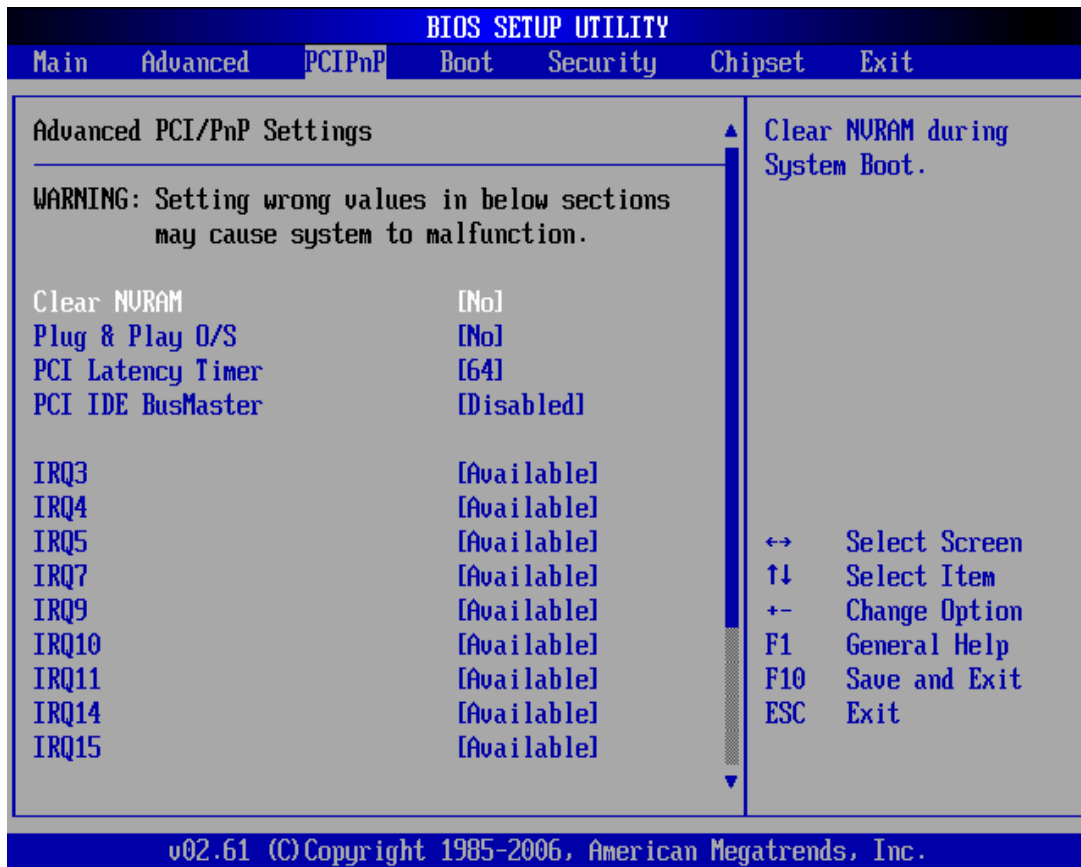
This is a workaround for OS without ECHI Hand-Off support. The ECHI ownership change should claim by ECHI driver.

Available Options: Enable and Disable

Default setting: Enable

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

◆ **Palette Snoop**

When Enabled is selected, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit. (0 is disabled).

Available Options:

Disabled: Data read and written by the CPU is only directed to the PCI VGA devices palette registers.

Enabled: Data read and written by the CPU is directed to both the PCI VGA devices palette registers.

Default setting: Disable

◆ **PCI IDE BusMaster**

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

Available Options: Enable, Disable

Default setting: Disable

◆ **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

◆ **DMA Channel 0 - 7**

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

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

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

Available Options: Available and Reserved

Default setting: Available

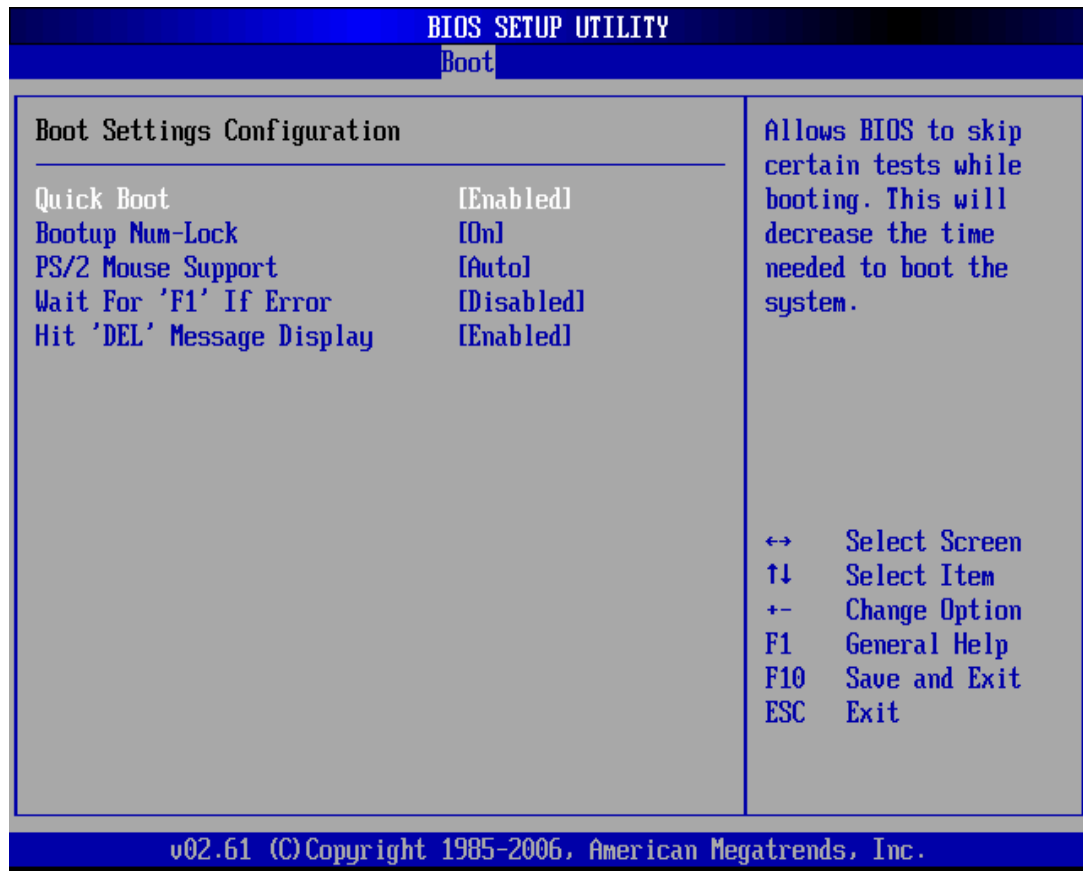
Boot Setup

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
- CD/DVD 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

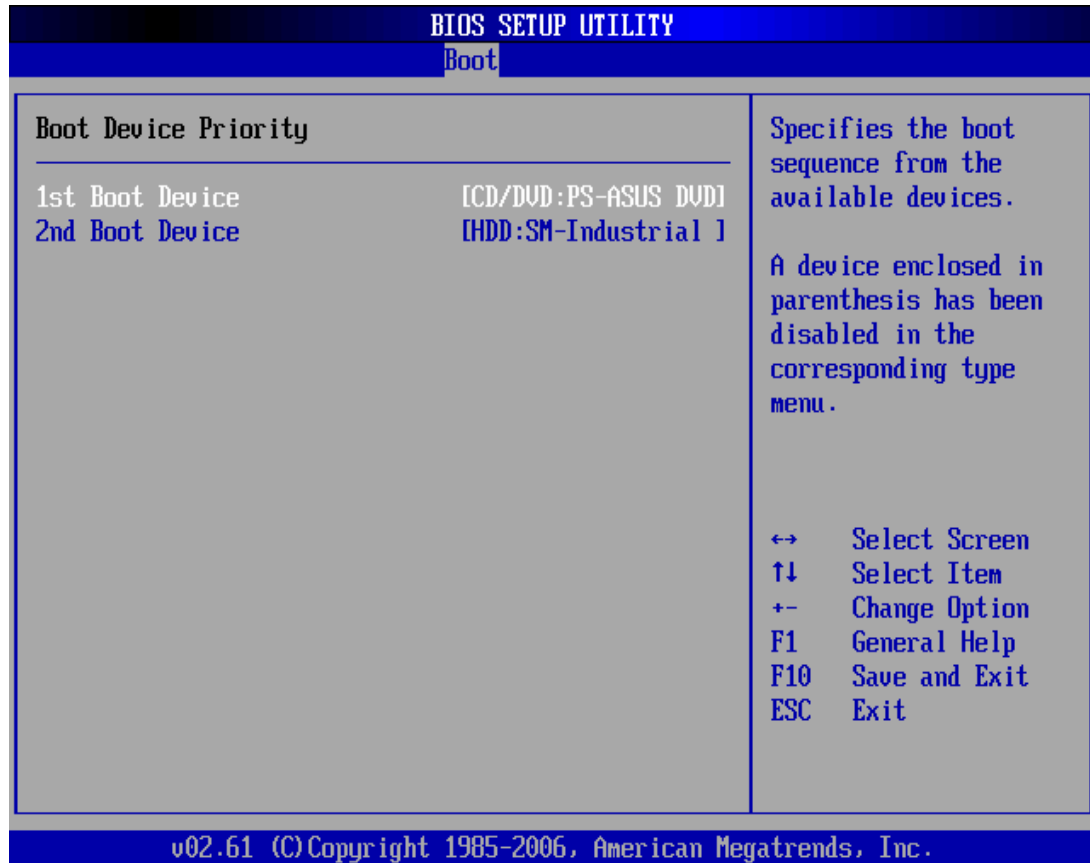
It will prevent the message from appearing on the first BIOS screen when the computer boots.

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>.



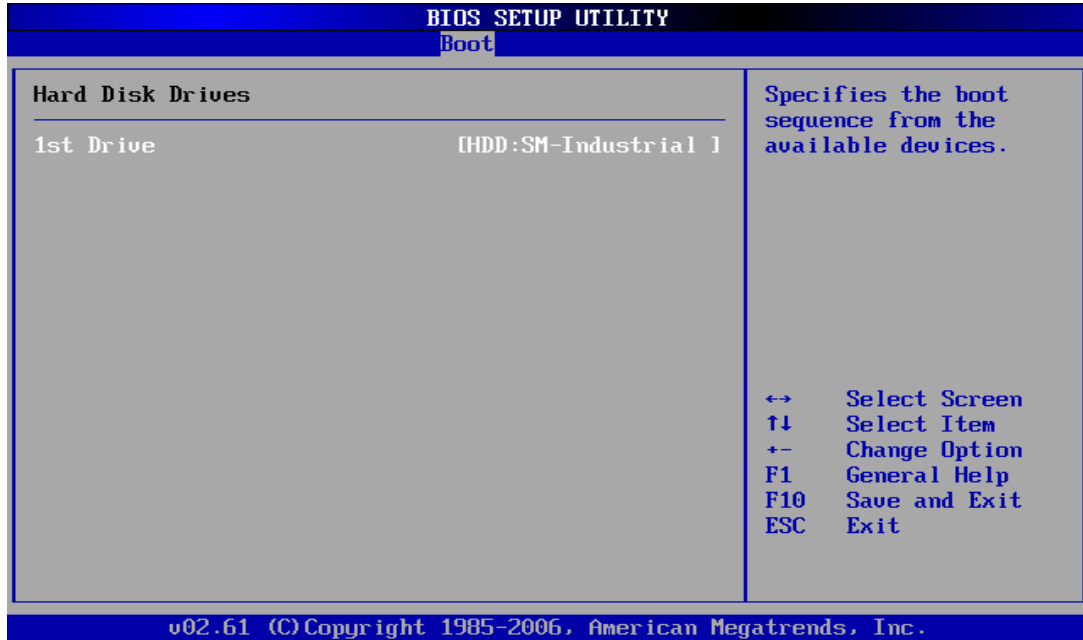
◆ **First /Second /Third Hard Disk Boot Device**

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

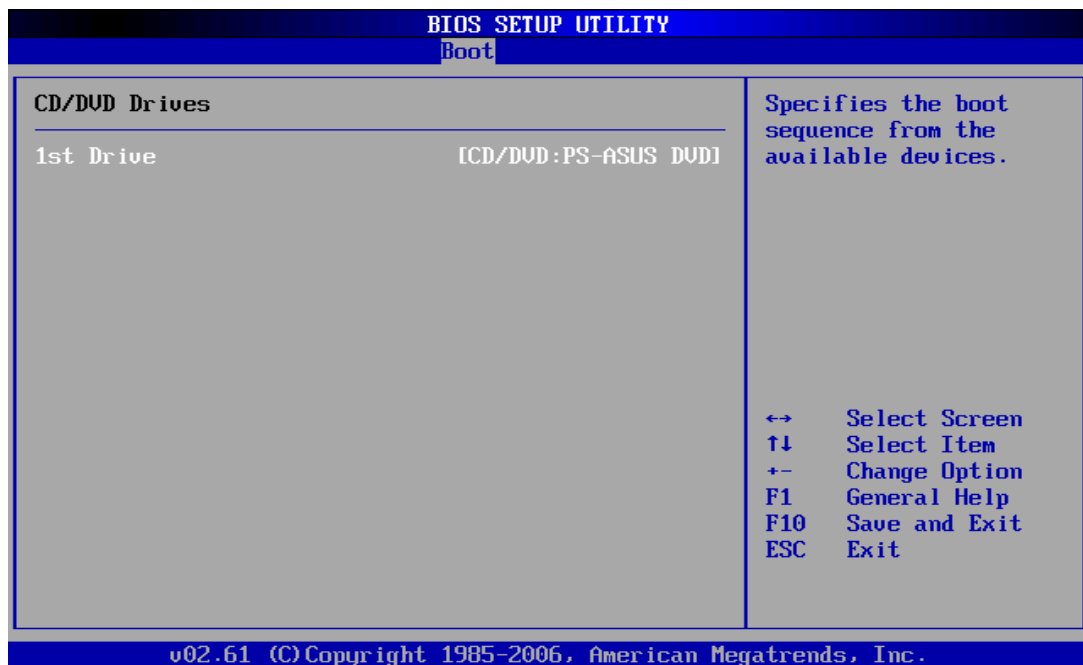
➤ **Hard Disk Drives**

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>.



➤ **CD/DVD Disk Drives**

Use this screen to view the CD/DVD drives in the system. To access this screen, select CD/DVD 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*

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

Disable: 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

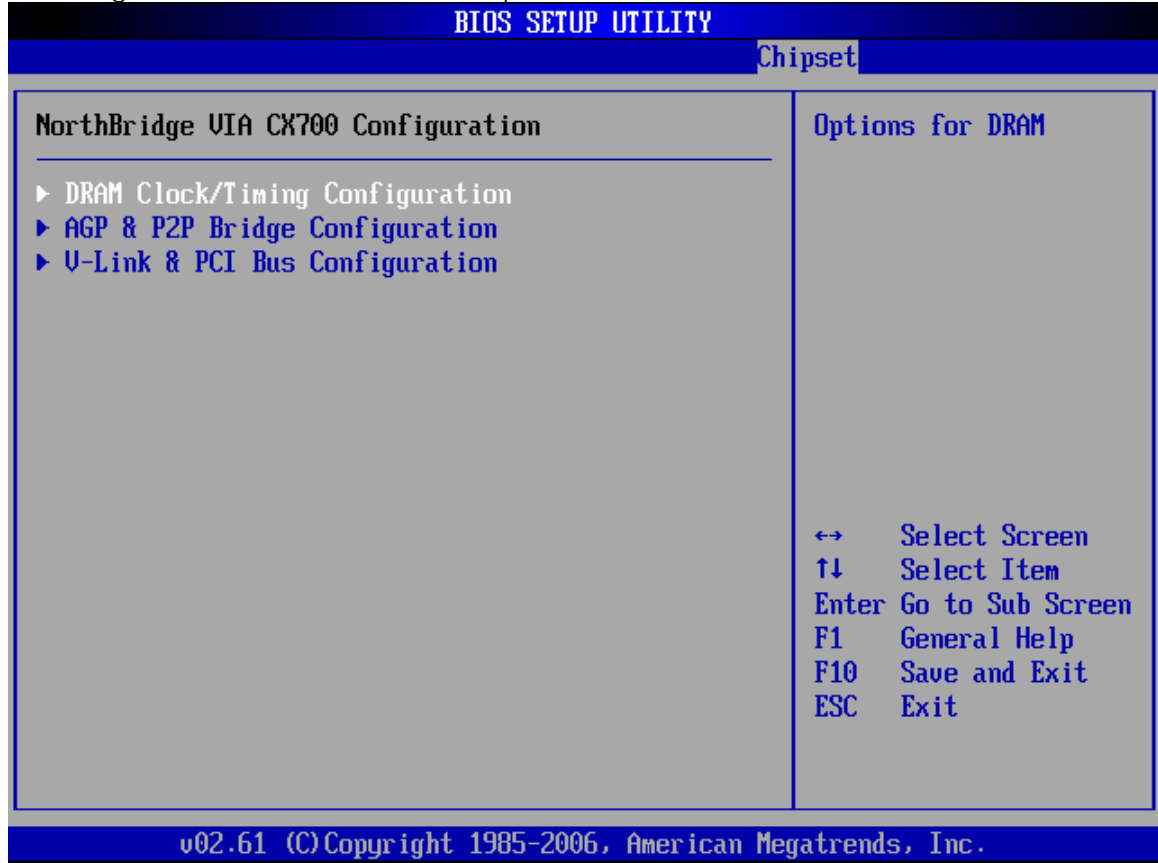
This section describes the configuration of the board's chipset features.

- NorthBridge VIA CX700 Configuration
- SouthBridge VIA CX700 Configuration



➤ **Northbridge VIA CX700 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 Clock/Timing Configuration**

■ *DRAM Timing*

If the installed SDRAM supports SPD function, select Auto. If not, you can select based on other access time of the SDRAM.

Available Options: Auto, Manual, Turbo and Ultra

Default setting: Auto

◆ **AGP & P2P Bridge Configuration**

■ *Primary Graphics Adapter*

This field specifies which VGA display will be used when the system is boot. You can select either the onboard AGP or the PCI VGA card installed on the PCI bus.

Available Options: AGP and PCI

Default setting: AGP

■ ***Onchip VGA Configuration***

VGA Frame Buffer Size

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: Disable, 16MB,32MB, 64MB and 128MB

Default setting: 32MB

Select Display Device

This field specifies which VGA display will be used when the system is boot. You can select the CRT, LCD, S-VIDEO or the CRT booting on the VGA.

Available Options: CRT, LCD, CRT+LCD, and S-VIDEO

Available Options: CRT

Panel Type

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

Available Options: 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14 and 15

Default setting: 1

Panel ID Resolution Channel Dithering

Panel ID	Function	Single/Dual LVDS
0	640x480	Single
1	800x600	Single
2	1024x768	Single
3	1280x768	Single
4	1280x1024	Dual
5	1400x1050	Dual
6	1600x1200	Dual
7	* 1280x800	Single
8	* 800x480	Single
9	1024x768	Dual
10	1024x768	Single
11	1024x768	Dual
12	1280x768	Single
13	1280x1024	Dual
14	1400x1050	Dual
15	1600x1200	Dual

TV Type

This setting refers to the native resolution of the display being used with the system.

Available Options: NTSC, PAL, PALM, PALN, PALNC, PALI, PALD, NTSC-J

Default setting: NTSC

■ **V- LINKAGP & PCI Bus Configuration Timing**

PCI Master 0WS Write

This field specifies the PCI Master 0 wait state installed in the PCI expansion bus.

Available Options: Disable and Enable

Default setting: Enable

➤ **Southbridge VIA CX700 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, audio function.

SouthBridge VIA CX700 Configuration		Chipset
* Serial ATA IDE Controller	[IDE]	Options
* High Definition Audio	[Auto]	
PCI Delay Transaction	[Disabled]	IDE
OnBoard LAN1 Controller	[Enabled]	RAID
OnBoard LAN2 Controller	[Enabled]	
Lan Boot ROM Controller	[Disabled]	
		↔ Select Screen
		↑↓ Select Item
		+ - Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit
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◆ **Serial ATA IDE Controller**

This field specifies the select SATA function as RAID.

Available Options: IDE, RAID

Default setting: IDE

■ ***RADI/AHCI BIOS Execute***

This field specifies the RAID/AHCI ROM of the SATA chip.

Available Options: Disabled, Enable

Default setting: Disable

◆ **High Definition Audio**

This field specifies the internal Audio Control.

Available Options: Disabled, and Auto

Default setting: Auto

◆ **On Board LAN1/2 Controller**

This field specifies the Enable or Disable of the onboard LAN chip.

Available Options: Disabled, Enable

Default setting: Enable

■ ***Onboard LAN1/2 Boot ROM***

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

Available Options: Disabled, Enable

Default setting: Disable

◆ **PCI Delayed Transaction**

This field specifies the chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.

Available Options: Enable and Disable

Default setting: Enable

Chapter 5 Driver and Utility

The enclosed diskette includes FB2631 VGA, AUDIO driver and LAN driver. To install and configure you FB2631 system, you need to perform the following steps.

VIA HyperionPro Driver

WIN 2000/XP Driver

Installs VIA Chipset, IRQ Routing, AGP Driver and PCI IDE Bus Master 4in 1Driver.

- 1 To install the VIA 4 IN 1 driver, insert the CD ROM into the CD ROM device, and enter DRIVER>SysChip>CX-700M. If your system is not equipped with a CD ROM device, copy the VIA 4 IN 1 driver from the CD ROM to CF or USB Device.
- 2 Execute SETUP.exe file.
- 3 The screen shows the SETUP type. Press any key to enter the main menu.
- 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.

VGA Drivers

WINXP/WIN2000 Driver

- 1 To install the VGA driver, insert the CD ROM into the CD ROM device, and enter DRIVER>VGA>CX-700M> WINXP_2K>SETUP. If your system is not equipped with a CD ROM device, copy the VGA driver from the CD ROM to CF.
- 2 Execute SETUP.exe file.
- 3 The screen shows the SETUP type. Press any key to enter the main menu.
- 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.

- 5 In the WINDOWS XP/2K, you can find the <DISPLAYL> icon located in the {CONTROL PANEL} group.
- 6 Adjust the <Color>, and <Resolution>.

Audio Drivers

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.

LAN Utility & Driver

- 1 To install the LAN utility OR driver, insert the CD ROM into the CD ROM device, and enter DRIVER>LAN>RTL8110SX>DIAG. If your system is not equipped with a CD ROM device, copy the LAN driver from the CD ROM to CF.
- 2 Execute install2KXP.exe or install98se.exe file.

Note: In the RTL8110SX directory, a README.TXT is included to provide installation information.

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.

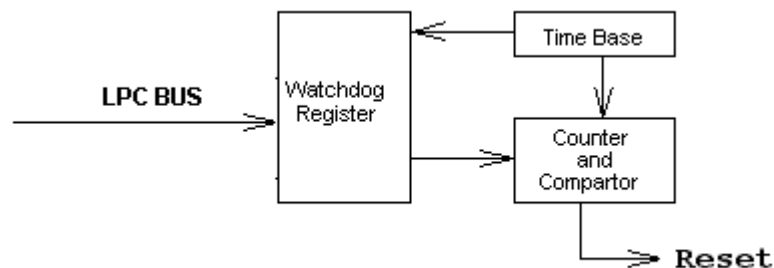
Step 2: And then refer to the chapter "BIOS Setup", as the steps to modify BIOS.

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 FB2631 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.



The CD-ROM includes a Watch Dog demo file. In the file, there are 3 execution programs written in different forms. The sub-directories of the file are:

1. WATCHDOG/ASSEMBLE: Library and Test Program written in Assembly Language
2. WATCHDOG/TURBOC: Library and Test Program written in Turbo C++

The WATCHDOG includes a demonstration program established for users who would like to configure the Watchdog timer by themselves.

Note: In the WATCHDOG/ITE8712 directory, README.TXT file is included to provide demo program information.

➤ **Watchdog Timer Setting**

The watchdog timer is a circuit that may be used from your program software to detect system crashes or hang-ups. LED on the Front side is the watchdog timer indicator. Whenever the watchdog timer is enabled, the LED will blink to indicate that the timer is counting. 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. The following is a Turbo C++ program, which demonstrates how to enable the watchdog timer and set the time-out period at 6 seconds.

```
#include "stdio.H"
#include "WDLIB.H"

main()
{
char WD_TIME=0x6;

InitWD(equWdUnitS);
printf ("Enable watchdog");
//Trigger watchdog Timer Output is 6 seconds
EnWD(WD_TIME);
}
```

➤ **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 the next trigger. Below is a Turbo C++ program, which demonstrates how to trigger the watchdog timer:

```
#include "stdio.H"
#include "WDLIB.H"

main()
{
char WD_TIME=0x6;

InitWD(equWdUnitS);
printf ("Enable watchdog");
//Trigger watchdog Timer Output is 6 seconds
EnWD(WD_TIME);
}
```

➤ **Watchdog Timer Disabled**

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

```
#include "stdio.H"
#include "WDLIB.H"

main()
{
    InitWD(equWdUnitS);
    printf ("Disable Watch Dog");
    //Disable watch dog
    DisWD(WD_TIME);
}
```

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 6 "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 FB2631 CPU card's DTR signal to the RS-485' s TXC communication.

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

Step 1: Enable 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: Enable 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 Enable 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 Disable 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 example of the above program is based on COM1 (I/O Address 3F8h). The RS-422/RS-485 of the FB2631 uses COM2. If you want to program it, please refer to the BIOS Setup for COM2 address setup.

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.

➤ **Error Message**

◆ **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

◆ **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

Temperature: Operating 0°C ~ 60°C

Relative humidity 5 % to 95 % non-condensing

➤ Real-Time Clock and Non-Volatile RAM

The FB2631 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
11	Fixed disk type byte, drive C

Address	Description
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	<p>Equipment</p> <p>Bits 7-6 Number of Floppy Drives 00 1 Drive 01 2 Drives</p> <p>Bits 5-4 Monitor Type 00 Not CGA or MDA 01 40x25 CGA 01 2 Drives 80x25 CGA</p> <p>Bits 3 Display Enabled 0 Disabled 1 Enabled</p> <p>Bit 2 Keyboard Enabled 00 Not CGA or MDA 01 40x25 CGA 01 2 Drives 80x25 CGA</p> <p>Bit 1 Math Coprocessor Installed 0 Absent 1 Present</p> <p>Bit 0 Floppy Drive Installed 0 Disabled 1 Enabled</p>
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. There is a total of 1K-port address space available. 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 - 073h	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
170h - 177h	IDE Interface
2F8h - 2FFh	Serial Port #2(COM2)
376h	PCI IDE Controller
3B0h - 3BBh	VGA Adapter
3C0h - 3CFh	VGA Adapter
3F8h - 3FFh	Serial Port #1(COM1)
4D0h - 4D1h	Motherboard Resource
800h - 8FEh	Motherboard Resource
A00h - A1Fh	Motherboard Resource
CF8h - CFFh	Motherboard Resource
E080 - E09Eh	USB Controller
E400 - E4FEh	Ethernet Controller
E800 - E8FEh	Ethernet Controller
EC00 - EC1Eh	USB Controller
FC00 - FC0Eh	IDE 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	- Reserved -
IRQ6	- Reserved -
IRQ7	- Reserved -
IRQ8	Real Time Clock
IRQ9	- Reserved -
IRQ10	LAN1
IRQ11	LAN2
IRQ12	PS2 Mouse
IRQ13	FPU
IRQ14	Primary IDE
IRQ15	- Reserved -

➤ **DMA Channel Map**

The equivalent of two 8237A DMA controllers is implemented in the FB2631 board. Each controller is a four-channel DMA device that will generate the memory addresses and control signals necessary to transfer information directly between a peripheral device and memory. This allows high speed information transfer with less CPU intervention. The two DMA controllers are internally cascaded to provide four DMA channels for transfers to 8-bit peripherals (DMA1) and three channels for transfers to 16-bit peripherals (DMA2). DMA2 channel 0 provides the cascade interconnection between the two DMA devices, thereby maintaining IBM PC/AT compatibility.

The following is the system information of DMA channels:

DMA Controller 1	DMA Controller 2
Channel 0: Spare	Channel 4: Cascade for controller 1
Channel 1: Spare	Channel 5: Spare
Channel 2: Spare	Channel 6: Spare
Channel 3: Spare	Channel 7: Spare

➤ 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)

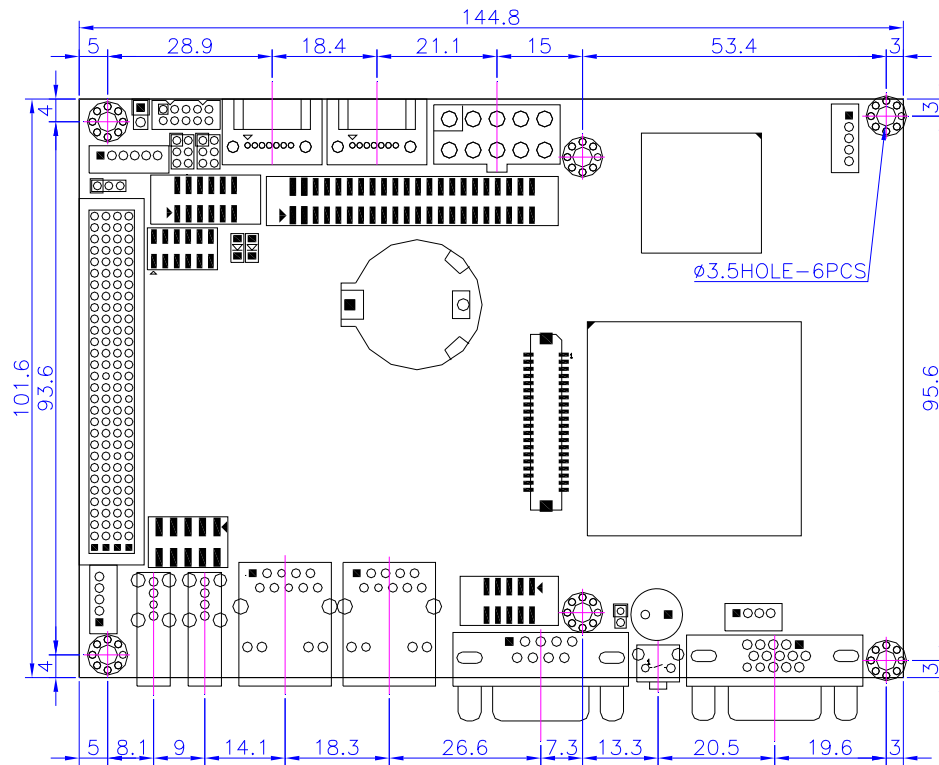
◆ **Divisor Latch (LS, MS)**

	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

Dimension

a. FB2631



b. FB4706

