FabiaTech Corporation

IPC Solution

Website: http://www.fabiatech.com

Email: support@fabiatech.com

Small Cube System

Fanless Series

FX5502 User's Manual

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- 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)

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Chapter 1 Introducing the FX5502 (A) System

Overview

The FX5502 (A) is a compact size embedded system with low-power Pentium II grade CPU module inside. This user's manual provides information on the physical features, installation, and BIOS setup of the FX5502 (A).

Built to unleash the total potential of the Intel Ultra low power CPU, Able to support 650 MHz, this system supports dual 10Base-T/100Base-TX LAN ports, 256MB SDRAM, 2 USB ports, audio and a VGA controller.

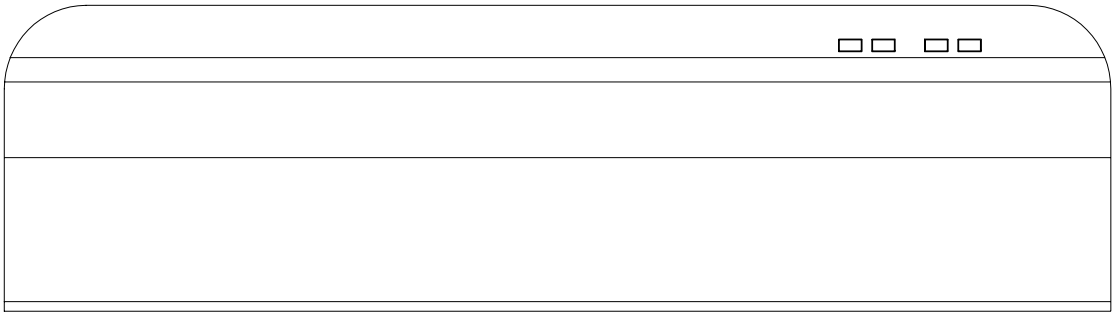
Each FX5502 (A) has two ports for I/O communications. Two RS-232C ports and one parallel port are available.

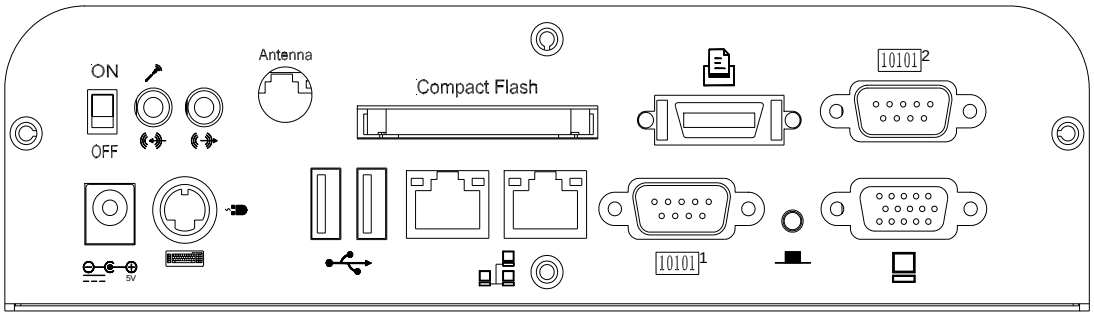
The FX5502 (A) is perfect for POS and POI applications, Internet Router, VPN Gateway, fire wall, Mail Server, WBT, Thin Client and small Embedded Control. The unit is only 148.0mm (D) X 203.0mm (W) X 55.0mm (H).

Series Comparison Table

Model	FX5502	FX5502 A
Processor	Intel (ULV) Power CPU-650Mhz	
SO-DIMM (Max/Standard.)	512MB/ 256MB	
CRT VGA	Yes	
Watchdog Timer	Yes	
Multi I/O	Two RS232	
Enhanced IDE	One	
USB 1.1	Two	
Audio	MIC-In/ Audio Out	
RJ45 port (10/100Mbps)	Two	
IDE CF Socket	One	
Power Connector	DC Jack	4 Pin
Dimensions (Unit: mm)	148(D) x 203(W) X 55(H)	

Layout





Specifications

- ***Processor Board –***

  650 MHz Intel Ultra low power CPU with 256MB SDRAM

  I/O Outlets –

  Two 100/10 base-TX Ethernet ports.

  Two RS-232C Ports and two USB ports.

  One CRT and one PS/2 compatible keyboard/mouse interface.

  One Audio MIC-In and one Audio Line-Out ear-jet connectors.

  One DC-In plug connector with power switch.

  One power LED, one HDD/CF access LED, and two LAN LEDs.

  One mini-PCI socket for mini-PCI I/O modules.

- ***Storage Bay-***

  One Compact Flash slot.

  One 2.5" hard disk space.

- ***Power requirement –***

  +12 ~ +24V DC with 15% tolerance, 20VA maximum with 2.5” HDD and 19V input voltage.

- ***Dimensions-***

  148.0mm(D) x 203.0mm(W) x 55.0mm(H)

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 FX5502 (A) 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 FX5502 (A) is not supplied from us, please make sure the specification of the cable(s) is compatible with the FX5502 (A) system.

Note: after you install the FX5502 (A), 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 FX5502 (A) package. Some accessories are optional items that are only shipped upon order.

- One FX5502 (A) embedded system.
- One AC to DC power adapter and 1 AC power code.
- One Wiring cable for DC12V or 24V power inputs. (Only for FX5502A)
- One Y-type (3-terminal) PS/2 keyboard plus mouse port adapter cable.
- One parallel port adapter cable.
- One pack of 2.5" hard disk installation guider with 4 fixed screws.
- One compact disc includes software utility.

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.

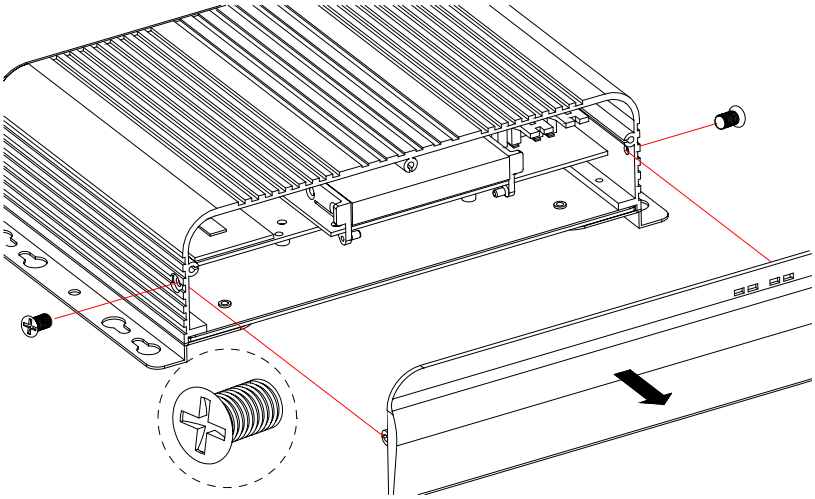
1. Before removing the cover, shut down the operation System and disconnect power switch to off and unplug AC-to DC Adapter cable.

2. Install or unplug any connector, Compact Flash, and hard disk be sure that the power is disconnected or power switch to off from the system. If not, this may damage the system.

3. The ESD (Electricity Static Discharge) may be created from human body that touches the board. It may do damage to the board circuit.

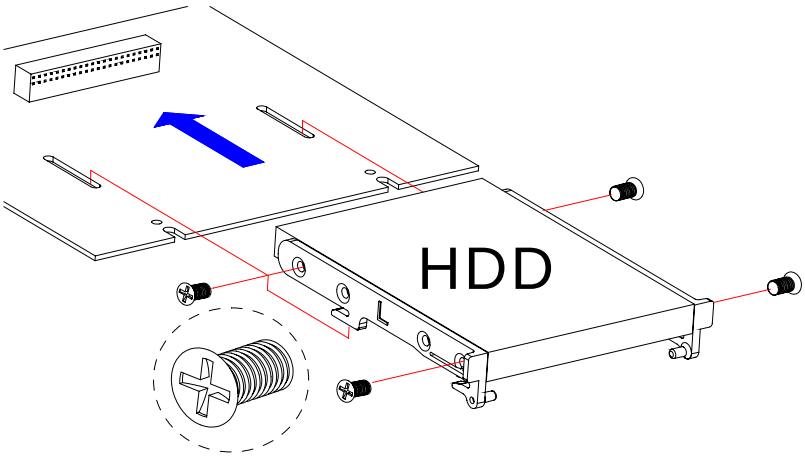
□ Installing/Ejecting 2.5” HDD

If you are installing hardware option, you can remove the front cover. The following figure will guide you how to install 2.5" HDD inside the FX5502 (A) and how to install the FX5502 (A) fixers.



■ *Installing HDD*

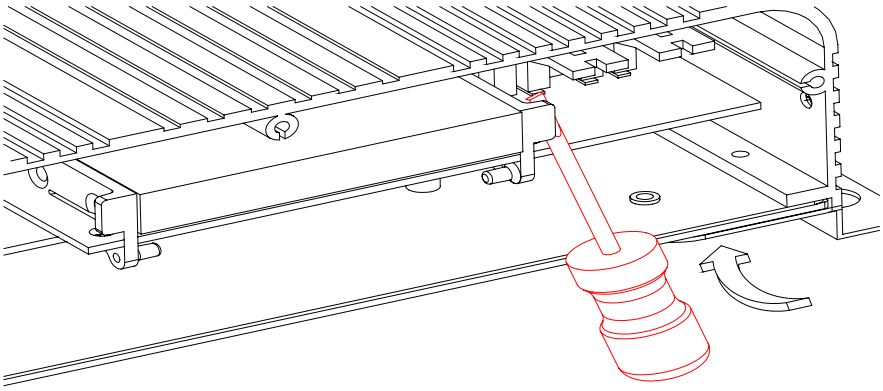
The following figure will guide you install fix support HDD and to inside the FX5502 (A).



Note: Use caution when handling the hard disk to prevent damage to IDE connector as you insert hard disk. Gently slide the hard disk into the IDE and stop when you feel resistance.

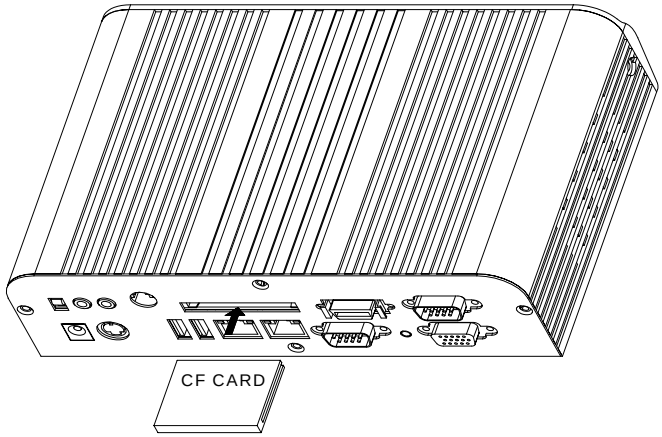
■ ***Ejecting HDD – Depend on Screwdriver***

If you are removing HDD option, you can use I-type screwdriver or equivalent as shown on right-down figure and push ahead to eject the hard disk with guiders



□ **Installing Compact Flash**

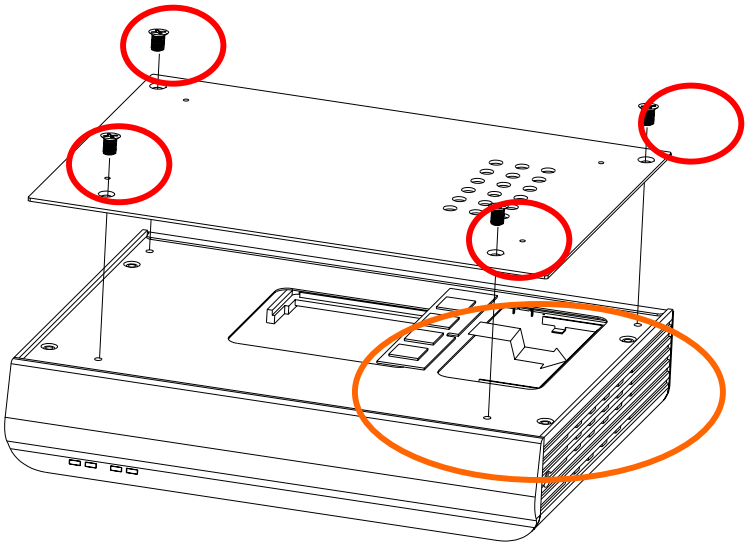
If you are installing compact flash to the FX5502 (A), see following figure and rear pictures.



Note: The Compact Flash socket (on the FX5502) supports 3.3V Compact Flash and Micro Drives.

□ **Installing Additional Memory: SoDIMM Socket for SDRAM Modules**

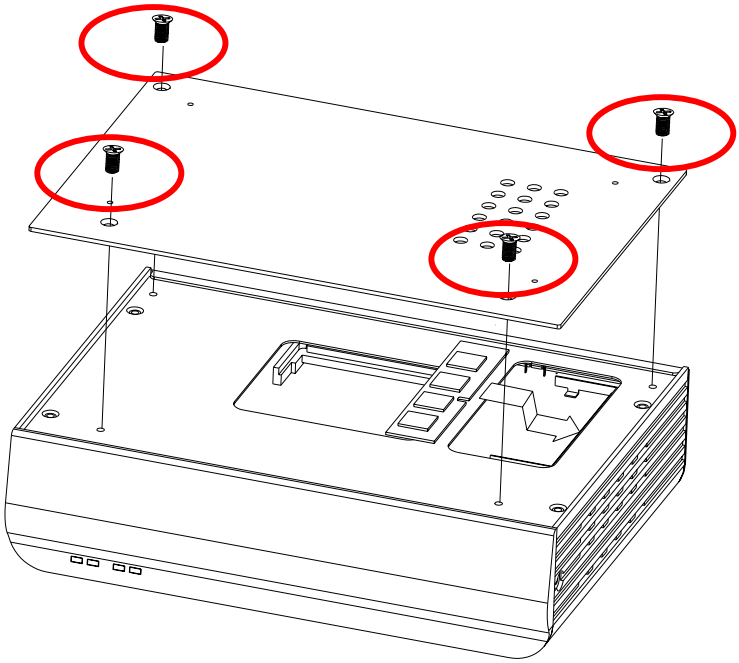
You may extend additional memory to FX5502 (A), remove the bottom cover, See as following figure and rear pictures. The DIMM socket supports 128MB to 512MB of SDRAM modules.



□ **Installing Mini PCI Card: Mini PCI Socket for WLAN Modules**

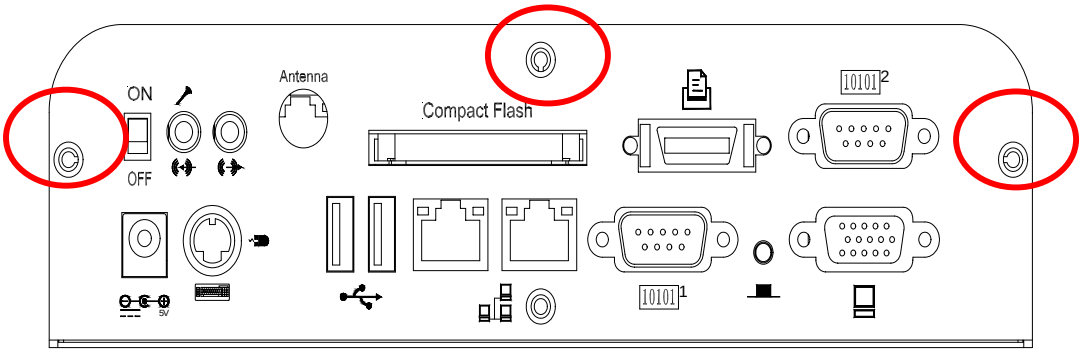
You may extend additional mini PCI WLAN module to FX5502 (A), remove the bottom cover, and See as following figure and backside pictures. Release the screws on the bottom of the unit. (Please see the spots circled.)

■ ***Removing Bottom Covers: Release the screws on the bottom***



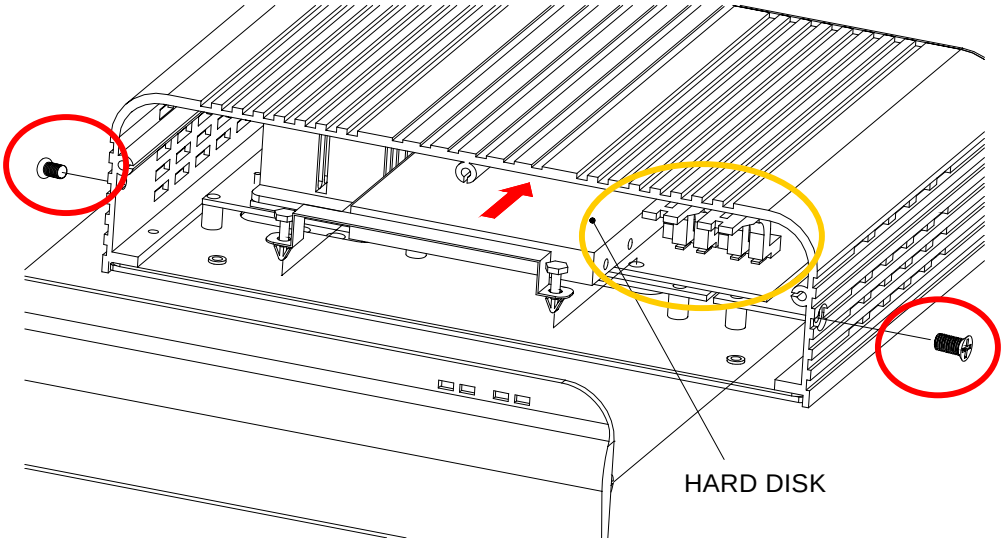
- ***Release the Rear screws***

The following figure will guide you how to release the rear screws.



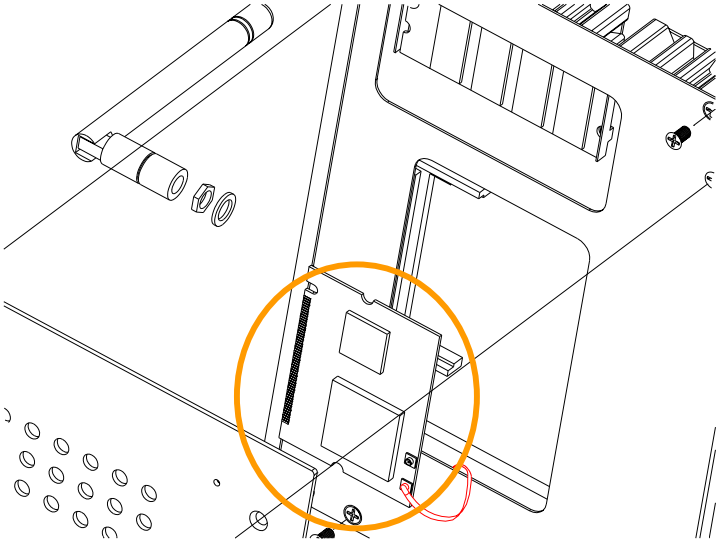
- ***Removing Front/Top Covers: Release the screws***

The following figure will guide you how to release the front screws



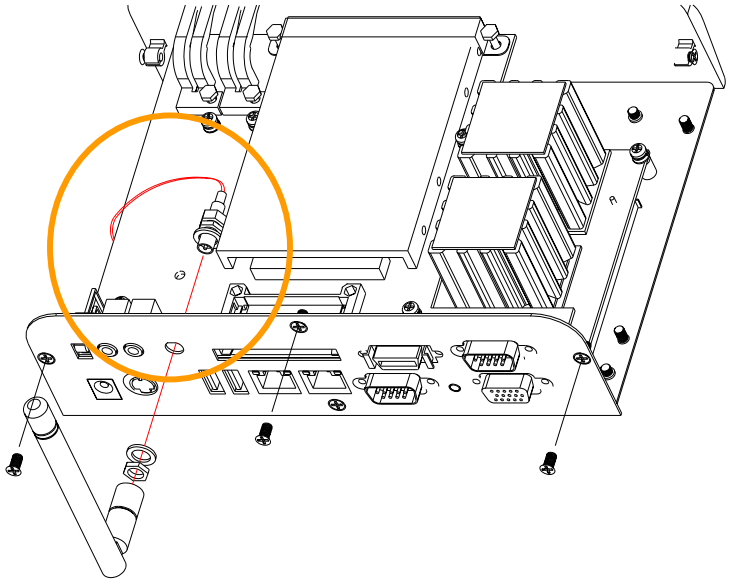
Caution: Be very careful LED guide when handling and moving cover.

- ***Installing Mini PCI Card***



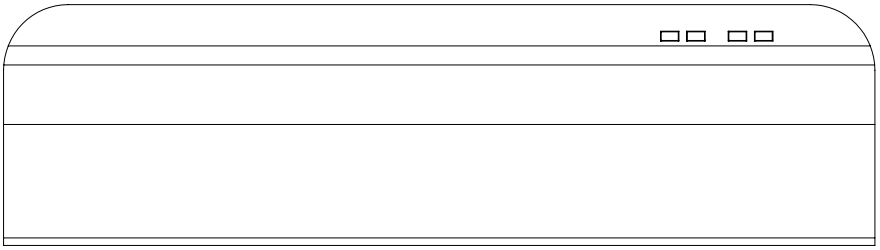
- ***Installing the Antenna***

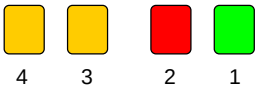
Connect the antenna cable from backside antenna hold to Mini PCI WLAN (the auxiliary board). Please see the figure guide.



□ LED Indicators (On the Front Panel)

The Power, LAN and HDD LED have two distinctive statuses: Off for inactive operation and blinking light for activity.





LED1: Power LED (Green)

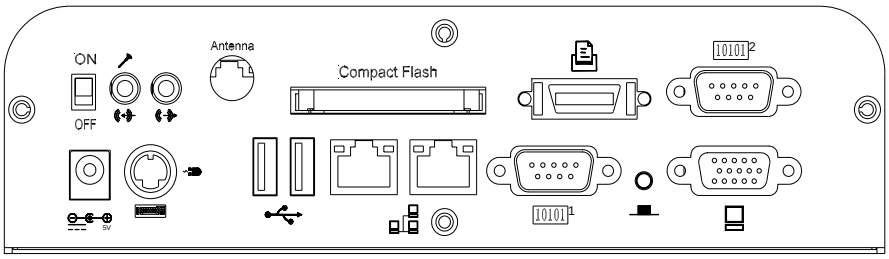
LED2: HDD LED (Red)

LED3: LAN Access LED (Yellow)

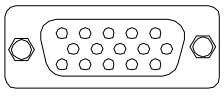
LED4: LAN Access LED (Yellow)

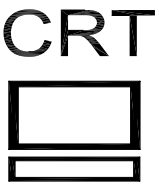
□ Connecting the Monitor, Keyboard, Mouse

Connector the monitor, keyboard and mouse to the FX5502 (A) using the connections provided on the backside of the chassis. See following figure and a side pictures.



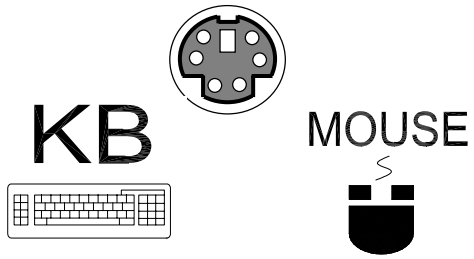
1. A VGA connector is provided for CRT display





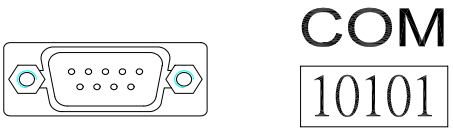
DB15	Signal
1	Red
2	Green
3	Blue
13	Hsync
14	Vsync
12	DDC Data
15	DDC Clock
5 & 10	Digital Ground
6,7,8	Analog Ground
Others	Not Used

2. The connector uses the included adapter cable you can attach standard PS/2 type keyboard and mouse. Standard PS/2 keyboard can be plugged into this connector without any adapter cable. If PS/2 keyboard and mouse will be used simultaneously, a Y-type (3-terminal) adapter cable is needed.



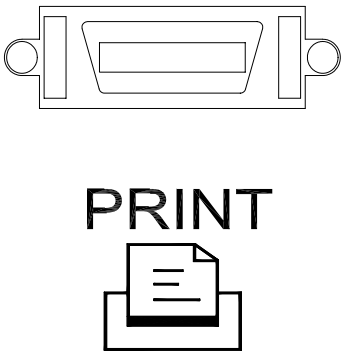
Pin	Description
1	Mouse Data
2	Keyboard Data
3	Ground
4	VCC
5	Mouse Clock
6	Keyboard Clock

□ **Connecting the COM1/COM2 ports and Parallel Port**



DB-9	RS-232 Signal
1	-DCD
6	-DSR
2	RXD
7	-RTS
3	-TXD
8	-CTS
4	-DTR
9	-RI
5	Ground
Case	Case Ground

Uses include parallel adapter cable to transfer to standard 25-pin female D-SUB connector for Parallel port.

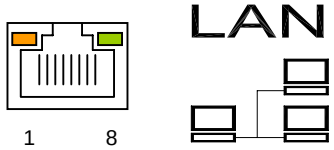


DB-25	Description	DB-25	Description
1	-STROBE	14	-AUTO FORM FEED
2	DATA 0	15	-ERROR
3	DATA 1	16	-INITIALIZE
4	DATA 2	17	-PRINTER SELECT IN
5	DATA 3	18	Ground
6	DATA 4	19	Ground
7	DATA 5	20	Ground
8	DATA 6	21	Ground
9	DATA 7	22	Ground
10	ACKNOWLEDGE	23	Ground
11	BUSY	24	Ground
12	PAPER	25	Ground
13	PRINTER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

□ Connecting the LAN ports and USB Ports

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

RJ45 connector



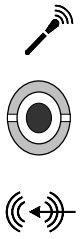
(Front View)

The following lists the pin assignment of RJ45.

LAN	Signal	LAN	Signal
1	TPTX+	5	FBG1
2	TPTX -	6	TPRX -
3	TPRX+	7	FBG2
4	FBG1	8	FBG2

The FX5502 (A) supports a dual port USB connector. Any USB device can be attached to USB ports with plug-and-play supported. The left side port is USB #1 and the right side port is USB #2

□ Connecting the Audio Microphone In/ Speak Out

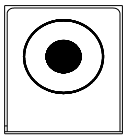


MIC-In

Line-Out

□ Connecting the DC Power Jack, Power Switch

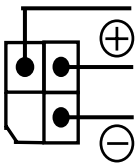
Power is supplied through an external AC/DC power adapter. Check the technical specification section for information about AC/DC power input voltage.



DC +12V to +24V, 15% tolerance

30VA minimum

□ FX5502A – 4 Pin Power Connector



Front View

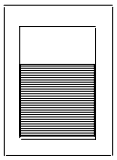
+12V with 15% tolerance, 30VA minimum (Yellow line on included power cable)

+24V with 15% tolerance, 30VA minimum (Blue line on included power cable)

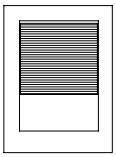
Ground (Black line on included power cable)

Note: 1. FX5502A needs only 1 power input, either +12V or +24V. Don't connect +12V and +24V lines simultaneously and protect the unused one in order to prevent it from short circuit. 2. It is recommended that connect a fuse (3A) in series to the power line if the power is supplied from cars or vehicles battery directly.

Since the switch does include a power switch, plugging its power adapter into a power outlet then switch power to on, when you final installed system hardware device.



Off: Power Off



On: Power On

Chapter 3 BIOS Setup

This chapter describes the BIOS setup.

Overview

The 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 PCI 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.

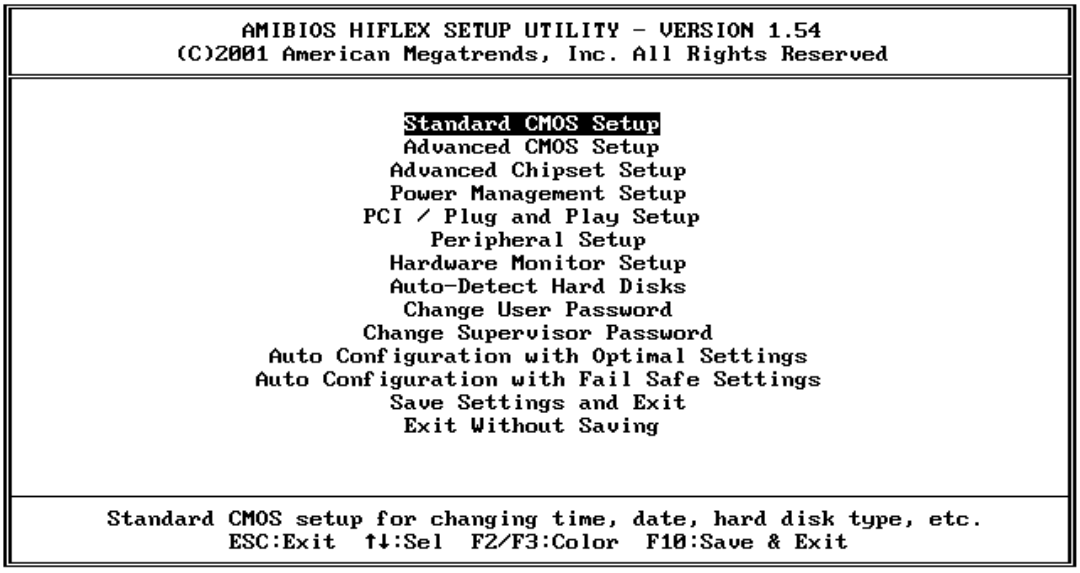
The BIOS provides a menu-driven interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

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. Standard CMOS Setup
2. Advanced CMOS Setup
3. Advanced Chipset Setup
4. Power Management Setup
5. PCI/ Plug and Play Setup
6. Peripheral Setup
7. Hardware Monitor Setup
8. Auto-Detect Hard Disks
9. Change User Password
10. Change Supervisor Password
11. Auto Configuration with Optimal Settings: 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.
12. Auto Configuration with Fail Safe Settings: to configure the system in fail-safe mode with predefined values.
13. Save Settings and Exit: perform this function when you change the setting and exit the BIOS Setup program.
14. Exit without saving: perform this function when you want to exit the program and do not save the change.

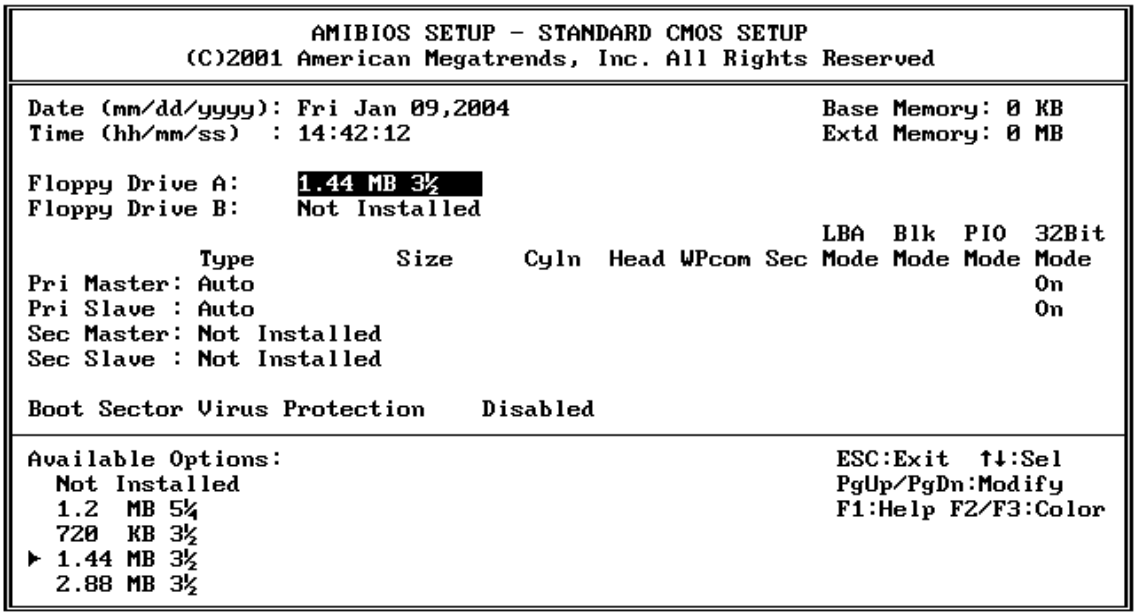
Keyboard Convention

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
F2/F3	To change the color of the menu display. F2 is to go forward and F3 is to go backward.
UP/Down Arrow Keys	To go upward or downward to the desired item

STANDARD CMOS SETUP

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



- ***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.

- ***Floppy Setup***

The <Standard CMOS Setup> option records the types of floppy disk drives installed in the system.

To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left-or right-arrow key.

- ***Hard Disk Setup***

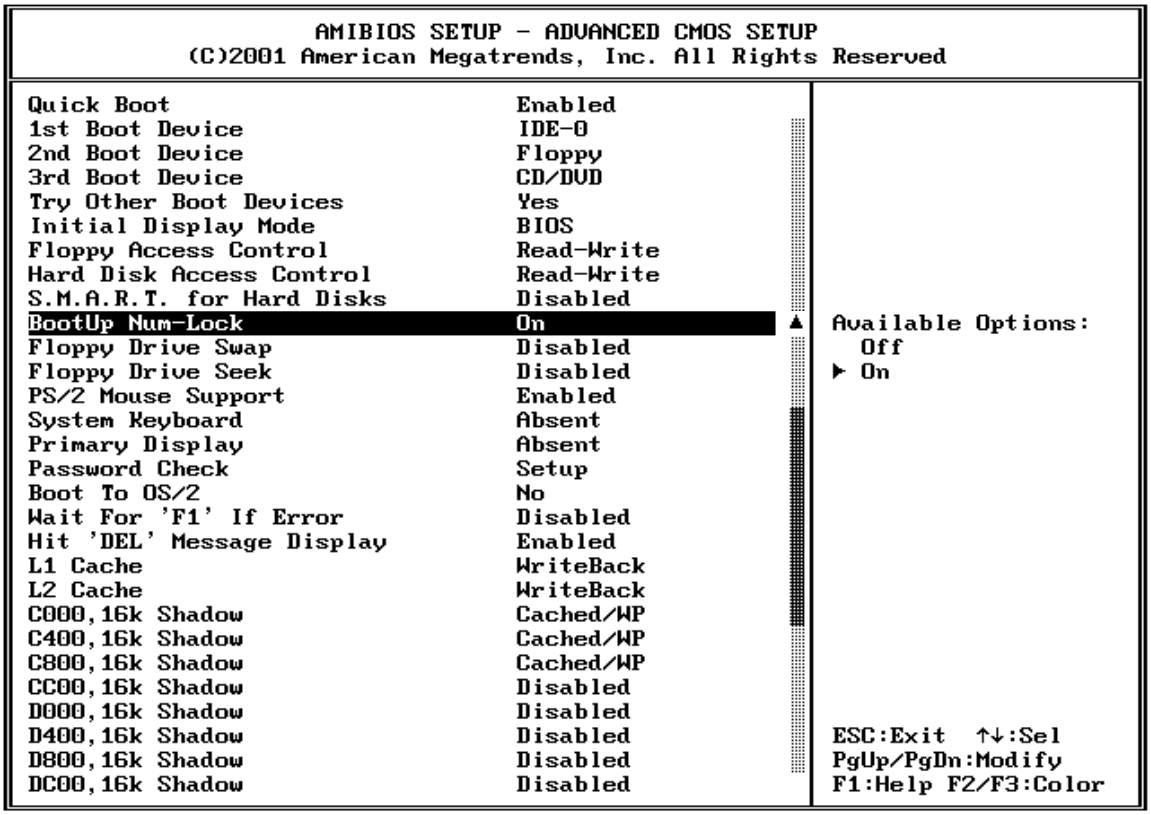
The BIOS supports various types for user settings, The BIOS supports <Pri Master>, <Pri Slave>, <Sec Master> and <Sec Slave> so the user can install up to four hard disks. For the master and slave jumpers, please refer to the hard disk's installation descriptions and the hard disk jumper settings.

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.

- ***Boot Sector Virus Protection***

This option protects the boot sector and partition table of your hard disk against accidental modifications. Any attempt to write to them will cause the system to halt and display a warning message. If this occurs, you can either allow the operation to continue or use a bootable virus-free floppy disk to reboot and investigate your system. The default setting is <***Disabled***>. This setting is recommended because it conflicts with new operating systems. Installation of new operating system requires that you disable this to prevent write errors.

ADVANCED CMOS SETUP



This section describes the configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference. Some entries here are required by the CPU board's design to remain in their default settings.

- ***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

- ***1st –3rd Boot Device***

These fields determine where the system attempts to look for the boot drive priority for an operating system. The default procedure is to check the hard disk, and then the floppy drive, and last the CDROM.

Available options: Disabled, IDE0-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CD/DVD, USB-FLOPPY, USB-CDROM, USB-HDD and SCSI, Network

Default setting: IDE-0 for 1st Boot device; Floppy for 2nd Boot Device; CDROM for 3rd Boot Device

- ***Try Other Boot Device***

If all 3 1st –3rd boot devices specified by CMOS setup are not available to boot, BIOS will try to boot other available devices in following order if this question is set to "Enabled".

- ***Initial Display Mode***

This field specifies can set Normal POST screen (BIOS) or Boot with logo, no POST messages (Client).

- ***Floppy Access Control***

This field specifies the read/write access when booting from a floppy drive.

Available options: Normal, Read-only

Default setting: Normal

- ***Hard Disk Access Control***

This field specifies the read/write access when booting from a HDD drive.

Available options: Normal, Read-only

Default setting: Normal

- ***S.M.A.R.T for Hard Disk***

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.

Available options: Disabled, Enabled

Default: Disabled

- ***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

- ***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

- ***Floppy Drive Seek***

This field is used to set if the BIOS will seek the floppy <A> drive upon boot.

Available Options: Disabled, Enabled

Default setting: Disabled

- ***PS/2 Mouse Support***

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

Default setting: Enable

- ***System Keyboard***

This field specifies if an error message should be prompted when a keyboard is not attached.

Available options: Absent, Present

Default setting: Absent

- ***Primary Display***

The field specifies the type of monitor installed in the system.

Available options: Absent, VGA/EGA, CGA40x25, CGA80x25, and Mono

Default setting: Absent

- ***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 To OS2***

If OS2 operating system is used, and the system RAM is over 64MB, please select yes. Otherwise, select No.

Available options: Yes, No

Default setting: No

- ***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

- ***C000, 32k Shadow - E800, 32k shadow***

These fields control the location of the contents of the 32KB of ROM beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus. The settings are:

1. **Disabled:** The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

2. **Enabled:** The contents of C000h - C7FFFh are written to the same address in system memory (RAM) for faster execution.

3. **Cached/WP**: The contents of the named ROM area are written to the same address in system memory (RAM) for faster execution, if an adapter ROM will be using the named ROM area. Also, the contents of the RAM area can be read from and written to cache memory.

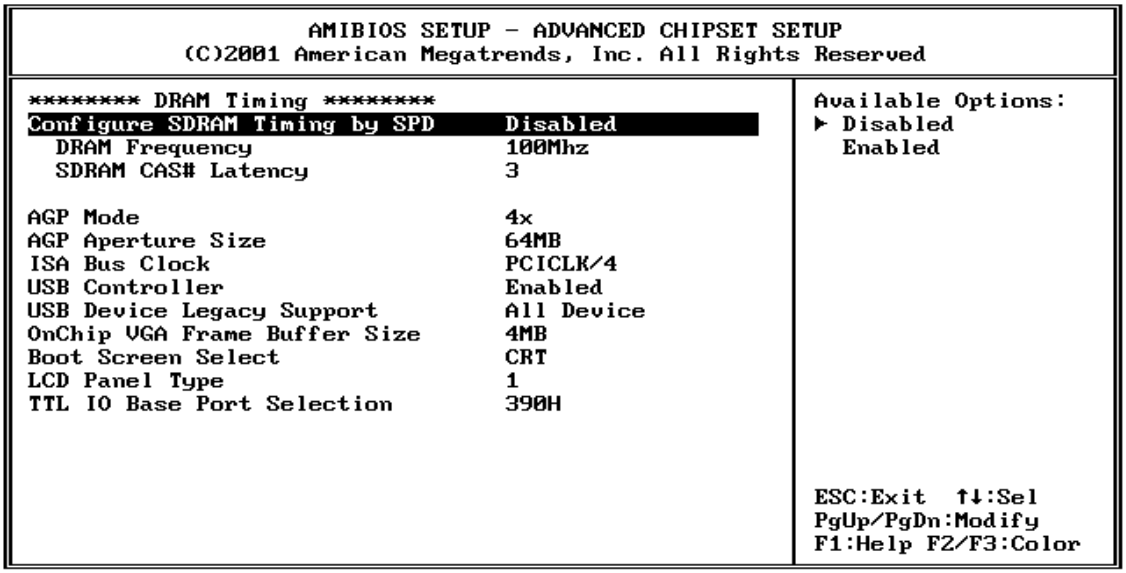
Available options: Disabled, Enabled, Cached

Default setting: Disabled

Default setting: Disable

ADVANCED CHIPSET SETUP

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



- ***Configure SDRAM 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, Enabled

Default setting: Disabled

- ***DRAM Frequency***

This specifies the SDRAM memory clock frequency.

Available Options: 100MHz, 133MHz

Default setting: 100MHz

- ***SDRAM CAS# Latency (SCLKs)***

This field specifies the latency for the Synchronous DRAM system memory signals.

Available Options: 3, 2

Default setting: 3

- ***AGP Mode***

This field select AGP transfers video data.

Available Options: 1x, 2x and 4x

Default setting: 4x

- ***AGP Aperture Size***

This field specifies the system memory size that can be used by the Accelerated Graphics Port (AGP).

Available Options: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB and 256MB

Default setting: 64 MB

- ***ISA Bus Clock***

This field sets the polling clock speed of ISA Bus (PC/104).

Available Options: PCICLK/2, PCICLK/3, PCICLK/4, PCICLK/5 and PCICLK/6

Default setting: PCICLK/4
NOTE: *1. PCICLK means the PCI BUS inputs clock (33Mhz).*

2. User is recommended to use setting at the range of 8MHz to 10MHz.

- ***USB Control***

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, Enabled

Default setting: Enabled

- ***USB Device Legacy Support***

Select All Device 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, All Device

Default setting: All Device

- ***OnChip VGA Frame Buffers Size***

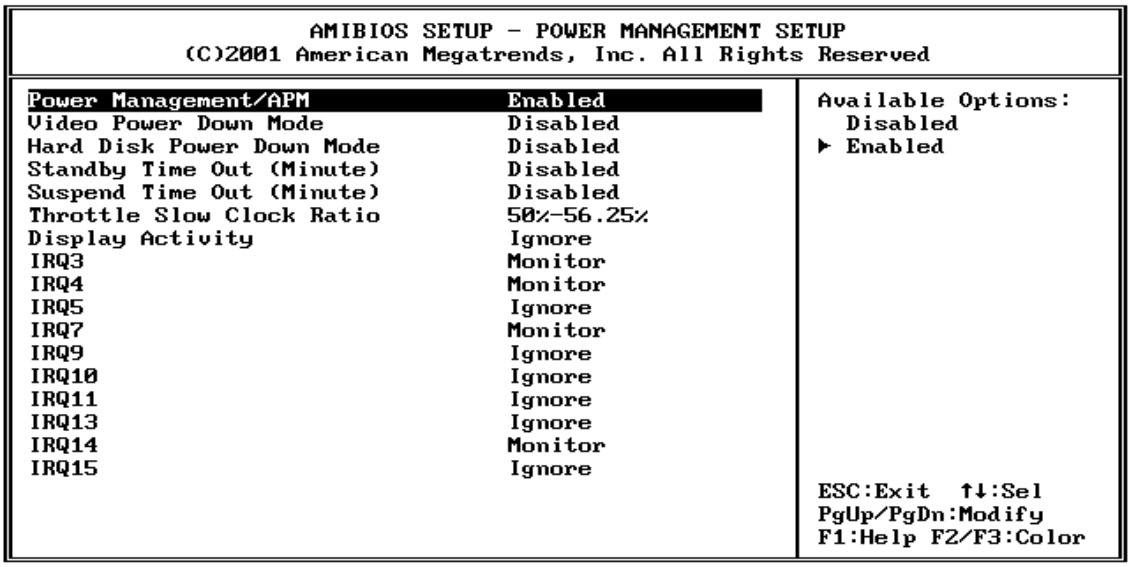
This field is share memory architecture (SMA) for frame buffer memory. SMA allows system memory to be efficiently share by the host CPU and allocated depending on user preference, application requirements, and total size of system memory.

Available Options: None, 2MB, 4MB, 8MB, 16MB and 32MB

Default setting: 8 MB

Default setting: 8 MB

POWER MANAGEMENT



- ***Power Management /APM***

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

Available Options: Disabled, 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, 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

- ***Standby Time Out (Minute)***

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 (Minute)***

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

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

Default setting: Disabled

- ***Throttle Slow Clock Ratio***

When the system enter Suspend or standby mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

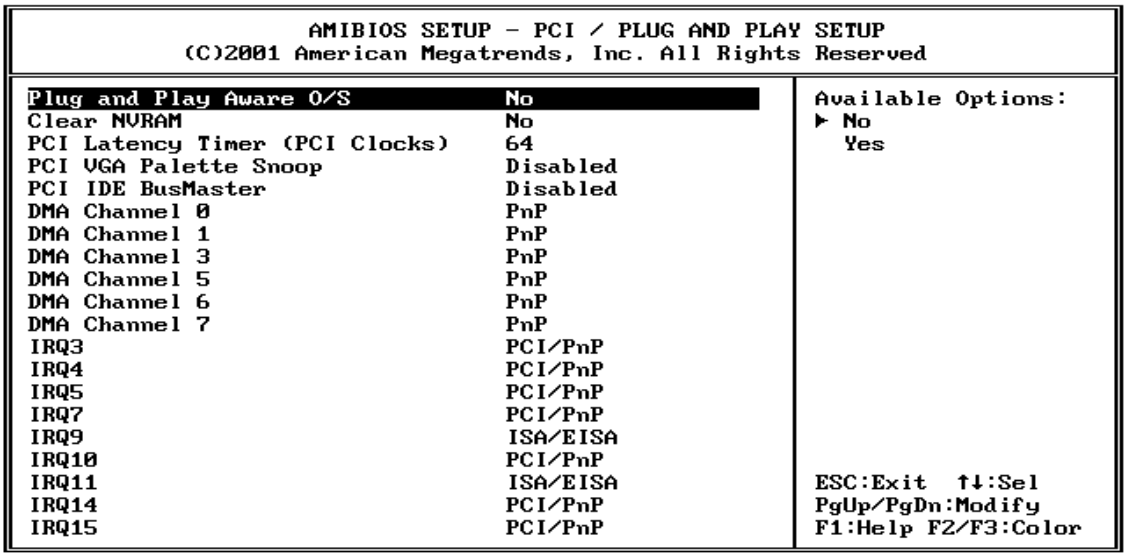
Available Options: 0%-6.25, 25%37.5%, 75%87.5% and 93.75%-100%

Default setting: 50%-56.25%

- ***IRQ3 ~IRQ15***

This field specifies the power down mode of the system based on the device. When the system does not receive signals from the device, it will enter the Power Down mode immediately. To enable the power saving mode, select Monitor. To disable it, select Ignore.

PCI/PLUG AND PLAY



- ***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

- ***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 VGA card installed on the PCI bus.

Available Options: AGP, PCI

Default setting: PCI

- ***PCI VGA 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

- ***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:

ISA/EISA devices comply with the original PC AT bus specification, requiring a specific interrupt (Such as IRQ5 for COM1).

PnP (PCI/ISA) devices: comply with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

Available Options: PnP, ISA/EISA

Default setting: PnP

- ***IRQ 3 –15***

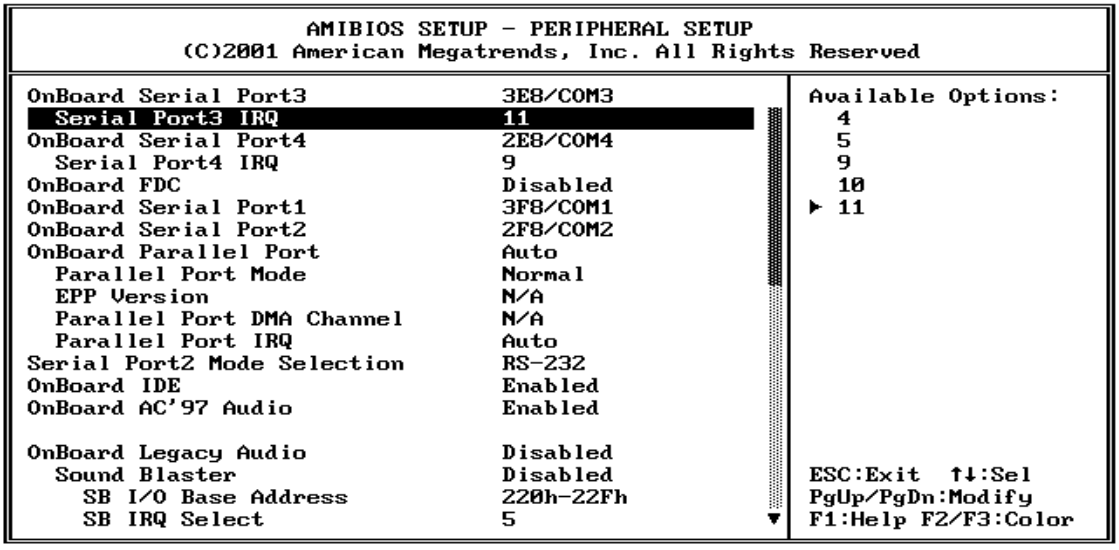
When I/O resources are controlled manually, you can assign each system interrupt as one of the following types, based on the type of device using the interrupt:

ISA/EISA devices comply with the original PC AT bus specification, requiring a specific interrupt (Such as IRQ5 for COM1).

PnP (PCI/ISA) devices: comply with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

PERIPHERAL SETUP

This section describes the function of peripheral features.



- ***OnBoard Serial Port 1***

These fields select the I/O port address for Serial port 1.

Available Options: Auto, Disabled, 3F8H/COM1, 2F8H/COM2, and 3E8H/COM3, 2E8H/COM4.

Default setting: 3F8/COM1

- ***OnBoard Serial Port 2***

These fields select the I/O port address for Serial port 2.

Available Options: Auto, Disabled, 3F8H/COM1, 2F8H/COM2, and 3E8H/COM3, 2E8H/COM4.

Default setting: 2F8/COM2

- ***OnBoard Parallel Port***

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

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

Default setting: Auto

- ***EPP Version***

This field specifies the EPP version for the Parallel Port Mode specification used in the system and is not configurable. IF Normal or ECP is selected, this field displays N/A, meaning not available.

Available Options: N/A, 1.7, 1.9

Default setting: N/A

- ***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: N/A, Normal, Bi-Dir, EPP, and ECP

Default setting: Normal

- ***Parallel Port IRQ***

This field specifies the IRQ for the parallel port.

Available Options: Auto, N/A, 5, 7

Default setting: Auto

- ***Parallel Port DMA Channel***

This option is only available if the setting for the parallel Port Mode option is ECP.

Available Options: N/A, 0,1,3

Default setting: N/A

- ***On-Board IDE***

This field specifies the IDE channel that can be applied when using CN3 IDE hard disk connector.

Available Options: Disabled, Primary, and Secondary, Both

Default setting: Both

- ***OnBoard AC'97 Audio***

This field specifies the internal Audio Control.

Available Options: Disable, Enable

Default setting: Enable

- ***Sound Blaster***

This field if you want to use the Sound Blaster emulation feature.

Available Options: Disable, Enable

Default setting: Disable

- ***SB I/O Base Address***

These fields select the I/O port address for Audio.

Available Options: 220H~22FH, 240H~24FH, 260H~26FH and 280~28FH

Default setting: 220H~22FH

- ***SB IRQ Select***

This field specifies the IRQ for the Audio.

Available Options: Disable, 5,7 and 10

Default setting: 5

- ***SB DMA Select***

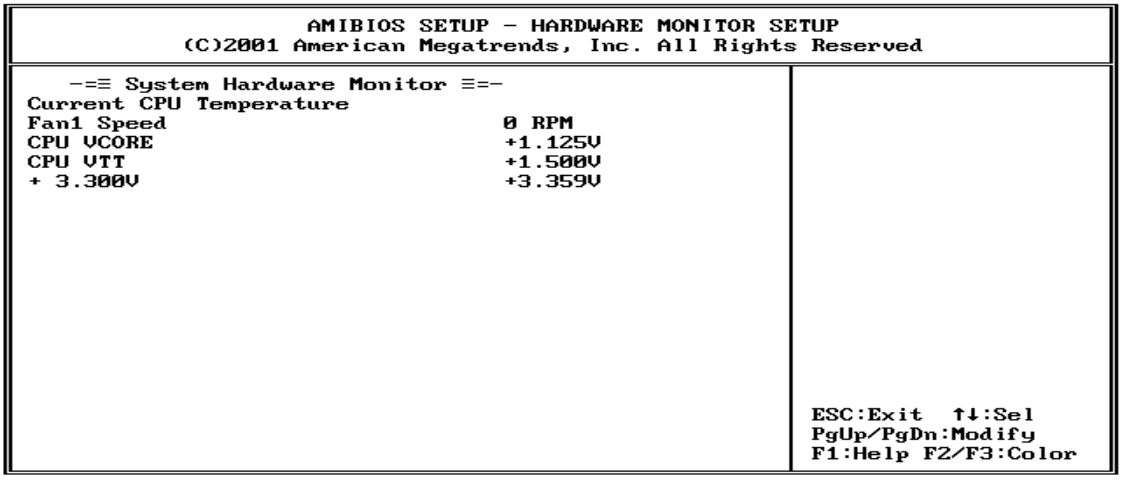
This field specifies the DMA for internal Audio Control.

Available Options: Disable, 0, 1,2 and 3

Default setting: 1

Hardware Monitor Setup

On the Hardware Monitor Setup screen, you can set up or monitor the system temperature, CPU voltage, and VIA C3 CPU Ration and CPU fan speed...



- ***System Hardware Monitor***

  In this field, you can monitor or detect the followings items. These items are view-only and cannot be changed.
  - Current CPU Temperature
  - Fan1 Speed
  - CPU VCORE
  - CPU VTT
  - +3.300V

Password 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.

To set the password, please complete the following steps.

1. Select **Change Supervisor Password.**

2. Type the desired password (up to 8 character length) when you see the message, "Enter New Supervisor Password."

3. Then you can go on to set a user password (up to 8 character length) if required. Note that you cannot configure the User password until the Supervisor password is set up.

4. Enter Advanced CMOS Setup screen and point to the Password Checkup field.

5. Select Always 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.

To set the password, please complete the following steps.

1. Select **Change Supervisor Password**.

2. Press Enter instead of entering any character when you see the message, "Enter New Supervisor Password."

3. Thus you can disable the password.

Chapter 4 Software Installation

The enclosed diskette includes FX5502 (A) VGA, Audio, system and LAN drivers. To install and configure you FX5502 (A) system, you need to perform the following steps.

VGA Drivers

WIN98_ME/WINXP_2K Driver

1 To install the VGA driver, insert the CD ROM into the CD ROM device, and enter DRIVER>VGA>Via8606>WIN98_ME or >WINXP_2K. 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 WINDOWS98/ME, you can find the <DISPLAYL> icon located in the {CONTROL PANEL} group.

6 Adjust the <Resolution> and <Color>,

Note: In the VGA >Via8606/VT686B>NT4.0, WINXP_2K directory, a Install.txt file is included to provide installation information

Audio Drivers

WIN 98_ME/WINXP_2K Driver

1 To install the AUDIO driver, insert the CD ROM into the CD ROM device, and enter DRIVER>AUDIO>Vt686B>WIN9X_2K_XP. 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.

VIA 4 In 1 Driver

WIN 98/2000/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>Via8606. 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 VIAHyperion4in1448v.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.

LAN Utility & Driver

1 To install the LAN utility OR driver, insert the CD ROM into the CD ROM device, and enter DRIVER>LAN>RTL8139C. If your system is not equipped with a CD ROM device, copy the LAN VGA driver from the CD ROM to a 1.44" diskette.

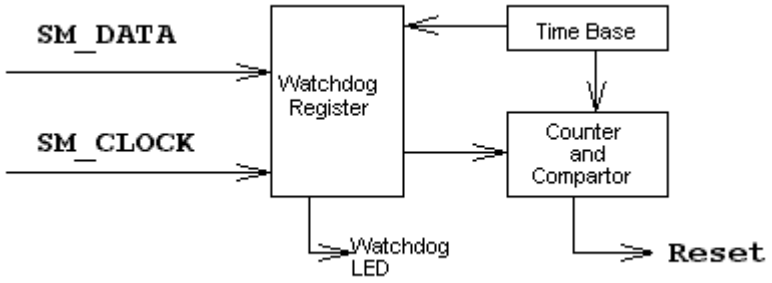
2 Execute install.exe file.

Note: In the LAN directory, a HELPME.EXE file is included to provide installation information

Watchdog Timer

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

The FX5502 (A) 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 256 seconds or 1 to 256 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 period is between 1 to 256 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.

Reset Time Factor	Time-Out Period Sec/Minutes
01h	1
02h	2
03h	3
04h	4
05h	5
06h	6
~	~
FFh	256

- □ **Watchdog Timer Enabled**
- □ **Watchdog Timer Trigger**
- □ **Watchdog Timer Disabled**

Note: In the DRIVER/WatchDog/F75101r directory a demo file is included to provide watchdog control information and assemble source code.

Chapter5 Error Coding

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

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***

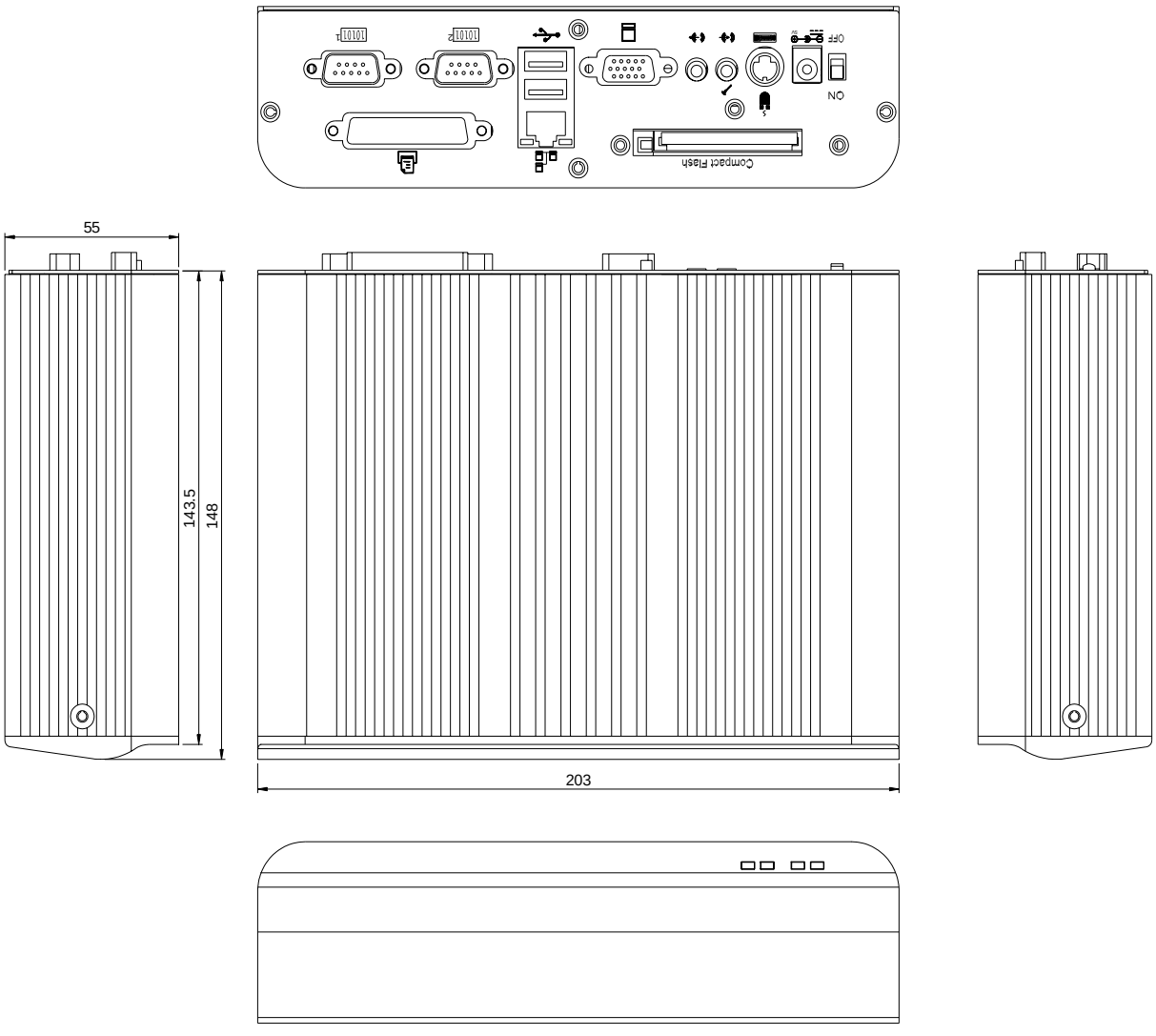
When this error occurs that requires you to reboot. Press any key and the system will reboot.

- ***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.

Appendix

Dimension



Technical Reference

Physical and Environmental

Temperature: Operating 0°C ~ 50°C

Relative humidity 5 % to 95 % non-condensing

AC-DC adapter

Input AC Voltage Range: 100V~240V, 50Hz ~60Hz

Output DC Voltage: 24V/1.25A Maximal

Surface Temperature of Chassis：

5°C to 45°C (W/HDD)/0°C to 50°C (W/CF card only)

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***

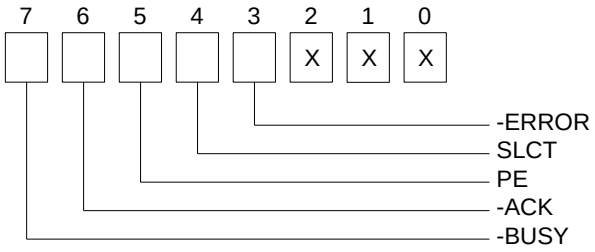
The parallel portion of the SMC37C669 makes the attachment of various devices that accept eight bits of parallel data at standard TTL level.

- ***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.

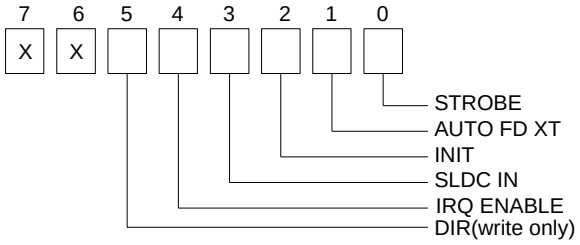
Bit 5: A 1 means the printer has detected the end of the paper.

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.