Single Board Computer

FSC-6621CLD2N

User's Manual

This mamual Serves to all FSC-6621 series models:
FSC-6621CLD2N/FSC-6621CLD2N-1

2003-04 Edition

Table of Contents

Chapter 1 General Information

1.1 Features

FSC-6621CLD2N Series is a member of EVOC's full-size VIA C3 processor based SBC (Single Board Computer) family. The features of this series are as following:

- On-board VIA C3 speed 800 MHz/1GHz processor
- Maximum 1GB SDRAM memory in 2 DIMM slots
- VIA8606 (Twister T) chipset with integrated Savage4 VGA controller with 32MB system memory
- Dual RealTek 8139C 10/100Mbps fast Ethernet
- LVDS/TTL LCD interface support, compact flash support

1.2 Specification

System Architecture

- Full-sized SBC with PCI/ISA gold-plated DIMMs
- PCI V2.2 compliant
- PICMG1.0 (Rev. 2.0) compliant

CPU Support

- On-board VIA C3 800MHz/1GHz processor with 100/133MHz FSB
- 128KB L1/64KB L2 cache on-die on CPU

Main Memory

- Maximum 1GB SDRAM memory (PC133), 168-pin DIMM x 2

BIOS

- Award system BIOS
- Plug & Play support
- APM (Advanced Power Management) support
- ACPI (Advanced configuration & Power) Interface
- 2M bits flash ROM

Chipset

- VIA 8606 (Twister T) chipset
- VIA VT82C686B PSIPC PCI super-I/O integrated peripheral controller

On-board VGA

- VIA 8606 chipset integrated Savage4 VGA controller
- 32MB of VGA system memory

On-board LAN

- Dual RealTek 8139C 10/100 Ethernet controllers

I/O Interface

- Built-in VIA VT82C686B integrated super I/O
- Serial COM port (16C550 UART): 10-pin connector x 2
- Video: 15-pin CRT connector x 1, 16-pin LVDS box header x 1, 50-pin TTL LCD box header x 1
- LAN: RJ45 connector x 2
- Parallel: 26-pin connector x 1
- FDD: 34-pin connector x 1
- HDD(IDE): Ultra DMA33/66/100 support, 50-pin connector x 2; 2-pin header for DOM
- On-board Compact Flash Socket x 1
- External keyboard: 5-pin connector x 1
- PS/2 keyboard/mouse: 6-pin mini DIN connector x 1
- USB box header x 1 (support 2 USB ports via EVOC's proprietary cable)
- GPIO (4 in/4 out)
- Buzzer x 1
- Reset SW: 2-pin header x 1
- IrDA: 5-pin header x 1
- Power SW: 2-pin header
- Power cable connected to backplane board to support ATX power on function: 3-pin power header x 1
- AC'97 pin header reserved

System Monitor

- Derived from VIA VT82C686B integrated super I/O to support system monitor
- 5 positive voltages
- Monitor CPU fan speed, CPU temperature and system temperature

Real Time Clock

- On-chip RTC with back-up battery

Watchdog Timer

- 1 ~ 64 seconds time-out intervals

ISAMAX support

- Support maximum 20 ISA slots on the backplane

Dimensions

- 338.58mm (L) x 122mm (W)

Power Requirements

- +5V: 8A (Maximum)
- +12V: 500mA (Maximum)
- +5Vsb: 800mA (Maximum)

Environments

- Operating temperatures: 0º C to 60º C
- Storage temperatures: -20º C to 80º C
- Relative humidity: 10% to 90% (Non-condensing)

Certification

- CE
- FCC Class A

1.3 FSC-6621CLD2N Series Models

The FSC-6621CLD2N single board computer series come in 2 models. The following table compares their main features:

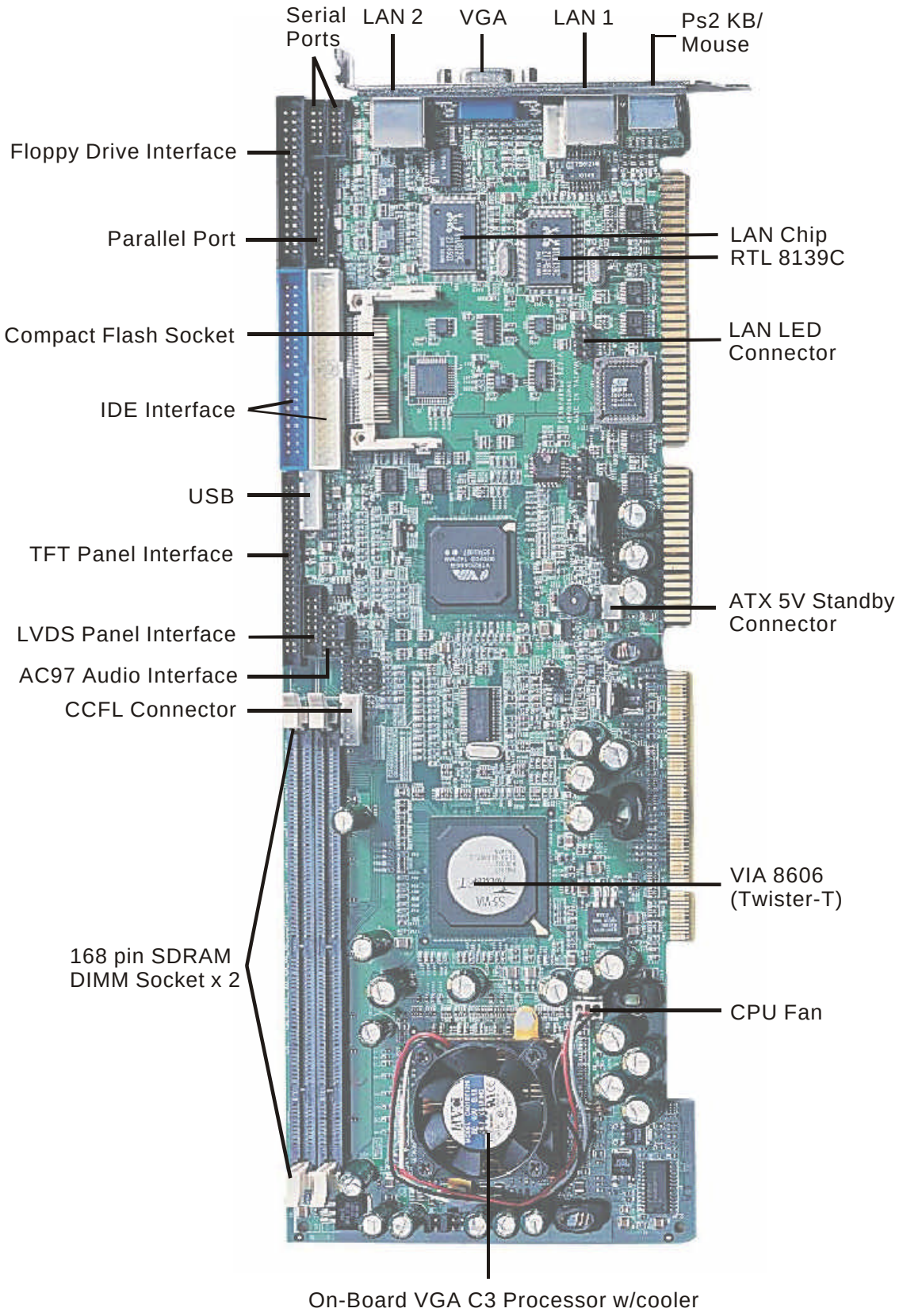
	FSC-6621CLD2N	**FSC-6621CLD2N-1**
CPU	VIA C3 800MHz	VIA C3 IGHz

1.4 Checklist

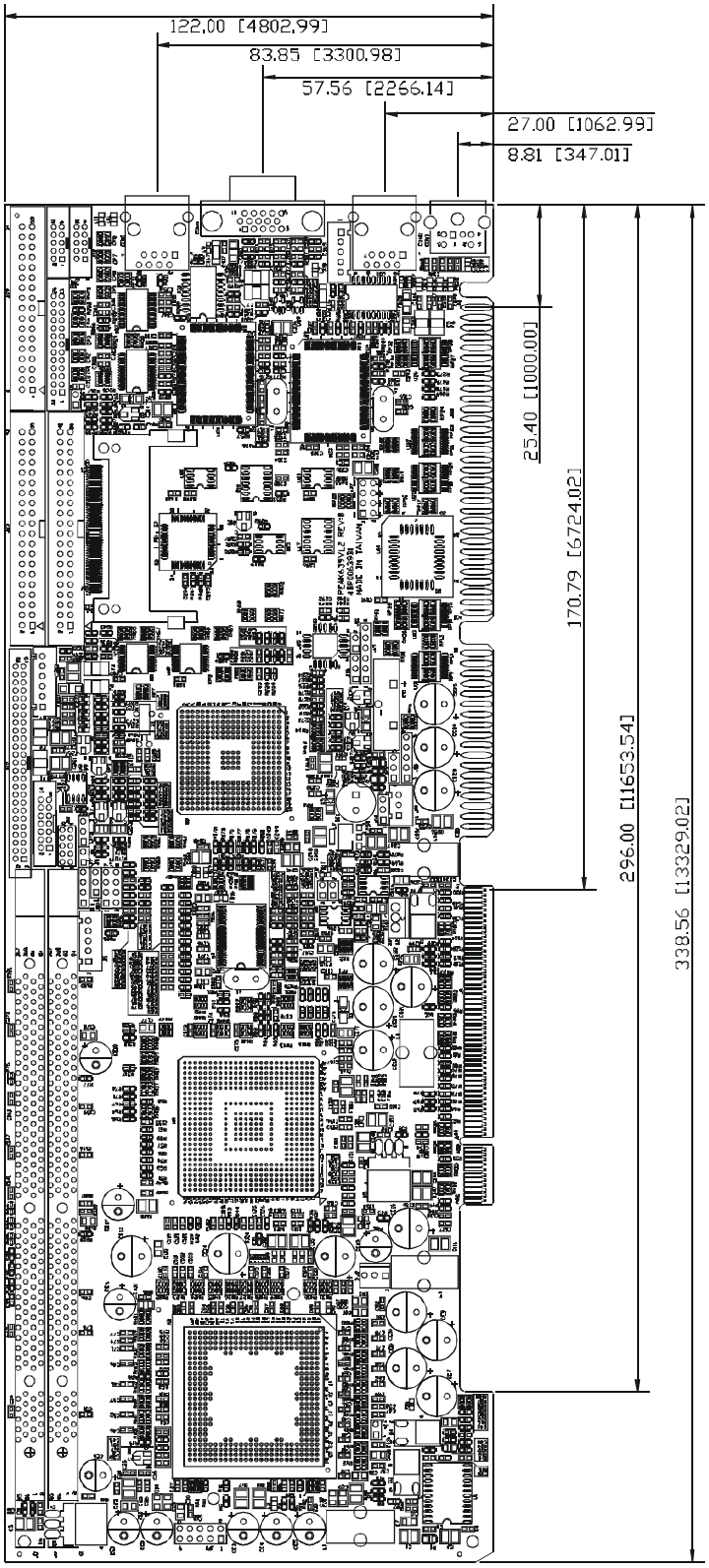
After opening the package of FSC-6621CLD2N Series, please check and make sure you have all of the following items:

- ❑ FSC-6621CLD2N Single Board Computer x 1
- ❑ ATX Power Cable x 1
- ❑ Y Cable PS/2 1 to 2 for Keyboard and Mouse x 1
- ❑ Cable Set (FDD x 1, SIO+PIO x 1, SIO x 1 / Keyboard x 1 / IDE66 x 1)
- ❑ USB Cable with Bracket x 1
- ❑ FSC-6621CLD2N Quick Reference Guide
- ❑ FSC-6621CLD2N Driver/Manual CD

1.5 Board Layout



1.6 Board Dimensions



Physical dimensions: 338.58 (L) x 122mm (W)

This concludes Chapter 1. The next chapter covers setting up the FSC-6621CLD2N

Chapter 2 Jumper Setting

This chapter of the User' s Manual describes how to set jumpers.

Note: The procedures that follow are generic for all of the FSC-6621CLD2N models

2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers Screwdrivers
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards (such as the FSC-6621CLD2N board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don' t flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations:

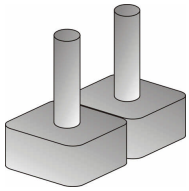
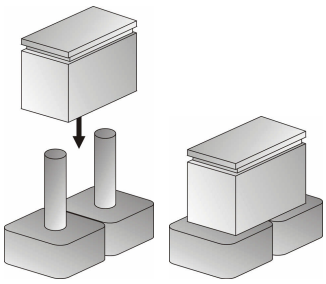
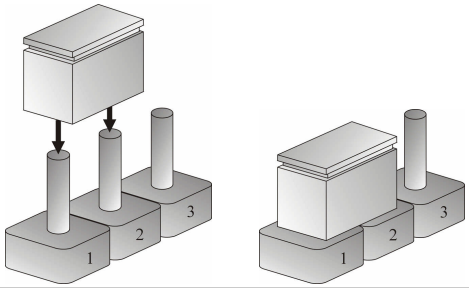
<table>
<tr><td rowspan="2">The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</td><td>  </td><td>  </td></tr>
<tr><td>Open (Off)</td><td>Short (On)</td></tr>
<tr><td>These illustrations show a 3-pin jumper. Pins 1 and 2 are SHORT.</td><td colspan="2"> 
</td></tr>
</table>

Table 2-1: Setting Jumpers

2.4 Functions of Jumpers

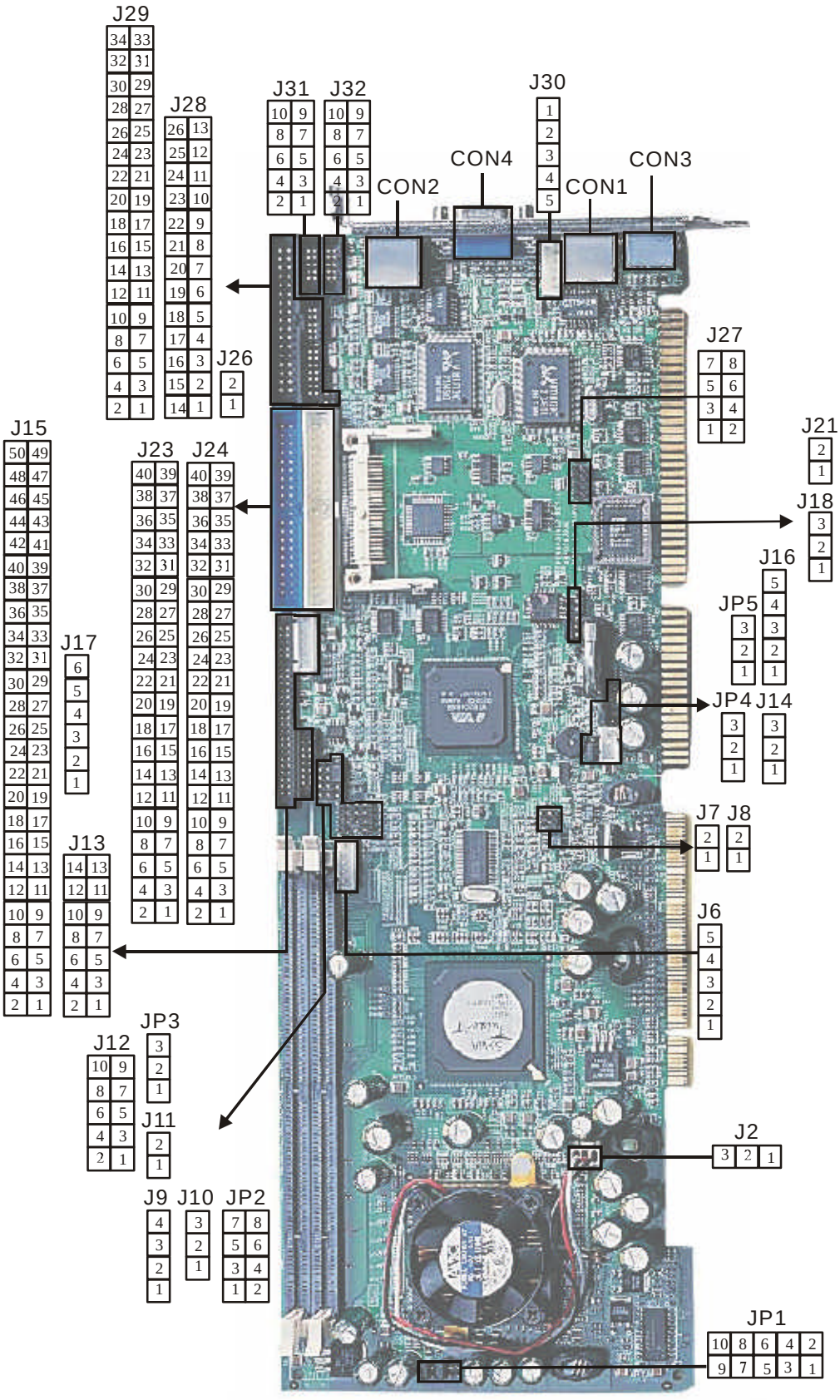
You can use jumpers to set configuration options. The table below defines function of each jumper:

Connector	Function	Connector	Function
JP1	CPU Bus Ratio Select Jumper	J12	AC97 Audio Interface Connector
JP2	Panel Type Select Jumper	J13	LVDS Panel Connector
JP3	Panel Power Select Jumper	J14	ATX Power on Connector
JP4	Vdual Power Select Jumper	J15	TFT Panel Connector
JP5	CMOS Status Select Jumper	J16	IR Connector
CON1/CON2	LAN RJ45 Connector	J17	USB Connector
CON3	KB/Mouse Connector	J18	CF Care Status Select Jumper
CON4	VGA Connector	J21	Reset Button Connector
J1	Thermal Resistor Connector	J23	Primary IDE Connector
J2	CPU FAN Connector	J24	Secondary IDE Connector
J3/J4	DIMM Slot	J25	Compact Flash Connector
J6	Panel Back-Light Connector	J26	IDE LED Connector
J7	Power Button Connector	J27	LAN LED Connector
J8	Thermal Resistor Connector	J28	PIO Connector
J9	GPIO Connector	J29	FDD Connector
J10	I2C Connector	J30	External KB Connector
J11	Power LED Connector	J31/J32	SIO Connctor

Table 2-2: Functions of Jumpers

2.5 Locating Jumpers and Switches

This page shows the location of the main board jumpers and switches:



2.6 Serial Port RS232/422/485 Select:

S1

Mode	S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8	S1-9	S1-10
RS232*	Off	On	Off	On	Off	On	Off	On	Off	On
RS422	On	Off	On	Off	On	Off	On	Off	On	Off
RS485	On	Off	On	Off	On	Off	On	Off	On	Off

S2

Mode	S2-1	S2-2	S2-3	S2-4	S2-5	S2-6	S2-7	S2-8	S2-9	S2-10
RS232*	Off	On	Off	On	Off	On	Off	On	Off	On
RS422	On	Off	On	Off	On	Off	On	Off	On	Off
RS485	On	Off	On	Off	On	Off	On	Off	On	Off

2.7 Panel Type Select (JP2)

P1-2	P3-4	P5-6	P7-8	BIOS Setup	Function
On	On	On	On	00	640 x 480 TFT
Off	On	On	On	01	800 x 600 TFT
On	Off	On	On	02	1024 x 768TFT 2 pixel/clk at 32Mhz (LVDS)
Off	Off	On	On	03	1280 x 1024 TFT
On	On	Off	On	04	640 x 480 DSTN
Off	On	Off	On	05	800 x 600 DSTN
On	Off	Off	On	06	1024 x 768 DSTN
Off	Off	Off	On	07	1024 x 768 TFT 1 pixel/clk at 65Mhz (LVDS)
On	On	On	Off	08	640 x 480 TFT
Off	On	On	Off	09	800 x 600 TFT
On	Off	On	Off	0A	1024 x 768 TFT
Off	Off	On	Off	0B	1280 x 1024 TFT
On	On	Off	Off	0C	1400 x 1050 TFT 2 pixel/clk at 54Mhz (LVDS)
Off	On	Off	Off	0D	800 x 600 DSTN
On	Off	Off	Off	0E	1024 x 768 DSTN
Off	Off	Off	Off	0F	1280 x 1024 DSTN

2.8 Panel Power Select (JP3)

	1-2	2-3
5V*	On	Off
3.3V	Off	On

* Default

2.9 Vdual Power Select (JP4)

	1-2	2-3
5V*	On	Off
5VSBY	Off	On

* Default

2.10 CMOS Status Select (JP5)

	1-2	2-3
Normal Status	On	Off
CMOS Clear Status	Off	On

Note: Clear CMOS procedure:

1. Turn off the power

2. Short pin 2 and 3 on JP5. Wait 1 ~ 2 seconds

3. Return the jumper to the normal setting (short pin 1 and 2)

4. Turn the system on. The BIOS is returned to the default settings

2.11 CF Care Status Select (J18)

	1-2	2-3
Master	On	Off
Slave	Off	On

For detail jumper setting information, please refer to Appendix A Connectors Pin Definition.

This ends Chapter 2. The next chapter covers FSC-6621CLD2N series expending capabilities.

Chapter 3 Capability Expanding

3.1 System Memory

Your system memory is provided by DIMM' s (Dual In-Line Memory Modules) on the CPU board. The board contains two memory banks: Bank 0 and 1, corresponds to connector DIMM1, DIMM2.

The table below shows possible DIMM Configurations for the memory banks. Please notice that the FSC-6621CLD2N support PC 100/133 SDRAM type. Configurations using different brands of memory modules are not recommended.

DIMM1	DIMM2	DIMM3
128 MB	Empty	128 MB
Empty	128 MB	128 MB
128 MB	128 MB	256 MB
256 MB	Empty	256 MB
Empty	256 MB	256 MB
256 MB	256 MB	512 MB
512 MB	Empty	512 MB
Empty	512 MB	512 MB
512 MB	512 MB	1024 MB

Table 3-1: FSC-6621CLD2N DIMM Configurations

3.2 Installing DIMM

To install DIMM

1. Make sure the two handles of the DIMM sockets are in the “open” position, i.e. the handles stay outward.

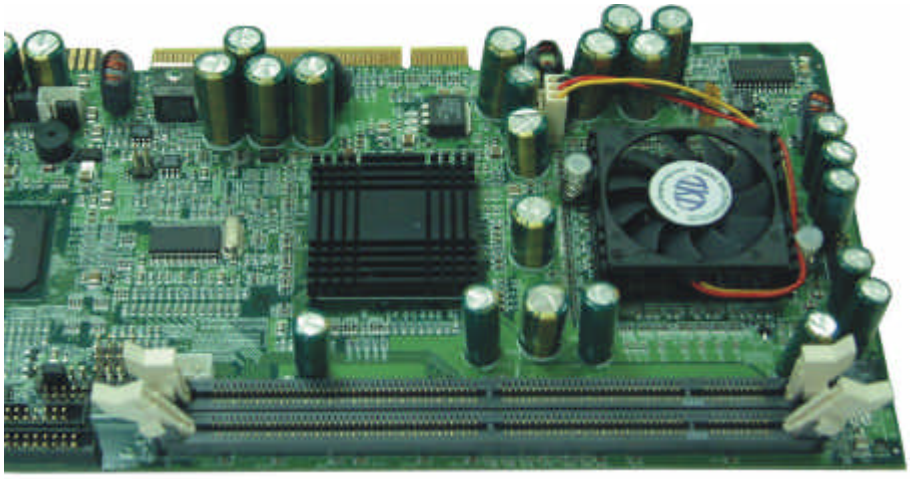


Figure 3-1: How to Install DIMM (1)

2. Slowly slide the DIMM module along the plastic guides in the both ends of the socket. The DIMM slots are keyed with notches and the DIMM module is keyed with cutouts so that they can only be installed correctly. Check the cutouts on the DIMM module edge connector match the notches in the DIMM slot.

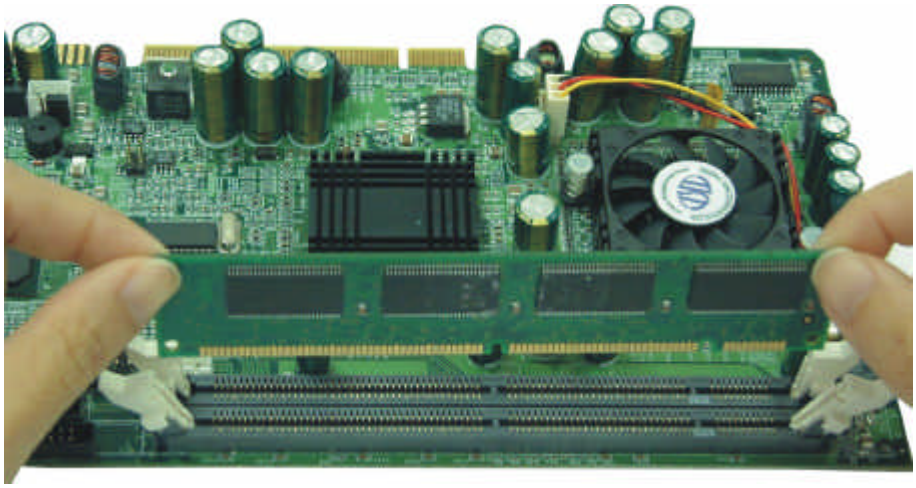


Figure 3-2: How to Install DIMM (2)

3. Press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.

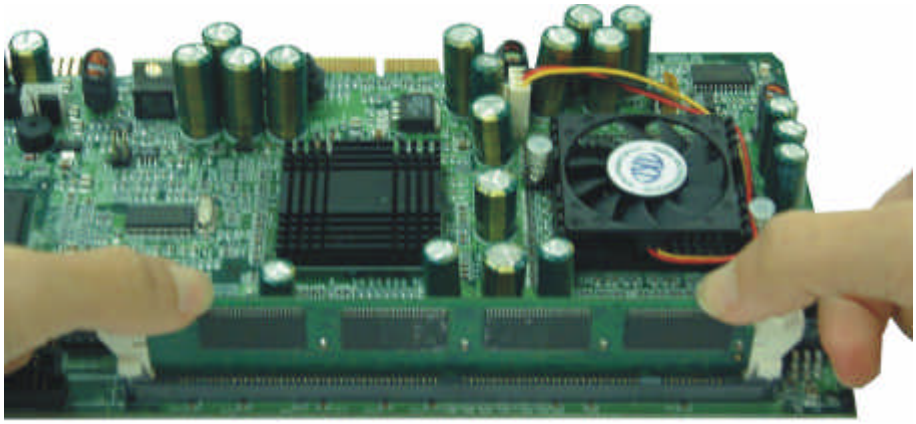


Figure 3-3: How to Install DIMM (3)

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

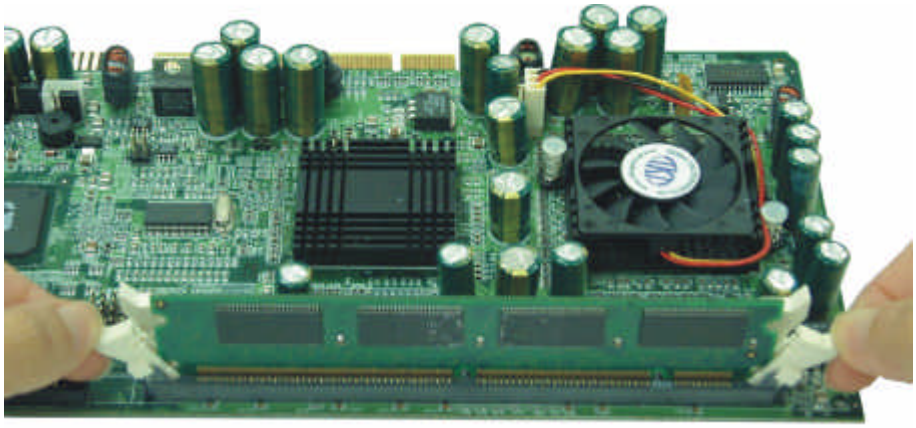


Figure 3-4: How to Install DIMM (4)

3.3 Installing Compact Flash

1. To install a Compact Flash memory card into FSC-6621CLD2N series, align the notches on the card with the Compact Flash socket in the FSC-6621CLD2N. Then firmly insert the card into the socket until it is completely seated.

Figure 3-5: How to Install Compact Flash Memory (1)

2. To remove the Compact Flash memory card from FSC-6621CLD2N, pull out the memory card from the Compact Flash socket.

Figure 3-6: How to Install Compact Flash Memory (2)

Chapter 4 Award BIOS Setup

This chapter explains how to use the BIOS Setup program for the FSC-6621CLD2N. The current BIOS setup pictures in the chapter is for reference only, which may change by the BIOS modification in the future.

4.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system' s configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

4.2 When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When setting the CPU clock speed so that it automatically runs either fast or slow
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR <DEL> KEY

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup.

4.4 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 4-1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <**Enter**> to accept or enter the sub-menu.

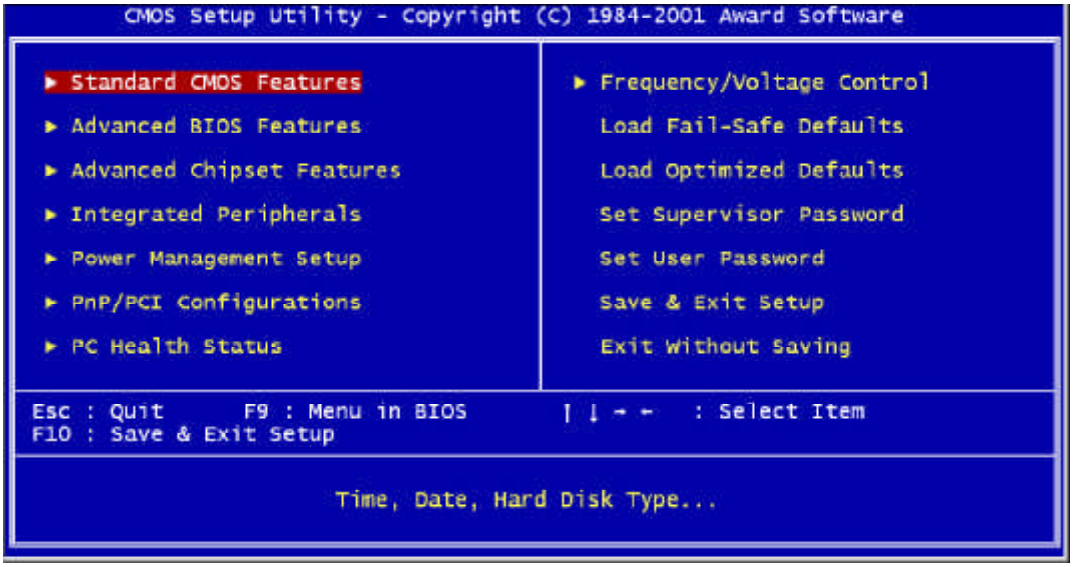


Figure 4-1: BIOS Setup Utility Main Menu

Standard CMOS Features
Use this menu for basic system configuration

Advanced BIOS Features
Use this menu to set the Advanced Features available on the system

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize the system' s performance

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals

Power Management Setup
Use this menu to specify your settings for power management.

PnP/PCI Configurations
This entry appears if your system supports Plug and Play and PCI Configuration

PC Health Status
Displays CPU, System Temperature, Fan Speed, and System Voltages Value

Frequency/Voltage Control
Use this menu to specify CPU and memory frequency, and voltage control settings

Load Fail-Safe Defaults
Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate

Load Optimized Defaults
Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

Set Supervisor/User Password
Enables you to change, set, or disable the supervisor or user password.

Save & Exit Setup
Saves CMOS value changes to CMOS and exits setup

Exit Without Saving
Ignores all CMOS value changes and exits setup.

4.5 Getting Help

Main Menu
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <**F1**> or <**Esc**>.

4.6 Control Keys

The table below lists the keys that help you navigate the setup program.

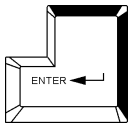
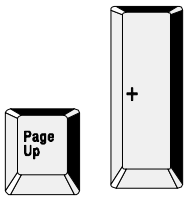
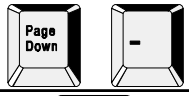
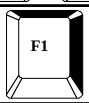
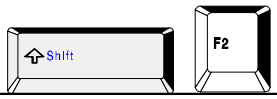
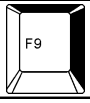
Up arrow		Move to previous item
Down arrow		Move to next item
Left arrow		Move to the item to the left
Right arrow		Move to the item to the right
Esc key		*Main Menu:* Quit without saving changes to CMOS *Status/Option Page Setup Menus*: Exit current page and return to Main Menu.
Enter Key		Select or Accept an Item
PgUp/plus key		Increase the numeric value or make changes
PgDn/minus key		Decrease the numeric value or make changes
F1 key		General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key		Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key		Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key		Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key		Load the Setup default value (only for Option Page Setup Menu)
F9 Key		Menu in BIOS
F10 key		Save all the CMOS changes (only for Main Menu)

Table 4-1: BIOS Control Keys

4.7 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu:

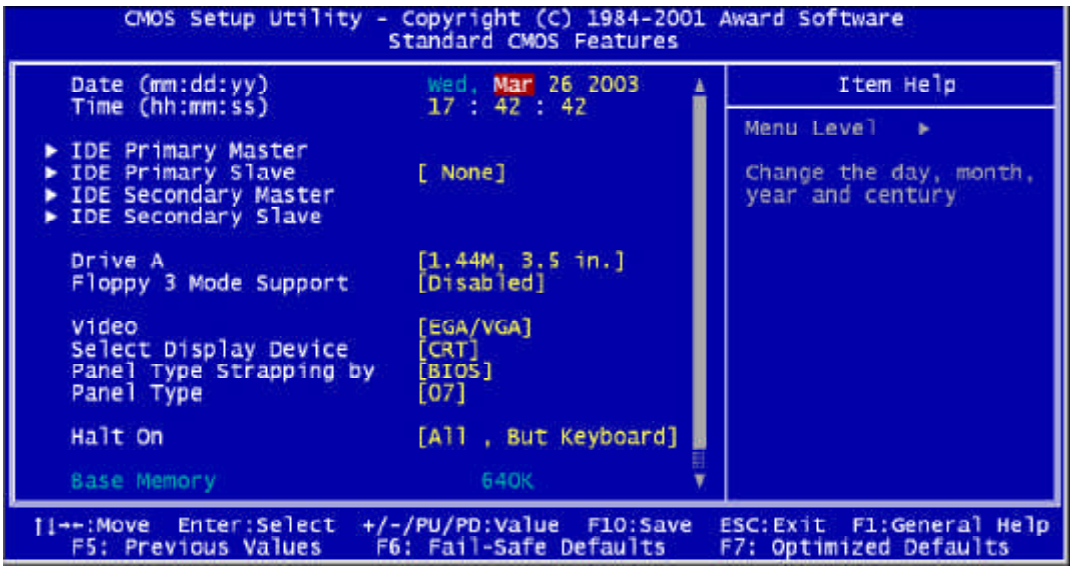


Figure 4-2: BIOS - Standard CMOS Features

The Standard CMOS Setup utility is used to configure the following features:

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or tight arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp or Pg Dn key to increment the setting, or type the desired value into the field.

IDE Devices:

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press <**Enter**> to display the IDE submenu:

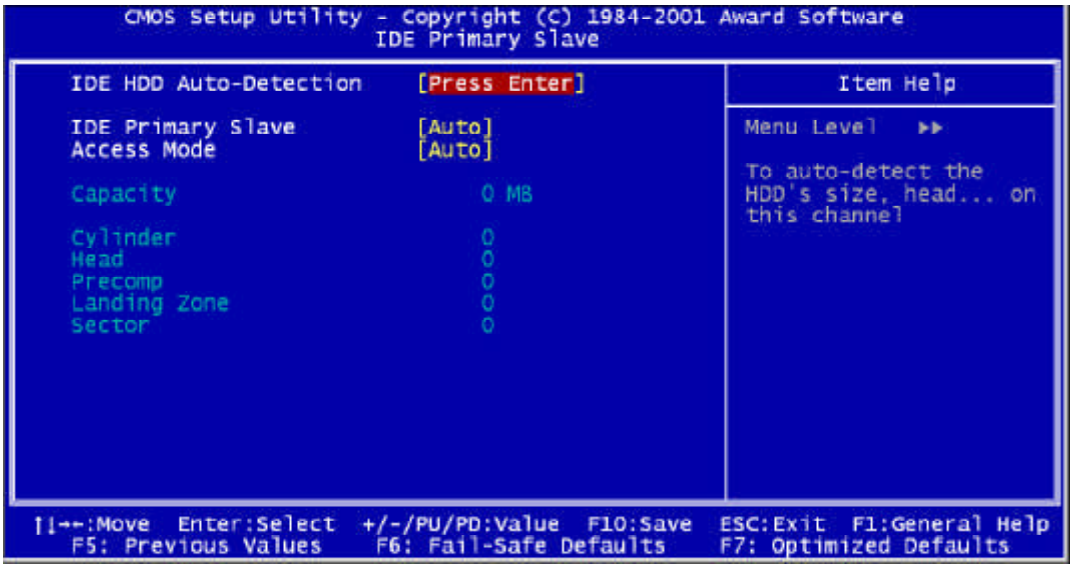


Figure 4-3: BIOS – IDE Primary Slave

IDD HDD Auto Detection

Press <**Enter**> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the one that should be used for your hard drive, do not accept them. Press <**N**> key to reject the values and enter the correct one manually in the Standard CMOS Setup screen.

Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

IDE Primary/Secondary Master/Slave

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below:

- Capacity — Approximate hard disk drive capacity
- Cylinder — Number of cylinders
- Head — Number of heads
- Precomp — Write pre-compensation cylinder
- Landing Zone — Landing zone
- Sector — Number of sectors

Refer to your drive' s documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Drive A
Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:

- None
- 360K, 5.25 in
- 1.2M, 5.25 in
- 720K, 3.5 in
- 1.44M, 3.5 in
- 2.88M, 3.5 in

Note: The None option could be used for diskless workstations.

Floppy 3 Mode Support
Floppy 3 mode refers to 3.5" diskette with a capacity of 1.2 MB. This mode is sometimes used in Japan.

Video
Set this field to the type of graphics card installed in your system. If you are using a BGA or higher resolution card, choose the EGA/VGA option. The options are: EGA/VGA, CGA40, CGA80, MONO

Select Display Device
When set to Auto, the system will automatically detect the display device. The options are: Auto, CRT, LCD, CRT+LCD

Panel Type Strapping by
The panel type can be strapping by H/W or BIOS.

Panel Type
Allow user to set the panel type value here.

Halt On
During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error. This setting determines which type of error will cause the system to halt during boot. The options are:

- All Errors: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.
- No Errors: The system boot will not be stopped for any error that may be detected.
- All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.
- All, But Diskette: The system boot will not stop for a disk error, but it will stop for all others.
- All, But Disk/Key: The system boot will not stop for a keyboard or disk error, but it will stop for all others.

Base/Extended/Total Memory

This category is display-only. The contents are determined by the POST (Power On Self Test) of the BIOS. You cannot make changes to these fields.

- Base Memory: Also called conventional memory. The DOS operating system and conventional applications use this area.
- Extended Memory: The POST of the BIOS will determine the amount of extended memory installed in the system.
- Total Memory: This option shows system memory capacity.

After you have made your selections in the Standard CMOS Setup screen, press <**ESC**> to go back to the main screen.

4.8 Advanced BIOS Features

Selecting Advanced BIOS Feature on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items to improve your system performance or set up system features according to your preference, without causing fatal errors to your system.

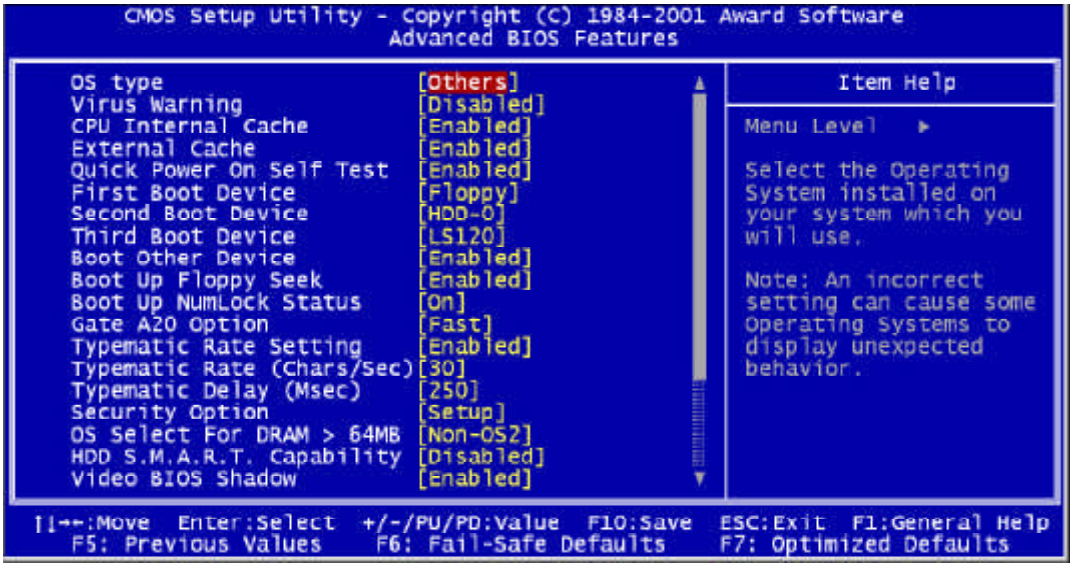


Figure 4-4: BIOS – Advanced BIOS Features

The following explains the options for each feature:

OS Type

Select the computer operation system here. The options are: Others, WinNT4.0, and QNX6.2

Virus Warning

Allow you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

Enabled: Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:

> **! WARNING !**
> **Disk boot sector is to be modified**
> **Type "Y" to accept write or "N" to abort write**
> **Award Software, Inc.**

Disabled: No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

Note: This function is available only for DOS and other operating systems that do not trap INT13. For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.

Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU Internal Cache/External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). These two items speed up memory access, depending on the CPU and chipset design. If your CPU does not have an internal cache, the item will not be displayed.

Quick Power-On Self-Test

Select Enabled to reduce the amount of time required to run the Power-On Self-Test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected. The available choices are: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, and Disabled.

Boot Other Device

If the selected boot devices fail to boot, selecting Enabled for this item allows the BIOS to boot from other boot devices (in a predefined sequence) which are present but not selected as boot devices in the setup.

Boot Up Floppy Seek

Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boot. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1MB (extended memory). This feature enables you to select whether the chipset or the keyboard controller should control Gate A20. The options are:

- Normal: A pin in the keyboard controller controls Gate A20
- Fast: Let system chipsets control Gate A20. The fast setting improves system speed, particularly with OS/2 and windows.

Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay. When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.

Typematic Rate (Chars/Sec):

When the typematic rate setting is Enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec):

This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

- System: The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
- Setup: The system will boot, but access to Setup will be denied if the correct password is not entered at setup.

OS Select for DRAM>64MB

Set to OS2 if the system memory size is greater than 64 MB and the operating system is OS/2.

HDD S.M.A.R.T. Capability

Built in problem-detection capability (Self Monitoring Analysis and Reporting Technology) of hard disk drives signals warning of any foreseen problem. The choices are: Enable, Disable.

For using the S.M.A.R.T. feature you would require an operating system that supports the S.M.A.R.T. feature i.e. Windows 95 or higher.

Video BIOS Shadow
This function, when enabled allows VGA BIOS to be copied to the system DRAM for enhanced performance.

C8000-CBFFF ~ DC000-DFFFF Shadow
Allows the 16K blocks of upper memory listed (which contain the system BIOS) to be shadowed for better performance.

After you have made your selections in the Advanced BIOS Features setup, press <**ESC**> to go back to the main screen.

4.9 Advanced Chipset Features

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you understand the chipset features.

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manage bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system has mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Selecting Advanced Chipset Features on the main program screen displays this menu:

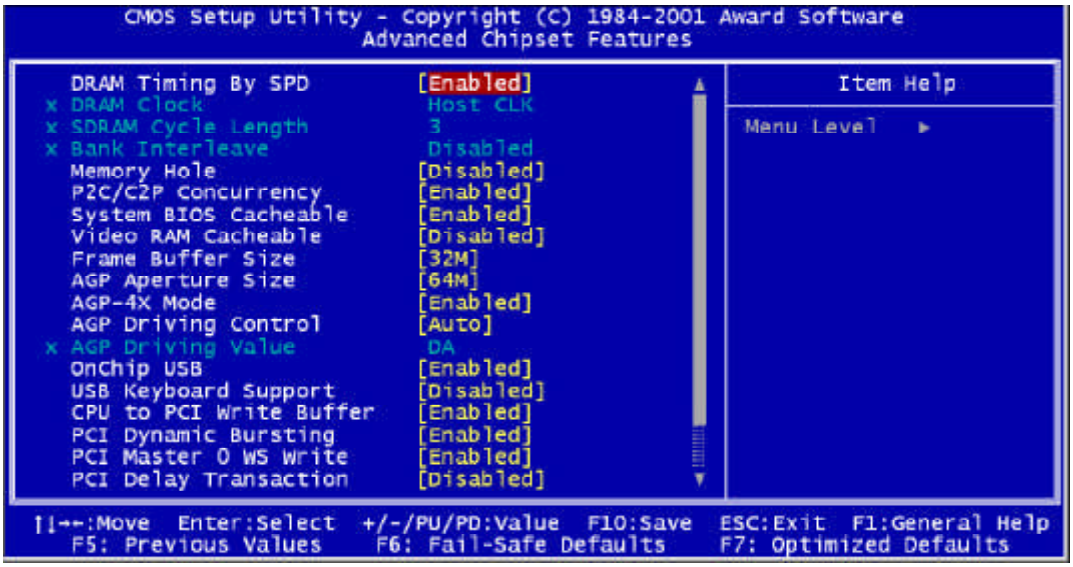


Figure 4-5: BIOS – Advanced Chipset Features

DRAM Timing By SPD

Set this to enable the system to automatically set the SDRAM timing by SPD (Serial Presence Detect). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. If you disable this item, you can use the following three items to manually set the timing parameters for the system memory.

DRAM Clock

The value represents the performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating.

SDRAM Cycle Length

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The available choices are: 2, 3. Do not change the default value unless you change specifications of the installed DRAM or the installed CPU.

Bank Interleave

Enable this item to increase memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed. The options are: Disable, 2 Bank, 4 Bank

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The available choices are: 15M ~ 16M, Disabled.

P2C/C2P Concurrency

Enabled means that more than on PCI device can be active at a time.

System BIOS cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The available choices are Enabled, Disabled.

Video RAM Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The choices: Enabled, Disabled.

Frame Buffer Size

This feature optimizes the memory address table for VGA frame buffer accesses according to the DRAM page size in use. Enabling this item improves VGA performance especially in tiling address mode. The available choices are: 2M, 4M and 8M, 16M and 32M.

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. The available choices are: 4M, 8M, 32M, 64M and 128 M.

AGP-4X Mode

This BIOS feature is only found on AGP 4X-capable motherboards. When enabled, it allows the AGP bus to make use of the AGP 4X transfer protocol to boost the AGP bus bandwidth. If it' s disabled, then the AGP bus is only allowed to use the AGP 1X or AGP 2X transfer protocol.

AGP Driving Control

This feature allows user to set whether to allow the AGP controller to dynamically adjust the AGP driving strength or to allow manual configuration by the BIOS. Recommend set this BIOS feature to Auto as it allows the AGP controller to dynamically adjust for motherboard impedance changes. However, manual configuration of the AGP drive strength may be necessary.

AGP Driving Value

When user set the AGP Driving Control to Manual, this function allows user determines the overall drive strength of the AGP bus.

OnChip USB

This feature directly controls the function of the on-board Universal Serial Bus ports (USB). Enable this feature if you want to attach your USB devices to the onboard USB controller. If you disable this feature, the USB controller will be disabled and you won' t be able to connect any USB devices to it. But if you don' t use any USB devices, this frees up an IRQ for other devices to use.

USB Keyboard Support

Enable this item if you play to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

CPU to PCI Write Buffer

When enabled, writes from the CPU to PCI bus is buffered, to compensate for the speed differences between the CPU and PCI bus. When disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another w rite cycle.

PCI Dynamic Bursting

This feature controls the dynamic bursting capability of the PCI write buffer. Recommend set this feature to enable, write transaction will go straight to the write buffer to improve the PCI bus' performance.

PCI Master 0 WS Write

This feature determines whether the chipset inserts a delay before any writes to the PCI bus. Normally, it is recommended that you enable this feature for faster PCI performance. However, disabling it may be useful when attempting to stabilize an over-clocked PCI bus. The delay will generally improve the over-clock ability and stability of the PCI bus.

PCI Delay Transaction

This BIOS feature controls the operation of that embedded 32-bit posted write buffer. It' s highly recommended that you enable this feature for better PCI performance and to meet PCI 2.1 specifications. Disable it only if your PCI cards cannot work properly with this feature enabled or if you are using an ISA card that is not PCI 2.1 compliant.

PCI#2 Access #1 Retry

When the CPU to PCI Write Buffer is enabled, any PCI bus writes are sent to it, freeing the CPU. The writes are sent from the CPU to PCI Write buffer during the next bus cycle. If this BIOS feature is enabled, then the buffer will attempt to write to the PCI bus until successful. If disabled, the buffer will flush its contents and register the transaction as failed. The CPU will then have to write again to the write buffer. Generally, it is highly recommended that you enable this feature, as this will improve the CPU' s performance.

AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. Normally, two-wait states are used by the system, providing greater stability. For better AGP write performance, enable this feature. Disable it only if you notice visual anomalies like wire-frame effects and pixel artifacts or if your system hangs on running software that make use of AGP texturing.

AGP Master 1 WS Read

This implements a single delay when reading to the AGP Bus. Normally, two-wait states are used by the system, allowing for greater stability. For better AGP read performance, enable this feature. Disable it only if you notice visual anomalies like wire-frame effects and pixel artifacts or if your system hangs on running software that make use of AGP texturing.

After you have made your selections in the Advanced Chipset Features setup, press <**ESC**> to go back to the main screen.

4.10 Integrated Peripherals

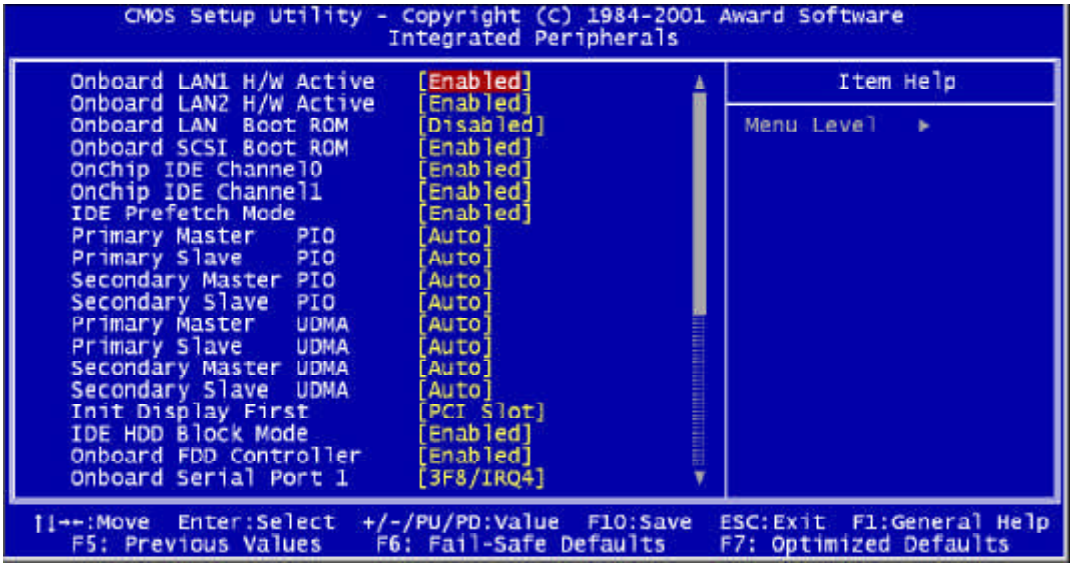


Figure 4-6: BIOS – Integrated Peripherals

Onboard LAN1/2 H/W Active
Enables and disables the onboard LAN modules.

Onboard LAN Boot ROM
Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2 and Disabled.

Onboard SCSI Boot ROM
Enable and disable the SCSI to boot ROM function.

OnChip IDE Channel 0/1
The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary/secondary IDE interface. Select Disabled to deactivate the primary/secondary IDE. The available choices are: Enabled and Disabled.

Note: For the on-chip secondary IDE controller (on-chip IDE channel 1):
Enabled: *Enables the secondary IDE port and BIOS assigns IRQ15 to this controller.*
Disabled: *Disables the secondary IDE port and IRQ15 is made available for other devices. Some of the sound cards have an onboard CD-ROM controller, which uses the IDE Secondary Port. In order to avoid a IRQ15 conflict, the IDE secondary channel controller should set to Disable in order for the CD-ROM to work.*

IDE Prefetch Mode
The on-board IDE drive interfaces supports IDE prefetching, for faster drive access. If you install a primary and secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

Primary/Secondary Master/Slave PIO
The four IDE PIC (Programmable Input/Output) fields let you set a PIC mode (0-1) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The choices are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA
Ultra DMA implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA, select Auto to enable BIOS support. The choices are Auto, and Disabled.

Init Display First
This feature allows you to select whether to boot the system using the on-board AGP graphics card or the PCI graphics card.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optional number of block read/write per sector the drive can support. The available choices are Enabled, Disabled.

Onboard FDD Controller

This feature allows you to enable or disable the onboard floppy drive controller. If you are using a floppy drive connected to the motherboard' s built-in floppy drive controller, leave it at the default setting of Enabled. But if you are using an add-on floppy drive controller card or if you are not using any floppy drives at all, set it to Disabled to save an IRQ. Other devices can then use the free IRQ.

Onboard Serial Ports (1, 2)

Select an address and corresponding interrupt for the first and second serial ports. The choices: Auto, 3F8/ IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, and Disabled.

UART 2 Mode

Select an operating mode for the second serial port. 3 selections: Standard, HPSIR (IrDA-compliant serial infrared port), ASKIR (Amplitude shift keyed infrared port).

IR Function Duplex

This field is available when UART 2 Mode is set to either HPSIR or ASKIR. This item enables you to determine the infrared (IR) function of the on-board infrared chip. The options are Full and Half.
Full duplex means that you can transmit and send information simultaneously. Half duplex is the transmission of a data in both directions, but only one direction at a time.

TX, RX inverting enable

Defines the voltage level for infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the requirements of the infrared module use in the system.

Onboard Parallel Port

This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 378h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. There are four options: Normal (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMA3 or DMA1.

Parallel Port EPP Type

Select which EPP version you want. Use EPP1.9 first; if the problems result, change it back to EPP1.7.

Onboard Sound device
Auto detects or disables a sound blaster compatible legacy audio device.

Sound Blaster: Enable of disable a Sound Blaster compatible legacy audio device

SB I/O Base Address: Set the Sound Blaster device I/O base address

SB IRQ Select: Set the Sound Blaster device IRQ

SB DMA Select: Set the Sound Blaster device DMA

MPU-401: Enable or disable MPU-401 compatibility

MPU-401 I/O Address: Set the MPU-401 address

After you have made your selections in the Integrated Peripherals setup, press the <**ESC**> key to go back to the main program screen.

4.11 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

Selecting Power Management Setup on the main program screen displays this menu:

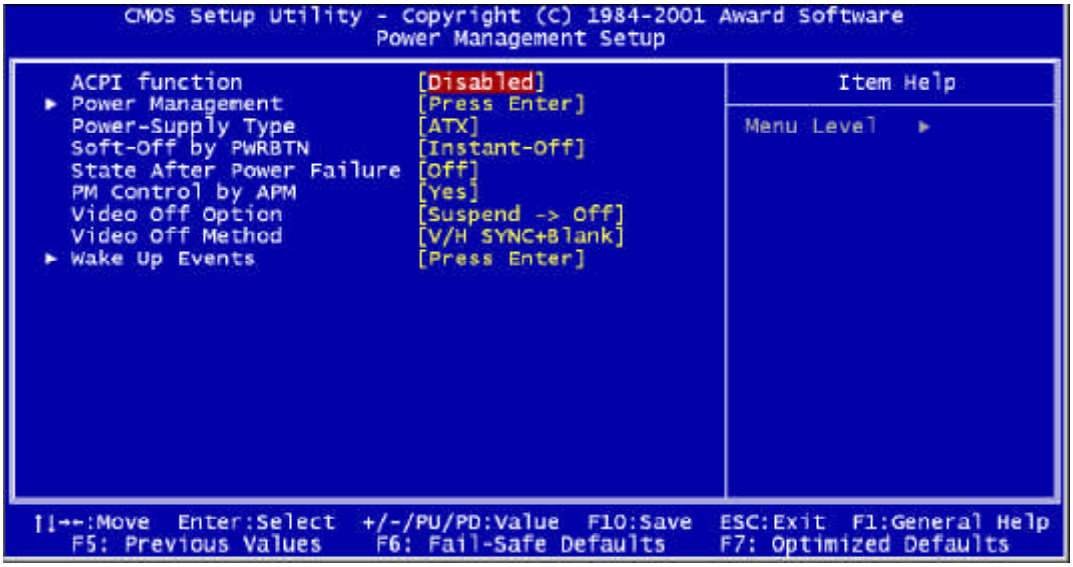


Figure 4-7: BIOS – Power Management Setup

ACPI Function

The ACPI standard (Advanced Configuration and Interface power) allows the operating system directly to check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode and Suspend Mode

Scroll to Power Management and press <**Enter**> to open the Power Management. There are four selections for Power Management, three of which have fixed mode settings:

Min. Saving: Minimum power management. Doze Mode = 1 hour, Suspend Mode = 1 hour, and HDD Power Down = 0 (Disable) ~ 15 minutes.

Max. Saving: Maximum power management. Doze Mode = 1 minute, Suspend Mode = 1 minute, and HDD Power Down = 0 (Disable) ~ 15 minutes.

User Define: Allows you to set each mode individually. When not disabled, each of the ranges is from 1 minute to 1 hour except for HDD Power Down, which ranges from 0 (Disable) minute to 15 minutes.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

- Disabled: HDD' s motor will not be off.
- I Min ~ 15 Mins: Defines the continuous HDD idle time before the HDD entering power saving mode (motor off).

Doze Mode

After the selected period of system inactivity, CPU activity slows down but other components such as the HDD run at full speed.

- Disabled: The system will never enter Doze mode
- 1 Min ~ 1 Hour: Defines the continuous idle time before the system entering Doze mode. After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. After the selected period of system inactivity, the chipset enters hardware suspend mode. Stopping the CPU clock will possibly cause other system devices to enter power management modes.

- Disabled: The system will never enter Suspend mode
- 1 Min ~ 1 Hour: Defines the continuous idle time before the system entering Suspend mode.

Power Supply Type
ATX supports a smarter power supply, which can turn on and off in response to port activity and software control. Select ATX mode enable you to set soft off type and state after power failure.

Soft-Off by PWRBTN (Power Button)
Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system " hangs" . The available choices are Delay 4 Seconds, Instant-Off

State After Power Failure
This field determines the state that your PC returns to after a power failure. If set to Off, the PC will not boot after a power failure. If set to On, the PC will restart after a power failure.

PM Control by APM
Power Management Control by Advanced Power Management. Enables and disables APM. When enabled, an APM device activate enhanced maximum Power Saving mode and stop the CPU internal clock.

Video Off Option
This option defines if the video is powered down when the system turns into suspend mode.

- Always on: System BIOS will never turn off the screen
- Suspend => Off: Screen off when system is in SUSPEND mode
- All mode => Off: Screen off when system is in DOZE, STANDBY or SUSPEND mode

Video Off Method
This determines the manner in which the monitor is blanked. There are three choices:

- V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchro nization port and write blanks to the video buffer.
- Blank Screen: This option only writes blanks to the video buffer.
- DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

Wake Up Event
When the system enters a Soft-off mode (Standby power exist but system is not working), it will wake up system when specific signals occurred. Normally you awake the system either by pressing power button, pressing a key, or moving the mouse. However, you may wake the system up by response to other events.

The BIOS monitors the system for " activity" to determine when to enable power management. You can tell the system what it should consider activity and what it should not, in other words, what sorts of events on the PC should reset the idle counter for power management. Normally, each IRQ has its separate setting.

VGA (Video Graphic Adapter): When enabled, any video activity awakes a system which has been powered down.

LPT & COM: Any event occurs at a LPT (printer) port or COM (serial port) will awaken a system, which has been powered down. Four choices are: None, LPT, COM and LPT/COM

HDD & FDD: When turn on this item; any Hard disk drive and Floppy disk drive activity awakes a system that has been powered down.

PCI Master (Peripheral Component Interconnect): If enabled the computer specifies that any signal noticed on the PCI bus channel master must make go out from the hibernation state.

RTC Alarm Resume (Real Time Clock): If enabled specifies that the internal watch of the computer is authorized to light the pc at the specified time. Inserting in the suitable field the data and exact time to which the pc wishes to make automatically light is necessary.

Date (of Month): Set a certain date when RTC Alarm Resume option is Enabled to awaken the system. This option is concurrent with Resume Time Option.

Resume Time (hour : minute : second): Set a certain time when RTC Alarm Resume option is Enabled to awaken the system. This option is concurrent with Resume Date Option.

Primary INTR: Allow user to turn on and off the IRQs Activity Monitoring

IRQs Activity Monitoring: Press <**Enter**> and select Primary Intr (IRQ Monitoring) to monitor which of the following events of INTR (Interrupt), when user enable the primary INTR. Any IRQ (Interrupt Request) assigned, can awake the system from hibernation: IRQ3(COM2), IRQ4(COM1), IRQ5(LPT2), IRQ6(FDD), IRQ7(LPT1), IRQ8(RTC Alarm), IRQ9(IRQ2 redirect), IRQ10(Reserved), IRQ11(Reserved), IRQ12(PS/2 Mouse), IRQ13 (Coprocessor), IRQ14(HDD), IRQ15(Reserved)

Note: Only to modify these IRQ Activity Monitoring options if they have problems or specific demands due to the waking up from an event that can be ignored.

After you have made your selections in the Power Management setup, press the <**ESC**> key to go back to the main program screen.

4.12 PnP/PCI Configurations

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

Selecting PnP/PCI Configurations on the main program screen displays this menu:

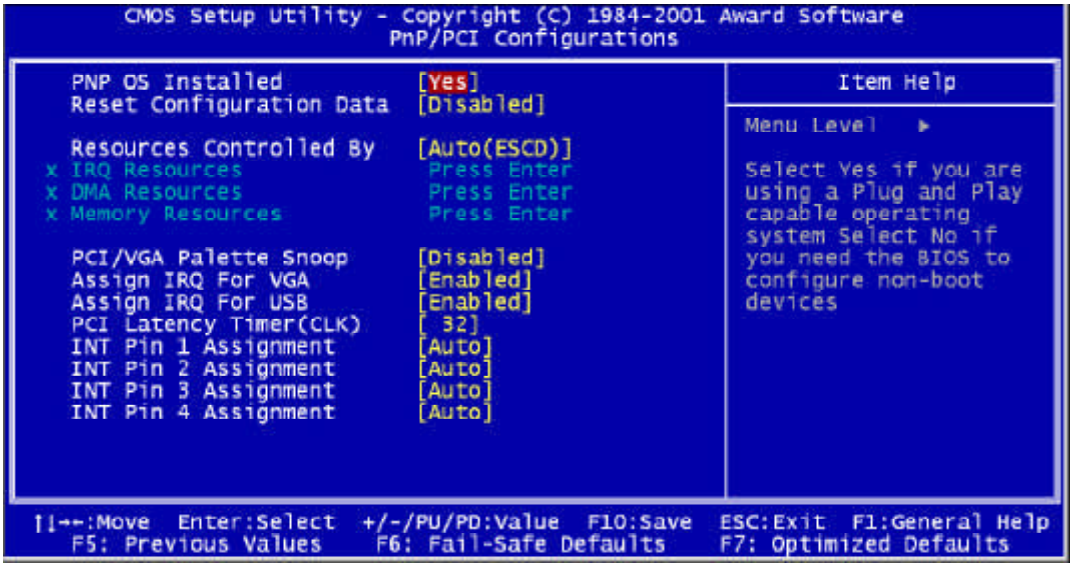


Figure 4-8: BIOS – PnP/PCI Configurations

PNP OS Installed

Select Yes if the system operating environment is Plug and Play aware (e.g. Windows 95 and up). The available choices are Yes and No.

Note: BIOS will automatically disable all PnP resources except the boot device card when you select Yes on Non-PnP operating system.

Reset Configuration Data

Normally, you leave this field Disabled, Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The choices are Enabled and Disabled.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as going into each of the submenus that follows this field. The choices are Auto (ESCD), Manual.

PCI/VGA Palette Snoop

This setting is used only to solve the visualization problems with dedicated MPEG decompression cards. In such specific case, setup the voice on Enabled to allow the BIOS to monitor the visualization passages between the principal card and the card of decodes. The default setting is Disabled.

Assign IRQ for VGA

Enable this setting assigns an IRQ channel to the graphic card, allows the revival of the system from a hibernation state when activity is noticed on the graphic card. If you are not using your system' s VGA controller, select Disabled to free the IRQ resource.

Assign IRQ for USB

Select Enabled if your system has a USB controller and you have one or more USB devices connected. If you are not using your systems USB controller, select Disabled to free the IRQ resource.

PCI Latency Timer (CLK)

The latency timer defines the minimum amount of time, in PCI clock cycles, that the bus master can retain the ownership of the bus. The Choices are from 0 to 255.

INT Pin 1 ~ 4 Assignment

These settings allow the user to specify what IRQ will be assigned to PCI devices in the chosen slot. Options available: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15. The default is Auto.

After you have made your selections in the PnP/PCI Configuration setup, press the <**ESC**> key to go back to the main program screen.

4.13 PC Health Status

When main boards support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Selecting PC Health Status on the main program screen displays this menu:

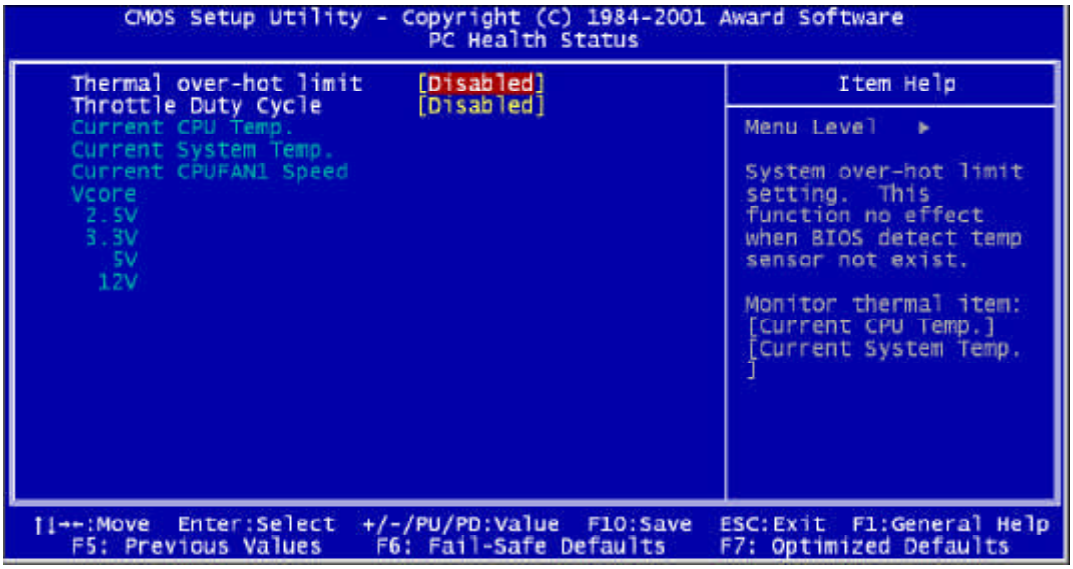


Figure 4-9: BIOS – PC Health Status

Thermal Over-Hot Limit

This item is used to specify a thermal standard for the CPU. If the CPU temperature reaches the specified standard, the system issues a warning and allows you to prevent the CPU from overheating. This function has no effect when BIOS detect temperature sensor is not exist.

Throttle Duty Cycle

Enables you to set the percentage by which CPU speed is cut back when it becomes hot, or for power saving. When CPU is overheated, lower the CPU performance can cool down the temperature.

Current CPU/System Temp., Current CPUFAN1 Speed, CPU Vcore, 2.5/3.3/5/12V

These items are display-only for the current status of all monitored hardware devices/components such as CPU voltages, temperatures and fan' s speed.

After you have made your selections in the PC Health Status setup, press the <**ESC**> key to go back to the main program screen.

4.14 Frequency/Voltage Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

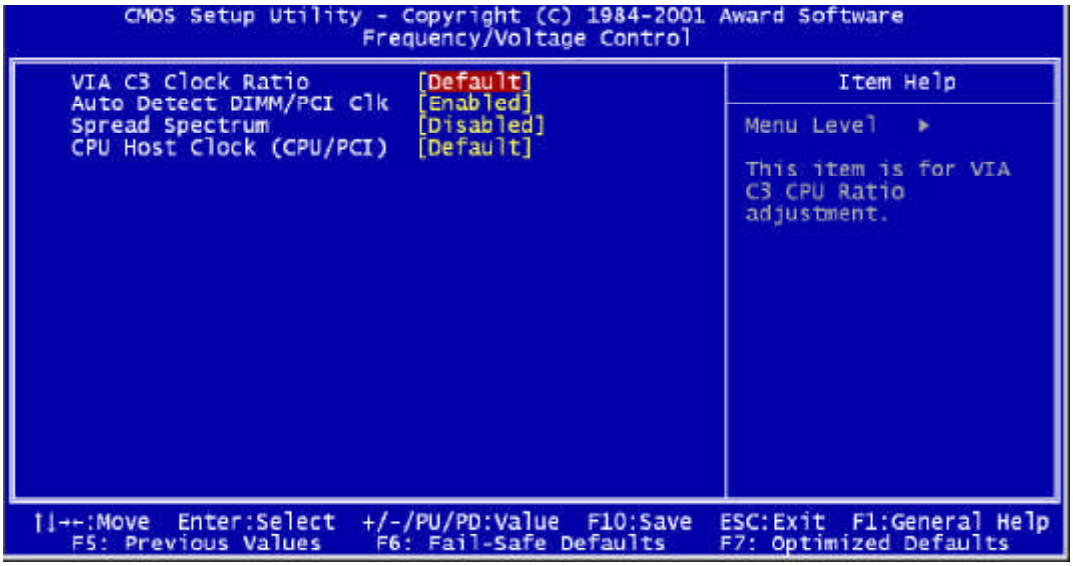


Figure 4-10: BIOS – Frequency/Voltage Control

CPU Clock Ratio

This item allows you to setup the CPU clock ratio, but this function depends on different CPU performance. It is only effective for those clock ratio that have not been locked.

Auto Detect DIMM/PCI Clk

When enabled, this item will auto detect if the PCI sockets have devices and will send clock signal to PCI devices. When disabled, it will send the clock signal to all PCI sockets. The choices are Enabled and Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate to reduce EMI. The choices are Disabled, 0.25% and 0.50%

CPU Host Clock (CPU/PCI)

On CPU host clock setting, if you are using 133MHz Athlon CPU, BIOS provide setting ranging from 133MHz to 199MHz. User can choose from this range or use an increment of 1MHz to adjust frequency till system reach the desired state. 199MHz is the highest frequency provided compared to other product.

After you have made your selections in the Frequency/Voltage Control setup, press the <**ESC**> key to go back to the main program screen.

4.15 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility. Press the <**Y**> key and then <**Enter**> to install the defaults. Press the <**N**> key and then <**Enter**> to not install the defaults.

Use this option if you have changed your system and it does not operate correctly or does not power up.

4.16 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole setup utility. Press the <**Y**> key and then <**Enter**> to install the defaults. Press the <**N**> key and then <**Enter**> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <**F7**> key.

4.17 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <**Enter**> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <**Enter**> again.

To disable the password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.

Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.

4.18 Save & Exit Setup

Selecting this option and pressing <**Enter**> will save the new setting information in the CMOS memory and continue with the booting process.

4.19 Exit Without Saving

Selecting this option and pressing <**Enter**> will exit the Setup utility without recording any new values or changing old ones.

This concludes Chapter 4. The next chapter covers drivers installing.

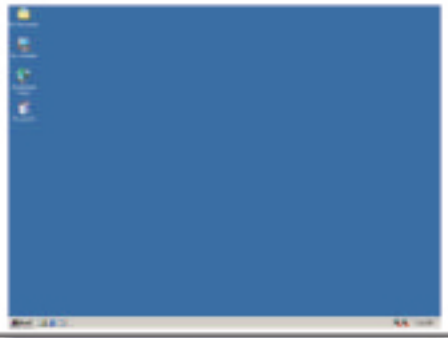
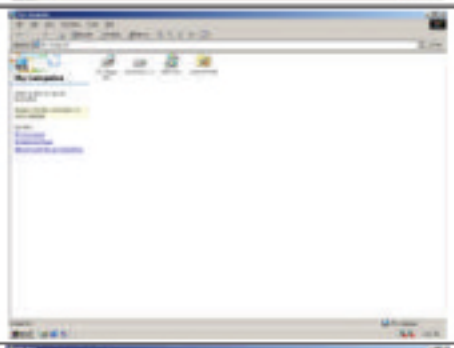
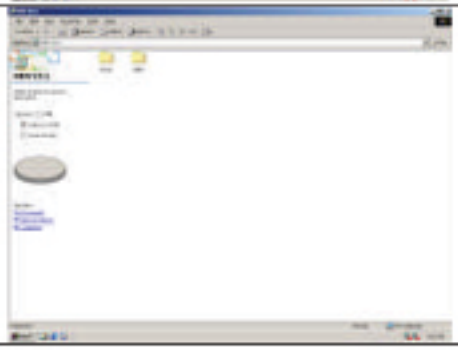
Chapter 5 Driver Installation

FSC-6621CLD2N Series come with a bundled drivers CD that enables you to install chipset, VGA, and LAN drivers. These drivers may be updated or re-versioned without any further notice.

Note: The installation instructions in this manual are based on Windows 2000 server operation system.

5.1 Installation CD

Please follow the below instructions to find VIA chipset, VGA and LAN drivers in the driver CD to implement installation.

Step 5.1.1 Place the Drivers CD into your CD-ROM drive. Open **My Computer** on your desktop.	
Step 5.1.2 My computer menu appears. Double click your **CD-ROM drive** to open.	
Step 5.1.3 CD content appears. Double click to open the **Driver** folder.	

5.2 Installing Drivers for FSC-6621CLD2N

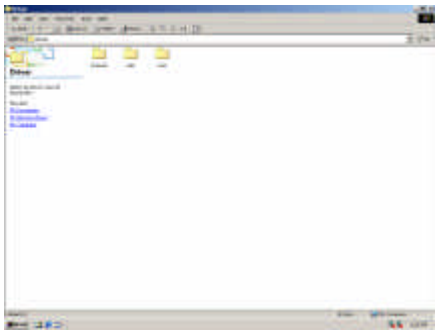
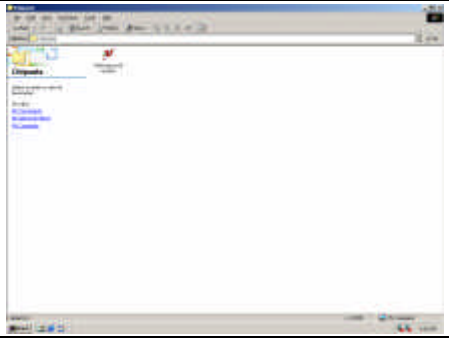
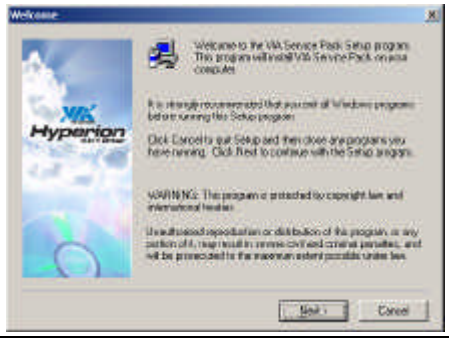
The following sections cover the drivers installation for the FSC-6621CLD2N. Refer to the followings for the section numbers for each driver:

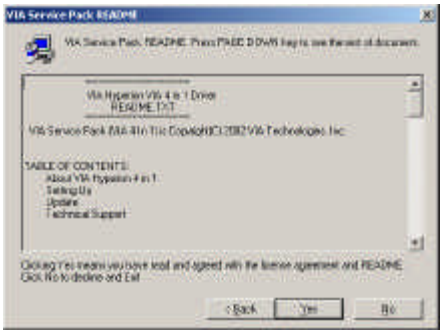
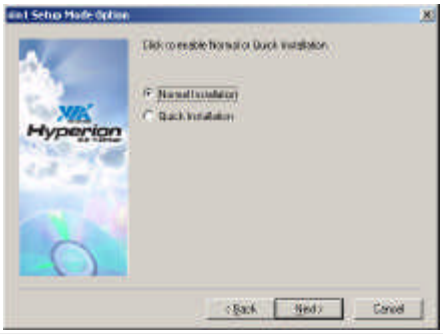
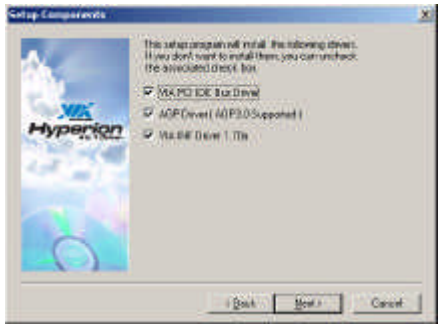
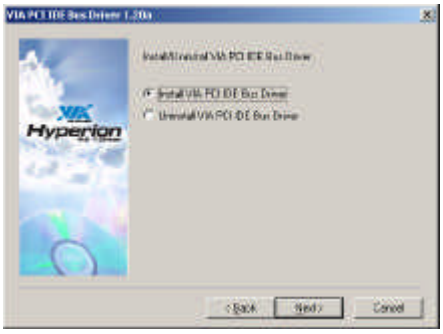
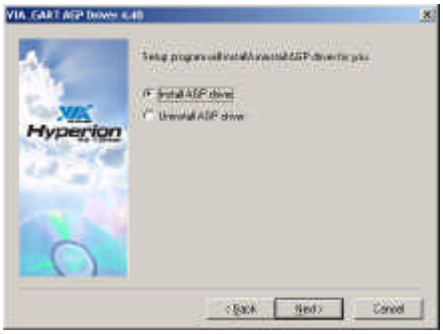
Intel Chipset	---	5.3
VGA	---	5.4
LAN	---	5.5

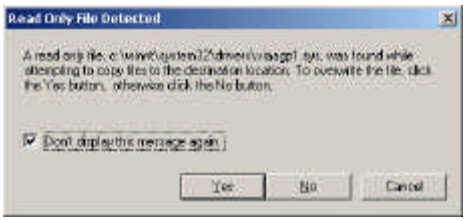
Note: You should install the VIA chipset patch before installing other drivers.
You may be prompted for your Windows Installation CD during setup.

5.3 Installing VIA Chipset

The chipset patch updates the chipset and enables user to adjust the advanced chipset components.

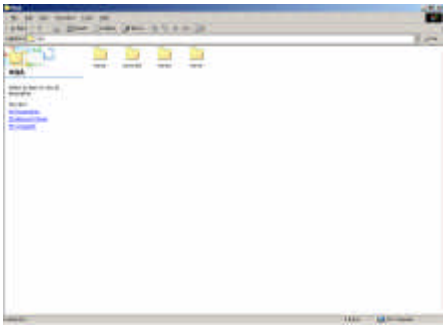
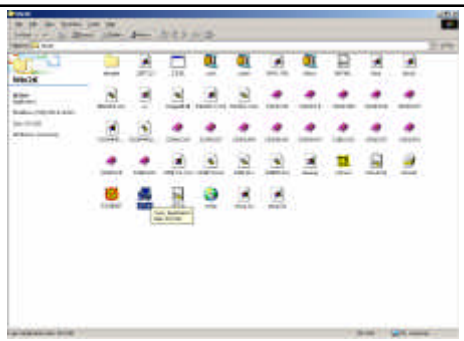
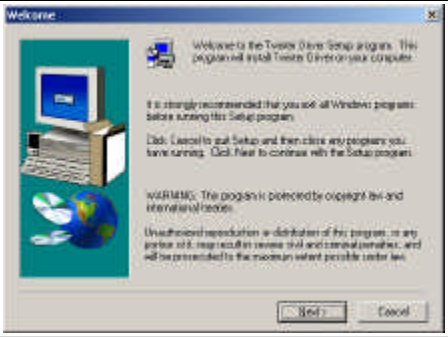
Step 5.3.1 Double click to open **Chipset** Folder.	
Step 5.3.2 The Chipset folder opens; double click to run the **VIAHyperion4in1445V** installation program.	
Step 5.3.3 The Welcome Screen appears, click **Next** button.	

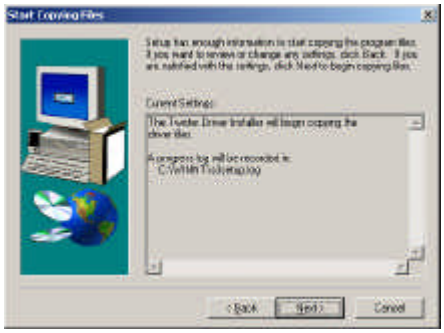
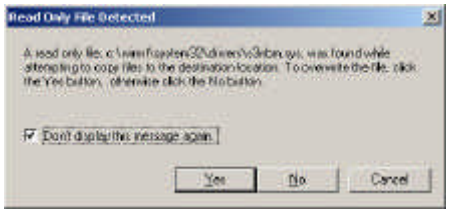
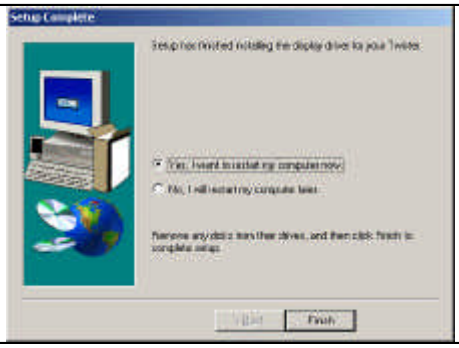
Step 5.3.4 Read the VIA Service Pack license agreement and README. If you accept it, click **Yes** to continue.	
Step 5.3.5 Choose the **Normal Installation** radio button and click **Next** to continue.	
Step 5.3.6 Check all **setup components** that you want to install and click **Next** to go to next screen.	
Step 5.3.7 Check the radio button next to **Install VIA PCI IDE Bus Driver**, and click **Next** to continue.	
Step 5.3.8 Check the radio button next to **Install AGP Driver**, and click **Next** to continue.	

Step 5.3.9 A warning message prompted up, check **Don't display the message again**, and click **Yes** to continue the installation process.	
Step 5.3.10 The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.	

5.4 Installing the On-board VGA

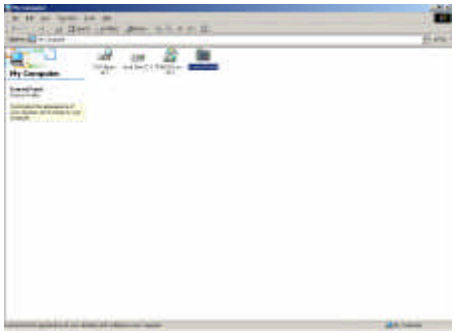
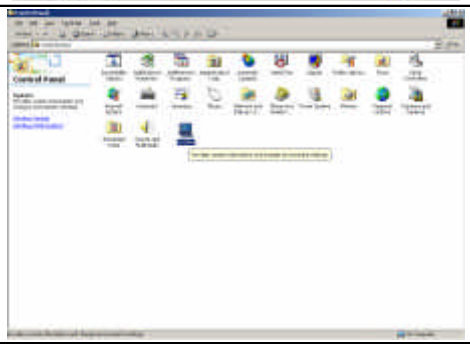
After installing the chipset driver, repeat steps 5.1.1 to 5.1.3 to open VGA folder.

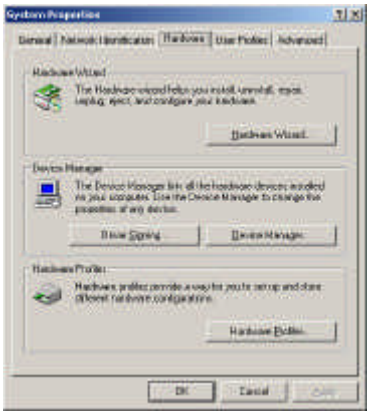
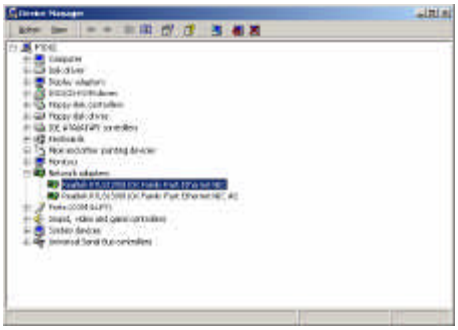
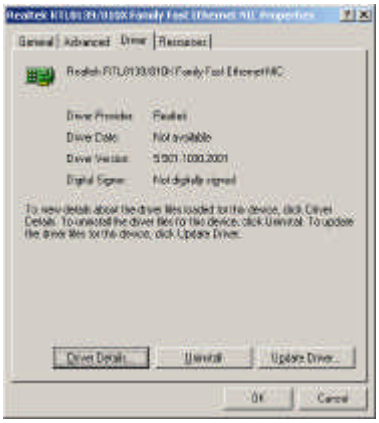
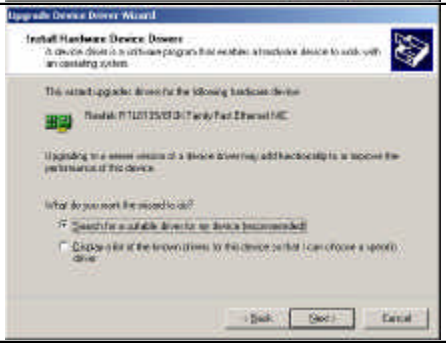
Step 5.4.1 Double click the VGA folder and the screen is as shown in the right. Click the correct Windows System folder you are using for the compute.	
Step 5.4.2 Double click **Setup.exe** to run the installation program.	
Step 5.4.3 The Welcome Screen appears. Click **Next** to continue.	

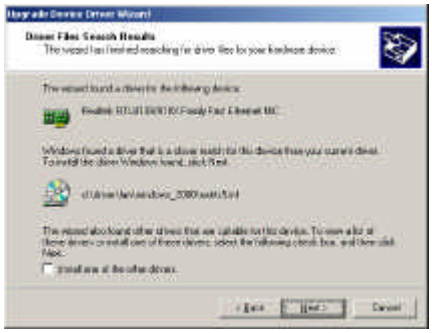
Step 5.4.4 Click **Next.** The setup program will start copying files into your computer.	
Step 5.4.5 Check **Don't display this message again**, then click **Yes** to continue the installation process.	
Step 5.4.6 After the program has finished installing files, you are prompted to restart your computer. Select **Yes, I want to restart my computer now**, and then click **Finish** button to reboot and complete the VGA driver installation.	

5.5 Installing the On-board LAN

After installing VGA driver, go back to computer desktop and open My Computer.

Step 5.5.1 Double click the **Control Panel** Icon to open.	
Step: 5.5.2 Double click the **System** Icon.	

Step 5.5.3 In the System Properties dialog, click to open the **Hardware** page and then click **Device Manager** button on the page.	
Step 5.5.4 Click the **Plus sign (+)** next to **Network Adapters**. The system will show the network Ethernet card you are using. Double click on the Ethernet card.	
Step 5.5.5 Go to the **Driver** page, and click **Update Driver** button to start the Upgrade Device Driver Wizard.	
Step 5.5.6 Click **Next** to continue the Upgrade Device Driver Wizard.	
Step 5.5.7 Check the radio button next to **Search for a suitable driver for my device (recommended)**, and then click **Next** to Continue.	

Step 5.5.8 Click **CD-ROM drives** for system to search for driver. Click **Next** to continue.	
Step 5.5.9 The wizard found the driver for the Ethernet device. Click **Next**. The setup program will start coping files into your compute.	
Step 5.5.10 You have completed the upgrade device driver wizard. Click **Finish** to return to your system.	

Note: If you are prompted for the location of the drivers, browse to the D:\Driver\LAN\Windows_2000 directory (where D: is your CD-ROM driver letter, and choose the correct windows system folder you are using).

This ends Chapter 5. The followings are Appendex A, B, and C.

Appendix A Connectors Pin Definition

The following table lists FSC-6621CLD2N connectors:

Connector	Function	Connector	Function
JP1	CPU Bus Ratio Select Jumper	J12	AC97 Audio Interface Connector
JP2	Panel Type Select Jumper	J13	LVDS Panel Connector
JP3	Panel Power Select Jumper	J14	ATX Power on Connector
JP4	Vdual Power Select Jumper	J15	TFT Panel Connector
JP5	CMOS Status Select Jumper	J16	IR Connector
CON1/CON2	LAN RJ45 Connector	J17	USB Connector
CON3	KB/Mouse Connector	J18	CF Care Status Select Jumper
CON4	VGA Connector	J21	Reset Button Connector
J1	Thermal Resistor Connector	J23	Primary IDE Connector
J2	CPU FAN Connector	J24	Secondary IDE Connector
J3/J4	DIMM Slot	J25	Compact Flash Connector
J6	Panel Back-Light Connector	J26	IDE LED Connector
J7	Power Button Connector	J27	LAN LED Connector
J8	Thermal Resistor Connector	J28	PIO Connector
J9	GPIO Connector	J29	FDD Connector
J10	I2C Connector	J30	External KB Connector
J11	Power LED Connector	J31/J32	SIO Connctor

CON1/CON2: LAN RJ45 connector

PIN No.	Description	PIN No.	Description
1	TX+	2	TX-
3	RX+	4	TERMPLANE
5	TERMPLANE	6	RX-
7	TERMPLANE	8	TERMPLANE
9	GND	10	GND

CON3: PS/2 Keyboard/Mouse connector

PIN No.	Description	PIN No.	Description
1	Keyboard Data	2	Mouse Data
3	GND	4	+5V
5	Keyboard Clock	6	Mouse Clock

CON4: VGA connector

PIN No.	Description	PIN No.	Description
1	Red	2	Green
3	Blue	4	Pull High
5	GND	6	GND
7	GND	8	GND
9	VGA Power	10	GND
11	Pull High	12	Display Data channel data
13	Horizontal Sync.	14	Vertical Sync.
15	Display Data Channel CLK		

J1: Thermal Resistor Connector

PIN No.	Description	PIN No.	Description
1	Thermal Sense	2	GND

J2: CPU Fan Connector

PIN No.	Description	PIN No.	Description
1	GND	2	+12V
3	Sense		

J6: Panel Back-Light Connector

PIN No.	Description	PIN No.	Description
1	+12V	2	GND
3	ENBKL	4	Pull Down
5	+5V		

J7: Power Button Connector

PIN No.	Description	PIN No.	Description
1	GND	2	Power Button

J8: Thermal Resistor Connector

PIN No.	Description	PIN No.	Description
1	Thermal Sense	2	GND

J9: GPIO Connector

PIN No.	Description	PIN No.	Description
1	GPIO_A	2	GPIO_B
3	GPO23	4	GPIO_D

J10: I2C Connector

PIN No.	Description	PIN No.	Description
1	I2C_Data	2	I2C_Clock
3	GND		

J11: Power LED Connector

PIN No.	Description	PIN No.	Description
1	Pull High	2	GND

J12 Audio Interface Connector

PIN No.	Description	PIN No.	Description
1	SDOUT	2	VCC
3	ACRST	4	GND
5	SYNC	6	+12V
7	SDIN	8	SDIN2
9	BITCLK	10	SPEAK

J13: LVDS Panel Connector

PIN No.	Description	PIN No.	Description
1	VDDSAFE	2	LVDS_DIN
3	LVDS_D0N	4	LVDS_D1P
5	LVDS_D0P	6	GND
7	GND	8	LVDS_D2N
9	LVDS_CP	10	LVDS_D2P
11	LVDS_CN	12	VDDSAFE
13	GND	14	GND

J14: ATX Power on Connector

PIN No.	Description	PIN No.	Description
1	5VSBY	2	GND
3	Power On		

J15: TFT Panel Connector

PIN No.	Description	PIN No.	Description
1	ENBKL	2	+12VSAFE
3	HSYNC	4	Data Enable
5	Panel Clock	6	VSYNC
7	PD25	8	VDDSAFE
9	PD24	10	PD31
11	PD28	12	PD26
13	PD32	14	PD30
15	PD13	16	PD34
17	PD12	18	PD19
19	PD16	20	VDDSAFE
21	PD20	22	PD14
23	GND	24	PD18
25	PD25	26	PD22
27	PD25	28	PD7
29	PD25	30	ENVEE

31	PD8	32	PD2
33	GND	34	PD6
35	PD3	36	PD10
37	PD9	38	PD5
39	NC	40	GND
41	PD15	42	PD11
43	PD21	44	PD17
45	PD27	46	PD23
47	PD33	48	PD29
49	GND	50	PD35

J16: IR Connector

PIN No.	Description	PIN No.	Description
1	VCC	2	NC
3	IRRX	4	GND
5	IRTX		

J17: USB Connector

PIN No.	Description	PIN No.	Description
1	VDD	2	SBD0-
3	SBD0+	4	SBD1-
5	SBD1+	6	GND

J21: Reset Button Connector

PIN No.	Description	PIN No.	Description
1	GND	2	Reset

J23/J24: IDE Connector

PIN No.	Description	PIN No.	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	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	N/C
29	DMA_ACK	30	Ground
31	Interrupt	32	IOCS16#
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

J25: Compact Flash Connector

PIN No.	Description	PIN No.	Description
1	GND	2	Data3
3	Data4	4	Data5
5	Data6	6	Data7
7	CS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	+5V	14	GND
15	GND	16	GND
17	GND	18	DA2
19	DA1	20	DA0
21	Data0	22	Data
23	Data2	24	NC
25	Pull Down	26	Pull Down
27	Data11	28	Data12
29	Data13	30	Data14
31	Data15	32	CS3#
33	NC	34	IOR#
35	IOW#	36	+5V
37	IRQ15	38	+5V
39	Status Select	40	NC
41	Reset	42	IORDY
43	REQ	44	ACK#
45	LED	46	NC
47	Data8	48	33/66/100 Detect
49	Data10	50	GND

J26: IDE LED Connector

PIN No.	Description	PIN No.	Description
1	+5V	2	HDD Active #

J27: LAN LED COnnector

PIN No.	Description	PIN No.	Description
1	Speed_1#	2	Pull High
3	Link_1#	4	Pull High
5	Speed_2#	6	Pull High
7	Link_2#	8	Pull High

J28: Parallel Port Connector

PIN No.	Description	PIN No.	Description
1	Strobe#	2	Data0
3	Data1	4	Data2
5	Data3	6	Data4
7	Data5	8	Data6
9	Data7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select	14	Auto Form Feed#
15	Error#	16	Initialize
17	Printer Select IN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground	26	GND

J29: FDD Connector

PIN No.	Description	PIN No.	Description
1	Ground	2	Density Select
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	Index#
9	Ground	10	Motor Enable A#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor Enable B#
17	Ground	18	Direction#
19	Ground	20	Step#
24	Ground	22	Write Data#
23	Ground	24	Write Gate #
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	N/C	30	Read Data#
31	Ground	32	Head Side Select#
33	N/C	34	Disk Change#

J30: External Connector

PIN No.	Description	PIN No.	Description
1	Keyboard Clock	2	Keyboard Data
3	NC	4	GND
5	+5V		

J31/J32: Serial Port Connector

PIN No.	Description	PIN No.	Descro[topm
1	Data Carrier Detect (DCD)	2	Receive Data (RXD)
3	Transmit Data (TXD)	4	Data Terminal Ready (DTR)
5	Ground (GND)	6	Data Set Ready (RTS)
7	Request to Send (RTS)	8	Clear to Send (CTS)
9	Ring Indicatoer (RI)	10	Ground (GND)

Appendix B Watchdog Timer Setting

The FSC-6621CLD2N series features a watchdog timer that reset the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

B.1 Watchdog Timer Working Procedure

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn' t occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

You must enter timer values into the WDT Configuration Register (Write the control value to the Configuration Port), and clear (read the Configuration Port).

WDT Configuration Port	F2	Default at F2
Watch Dog Timer	Disabled Enabled	1. Default at disabled 2. Enabled for user's programming
WDT Timer out active for	Reset NMI	Default at Reset
WDT Active Time	1 second 2 seconds 4 seconds 8 seconds 16 seconds 32 seconds 64 seconds	Default at 64 seconds

Table B-1: Watchdog Timer Character and Function

B.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the EDT working mode. Write the value to the WDT Configuration Port.

The following table describes the Control Register bit definition.

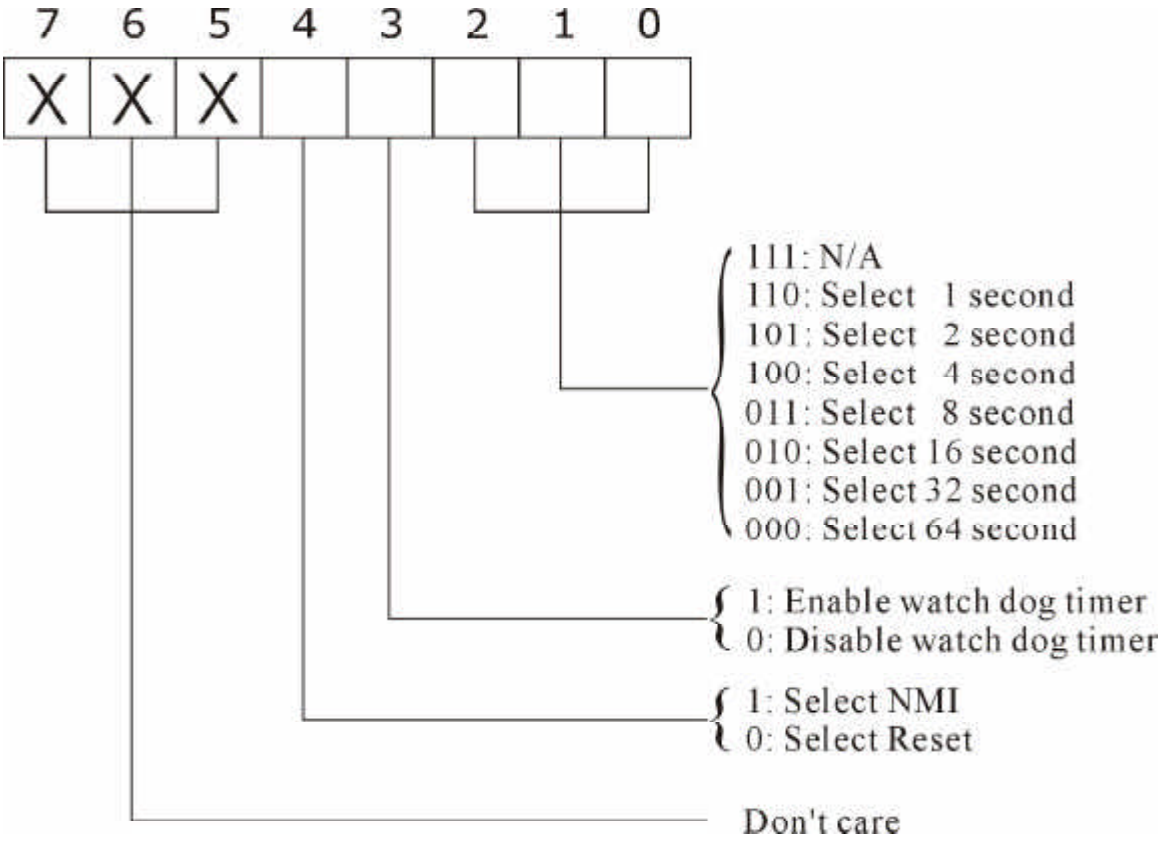


Table B-2: Control Register Bit Definition

B.3 Watch Dog Timer Programming Procedure

Power on or reset the system

The initial value of WDT Control Register (D4~D0) is zero, when power is on or reset the system. The following shows the initial value of WDT (00000000b):

Bit	Value	Mean
4	0	Select Reset
3	0	Disable watch dog timer
2, 1, 0	0 0 0	Select 64 second

Table B-3: WDT Control Register Initial Value

Initialize the SQW of RTC (set SQW output period = 0.5 second)

To initialize the SQW of RTC processor is to set the SQW signal which is output period = 0.5 second. It offers the basic frequency of the WDT counter.

The following is an example of initializing the SQW signal program in Intel 8086 assembly language.

```
; (General SQW = 0.5 Sec.)
Mov dx, 70h
Mov ax, 0Ah
Out dx, al          ;Out port 70h = 0Ah
Mov dx 71h
Mov as 2Fh
Out dx, al          ;Out port 71h = 2Fh
; (enable the SQW output)
Mov dx, 70h
Mov ax, 0Bh
Out dx, al          ;Out port 70h = 0Bh
Mov dx, 71h
Mov ax, 0Ah
Out dx, al          ;Out port 71h = 0Ah
```

Clear the WDT

Repeatedly read WDT Configuration Port and the interval cannot be longer than the preset time, otherwise, the WDT will generate NMI or Reset signal for the system. The following is an example of clear the WDT program in Intel 8086 assembly language.

```
; (Clear the WDT)
Mov dx, F2h             ; Setting the WDT configuration port
In      al, dx
```

Note: Before running WDT, clear the WDT to make sure the initial value is zero before enabling the WDT.

WDT Control Register (Write to WDT configuration port)

You can set the WDT Control Register to control the WDT working mode.
The initial value of the WDT Control Register is as the following:

```
; Setting the WDT Control Register as AL
Mov         al, 0h      ; Setting initial value = 0 for the WDT Control Register
```

You must plan the option of following:

1. Select NMI or Reset: decide D4 value in F2

   Example: Setting D4 = 0, then it select Reset

```
AND     al, 11101111b       ; Select Reset
```

   Example: Setting D4 = 0, then it select NMI

```
OR      al, 00010000b       ; Select NMI
```

2. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)

   Example: D2~D0 = 0, the time-out interval will be 64 seconds.

```
OR      al, 00010000b       ; Select NMI
```

3. Enable or Disable the WDT (decide D3 value in F2)

   Example: D3 = 0, Disable the WDT

```
AND al, 11111000b       ; Select the time-out interval as 64 sec.
```

   Example: D3 = 1, Enable the WDT

```
AND al, 11110111b       ; Disable the WDT
```

After finishing the above setting, you must be output for the Control Register' s value to the WDT Configuration Port. Then WDT will start according to the above setting.

```
AND al, 11111000b       ; Enable the WDT
```

Note: You should build in a mechanism in the program to continue to read the WDT Configuration Port for clearing WDT before time out.

Appendix C Programming the GPI/O

GPI/O (General Purpose Input/Output) pins are provided for custom system design. The number of inputs and outputs varies depending on configuration. This appendix provides definitions for the four GPI/O pins in the FSC-6621CLD2N series. The pin definition is shown in the following table:

PIN No.	Description	PIN No.	Description
1	GPIO_A	2	GPIO_B
3	GPO23	4	GPIO_D

Table C-1: J9 – GPI/O Connector

C.1 Specify the GPI/O Direction

You may specify the GPI/O direction by configuring the PCI register.

- Procedure of using GPI/O (A/B/D) as input:
  Set PCI Bus 0 Device 7 Function 0 Offset 74H bit (2/3/5) = 0
- Procedure of using GPI/O (A/D) as output:
  1. Set PCI Bus 0 Device 7 Function 0 Offset 76H bit (0/3) = 0
  2. Set PCI Bus 0 Device 7 Function 0 Offset 74H bit (2/5) = 1
- Procedure of using GPI/O (B) as output
  Set PCI Bus 0 Device 7 Function 0 Offset 74H bit 3 = 1

C.2 Read the GPI/O (A/B/D) Status

Make sure that you have specified the GPI/O direction correctly

- Read GPI/O (A/B/D) status defined as input:
  Read a byte from I/O port 4049H, Bit (0/1/3) mapped to GPI/O (A/B/D) status. Whenever GPI/O pin gets an input, it makes the mapping bit high.

  Caution!! This port is read only.
- Read GPI/O (A/B/D) status defined as output:
  Read a byte from I/O port 404DH, Bit (0/1/3) mapped to GPI/O (A/B/D) status. Whenever GPI/O pin output is high, it makes the mapping bit high.

C.3 Read the GPO23 Status

- Read GPO23 status defined as output:
  Read a byte from I/O port 404EH, Bit (7) mapped to GPO23 status. Whenever GPO23 pin output is high, it makes the mapping bit high.

C.4 Control GPI/O (A/B/D) output high/low

Make sure that you have specified the GPI/O direction correctly

- Output high/low
  Read a byte from I/O port 404DH, Bit (0/1/3) mapped to GPI/O (A/B/D) status. Makes the mapping bit to 1/0 and write back.

C.5 Control GPIO23 (C) output high/low

- Output high/low
  Read a byte from I/O port 404EH, Bit (7) mapped to GPO23 status. Makes the mapping bit to 1/0 and write back.