

USER'S MANUAL

PC-430

**5x86 Embedded Card
with VGA & SSD**

PC-430 M4

***PC-430 EMBEDDED CARD
WITH VGA & SSD***

OPERATION MANUAL

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This operation manual is meant to assist both Embedded Computer manufacturers and end-users in installing and setting up the system. The information contained in this document is subject to change without any prior notice.

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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

1-1	About This Manual	1-2
1-2	System Specification	1-3
1-3	Safety Precautions	1-6

CHAPTER 2 HARDWARE CONFIGURATION

2-1	Jumper & Connector Quick Reference Table	2-2
2-2	Component Locations	2-3
2-3	How to Set the Jumpers	2-4
2-4	Turbo LED Connector	2-6
2-5	Hard Disk Drive LED Connector	2-6
2-6	Reset Connector	2-6
2-7	External Speaker Connector	2-7
2-8	Power LED & Keylock Connector	2-7
2-9	Green Function Connector	2-7
2-10	COM2 for RS-232/422/485 Selection	2-8
2-11	Keyboard or PS/2 Mouse Selection	2-9
2-12	Keyboard or PS/2 Mouse Connector	2-9
2-13	Hard Disk Drive Connector	2-10
2-14	Floppy Disk Drive Connector	2-11
2-15	Printer Connector	2-12
2-16	LCD Panel Connector	2-13
2-17	VGA CRT Connector	2-14
2-18	External Keyboard Connector	2-14
2-19	COM1 Connector	2-15
2-20	COM2 Connector	2-15
2-21	Memory Installation	2-16
2-22	Panel Power Connector	2-16
2-23	Solid State Disk Socket	2-17
2-24	SSD Memory Mapping Selection	2-18
2-25	Power Connector	2-19

CHAPTER 3 SOFTWARE UTILITIES

3-1	Introduction	3-2
3-2	VGA Driver Utility	3-2
3-3	Flash BIOS Update	3-5
3-4	Watchdog Timer Configuration	3-7

CHAPTER 4 GREEN PC FUNCTION

4-1	Power Saving Block Diagram	4-2
4-2	CPU Doze Mode	4-2
4-3	System Standby Mode	4-2
4-4	System Suspend Mode	4-3

CHAPTER 5 AWARD BIOS SETUP

5-1	Introduction	5-2
5-2	Entering Setup	5-3
5-3	The Standard CMOS Setup Menu	5-4
5-4	The BIOS Features Setup Menu	5-8
5-5	Chipset Features Setup	5-11
5-6	Power Management Setup	5-12
5-7	PCI Configuration Setup	5-14
5-8	Load BIOS Defaults	5-15
5-9	Load Setup Defaults	5-15
5-10	Integrated Peripherals	5-16
5-11	Password Setting	5-18
5-12	IDE HDD Auto Detection	5-19
5-13	Save & Exit Setup	5-22

APPENDIX A EXPANSION BUS

PC-104 Connector Pin Assignment	A-2
ISA Bus Pin Assignment	A-3

APPENDIX B TECHNICAL SUMMARY

Interrupt Map	B-2
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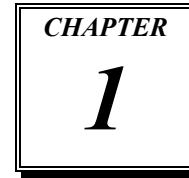
RTC & CMOS RAM Map	B-3
Timer & DMA Channels Map	B-4
I/O & Memory Map	B-5

APPENDIX C TROUBLE SHOOTING

Trouble Shooting for Error Messages	C-2
Trouble Shooting for POST Code	C-5



INTRODUCTION



This chapter gives you the information for PC-430. It also outlines the System specification.

Section includes:

- About This Manual
- System Specifications
- Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PC-430 Embedded Card with VGA, fully PC / AT compatible. The PC-430 provides faster processing speed, greater expandability and can handle more task than before. This manual is designed to assist you how to install and set up the system. It contains five chapters. The user can apply this manual for configuration according to the following chapters :

Chapter 1 Introduction

This chapter introduces you the background of this manual, and the specification for this system. Final in this chapter will indicate you how to avoid the damages for this Embedded Card.

Chapter 2 Hardware Configuration

This chapter outlines the components' locations and their functions. In the end of this chapter, you will know how to set the jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

Helpful information that informs you the proper installations of the VGA and Flash BIOS. It also describes the Watchdog-timer function.

Chapter 4 Green PC Function

This chapter explains the Green PC functions concisely.

Chapter 5 Award BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A Expansion Bus

This Appendix introduces you the expansion bus for PC-104 and ISA BUS

Appendix B Technical Summary

This section gives you the information about the Technical maps.

Appendix C Trouble Shooting

This section outlines the errors messages and offers you the methods to solve the problems.

1-2. SYSTEM SPECIFICATION

- **CPU :**
AMD 5x86 133 MHz CPU built on board
3.3V voltage regulator.
- **MEMORY :**
Up to 128 MB DRAM.
Two 72pin SIMM sockets on board.
- **CACHE :**
L1: 16K Cache
L2: 128K Cache
- **REAL-TIME CLOCK / CALENDAR :**
CMOS data back up from BIOS set or BIOS default.
Dallas DS 12887 Real Time Clock.
Guaranty battery 10 years.
- **BIOS :**
Award Flash BIOS for plug & play function.
Easy update 128KB flash EEPROM.
Support Green Function .
Support S/IO Setup.
- **KEYBOARD CONNECTOR :**
Mini DIN connector for Keyboard (selectable with PS/2 Mouse).
A 5-pin connector for External PC/AT Keyboard.
- **MOUSE CONNECTOR :**
Mini DIN Connector for PS/2 Mouse (selectable with keyboard).
- **BUS SUPPORT :**
External ISA BUS.
Internal PCI Bus, for VGA & IDE.
PC-104 BUS.
- **SSD SOCKET :**
Support up to 144MB M-system Disk-on-chip.

● **DISPLAY :**

Support simultaneous display for CRT & Panel.
Support 32bits PCI Local Bus.
VGA BIOS combines in 128KB flash ROM together with system BIOS.
Onboard 15-pin connector, support for 1024 x 768 (256 colors) resolution on SVGA Monitor.
Support 1 MB Video memory.
Onboard 41-pin connector, support for 640 x 480 or 800 x 600 resolutions on LCD Panel.
Support panel display for STN and TFT.
SVGA & Panel Display simultaneously.

● **WATCHDOG :**

I / O port 443H to open watchdog.
I / O port 441H to close watchdog.
Time-out timing select 0 / 8 / 16 / 24 / 32 / 40 / 48 / 56 / 64 / 72 / 80 / 88 / 96 / 104 / 112 / 120 sec +/- 25%.

● **IDE INTERFACE :**

One IDE port, Support up to two Enhanced IDE devices.

● **FLOPPY DISK DRIVE INTERFACE :**

Support up to two Floppy Disk Drives, 3.5" and 5.25" (360K / 720K / 1.2M / 1.44M / 2.88M).

● **SERIAL PORT :**

Two high speed 16550 Compatible UARTs with Send / Receive 16 Byte FIFOs: COM1: RS-232; COM2: RS-232/422/485
MIDI Compatible.
Programmable Baud Rate Generator.

● **PARALLEL PORT :**

SPP, ECP, EPP Function.
Bi-directional parallel port.

● **GREEN FUNCTION :**

Software supported by BIOS setup.
Hardware supported by switch control.

● **LED INDICATOR :**

System power.
Hard Disk access.
Turbo and green function mode.

● **PC-104 BUS EXPANSION & SPEED :**

ISA 8MHz
PC-104 8MHz
PCI Bus 33MHz

● **DMA CONTROLLER :**

82C37 x 2

● **DMA CHANNELS :**

7

● **INTERRUPT CONTROLLERS :**

82C59 x 2

● **INTERRUPT LEVELS :**

15

● **STORAGE TEMPERATURE :**

-40 to 80°C.

● **OPERATING TEMPERATURE :**

0 to 60°C.

● **SYSTEM POWER REQUIREMENT :**

DC Voltage: +5V, minimum +4.75V, maximum +5.25V.
DC Ampere: 10A.

● **BOARD DIMENSION :**

185mm x 122mm

● **BOARD WEIGHT :**

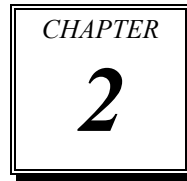
0.25 Kg.

1-3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Avoid your system from static electricity on all occasions.
2. Prevent electric shock. Don't touch any components of this card when the card is on. Always disconnect power when the system is not in use.
3. Disconnect the power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION



***** QUICK START *****

Helpful information details you the jumper & connector settings, and component locations.

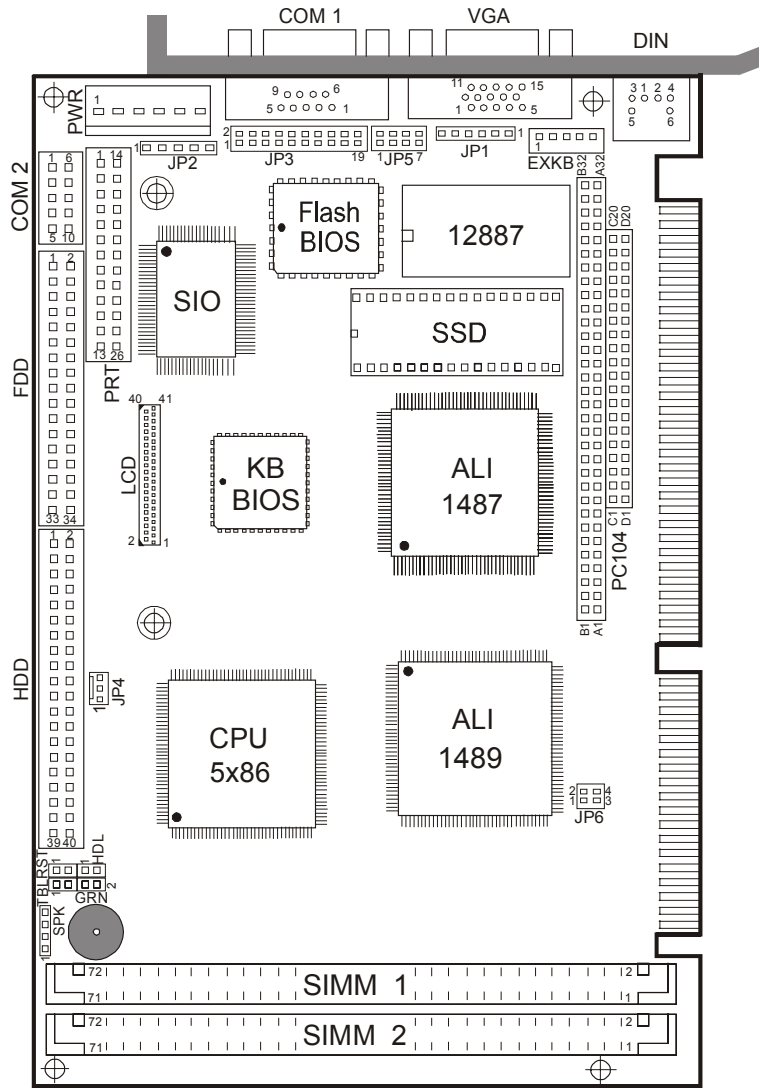
Section includes:

- Jumper & Connector Quick Reference Table
- Components Locations
- Configuration and Jumper settings
- Connector Pin Assignments

2-1 JUMPER & CONNECTOR QUICK REFERENCE TABLE

Turbo LED Connector	TBL
Hard Disk Drive LED Connector	HDL
Reset Connector	RST
External Speaker Connector	SPK
Power LED and Keylock Connector	JP2
Green Function Connector	GRN
RS232/422/485 (COM2) Selection	JP3
Keyboard or PS/2 Mouse Selection	JP1
Keyboard or PS/2 Mouse Connector	DIN
Hard Disk Drive Connector	HDD
Floppy Disk Drive Connector	FDD
Printer Connector	PRT
LCD Penal Connector	LCD
VGA CRT Connector	VGA
External Keyboard Connector	EXKB
COM1 Connector	COM1
COM2 Connector	COM2
Memory Installation	SIMM1, SIMM2
....	
Panel Power Connector	JP4
Solid State Disk Socket	SSD
SSD Memory Mapping Selection	JP5, JP6
Power Connector	PWR

2-2 COMPONENT LOCATIONS



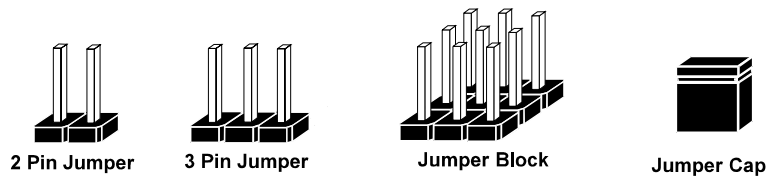
PC-430 Connector, Jumper and Component Locations

2-3 HOW TO SET THE JUMPERS

You can configure your board by setting jumpers. A jumper consists of two or three metal pins with a plastic base mounted on the card, and a small plastic “cap” (with a metal contact inside) to connect the pins. So you can set up your hardware configuration by “open” or “close” the pins.

The jumper can be combined into sets, which called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks.

JUMPERS AND CAPS

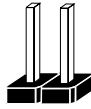


If a jumper has three pins, for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

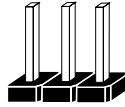
JUMPER DIAGRAMS



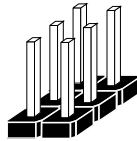
Jumper Cap like this



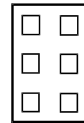
2 pin Jumper like this



3 pin Jumper like this



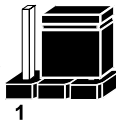
Jumper Block like this



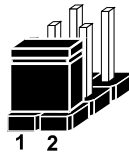
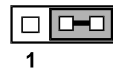
JUMPER SETTINGS



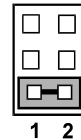
2 pin Jumper close(enabled)
like this



3 pin Jumper
2-3 pin close(enabled)
like this



Jumper Block
1-2 pin close(enabled)
like this

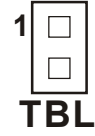


2-4 TURBO LED CONNECTOR

TBL : Turbo LED Connector

The pin assignments are as follows :

PIN	ASSIGNMENT
1	VCC
2	Turbo Signal



2-5 HARD DISK DRIVE LED

HDL : Hard Disk Drive LED Connector

The pin assignments are as follows :

PIN	ASSIGNMENT
1	HDD Active Signal
2	VCC



2-6 RESET CONNECTOR

RST : Reset Connector

The pin assignments are as follows :

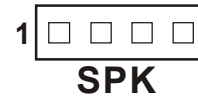
PIN	ASSIGNMENT
1	Reset
2	Ground



2-7 EXTERNAL SPEAKER CONNECTOR

SPK : External Speaker Connector
The pin assignment are as follows :

PIN	ASSIGNMENT
1	VCC
2	Ground
3	NC
4	Speaker Signal



2-8 POWER LED & KEYLOCK CONNECTOR

JP2 : Power LED & Keylock Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	Power LED
2	NC
3	Ground
4	Keyboard INT
5	Ground



2-9 GREEN FUNCTION CONNECTOR

GRN : Green Function Connector
When you touch the switch first time, it works into Green Mode, the second time is back to Standard Mode. The pin assignments are as follow:

PIN	ASSIGNMENT
1	Green Signal
2	Ground



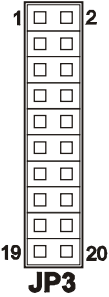
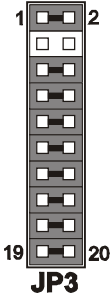
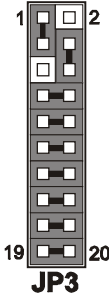
2-10 COM2 FOR RS-232/422/485 SELECTION

JP3: RS-232/422/485 Selection

COM1 fixed for RS-232 function only

COM2 selectable for RS-232, 422, or 485 function

The jumper settings are as follows :

COM 2 Function	RS-232	RS-422	RS-485
Jumper setting (pin closed)		1-2 5-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20	1-3 4-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20
Jumper illustration			

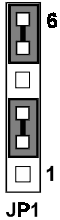
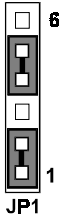
*** Manufactory default --- RS-232.

2-11 KEYBOARD OR PS/2 MOUSE SELECTION

JP1 : Keyboard or PS/2 Mouse Selection

For Y-Cable user, please set the jumper same as AT keyboard.

The jumper settings are as follows :

DEVICE TYPE	KEYBOARD	PS/2 MOUSE
JUMPER SETTING	2-3 5-6	1-2 4-5
JUMPER ILLUSTRATION		

*** Manufactory default --- AT Keyboard

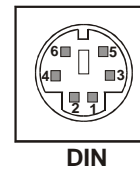
2-12 KEYBOARD OR PS/2 MOUSE CONNECTOR

DIN : Keyboard or PS/2 Mouse Connector

DIN connector can support keyboard, Y-cable, or PS/2 Mouse, user may select the right device to used on “Keyboard or PS/2 Mouse Selection”.

The pin assignments are as follows :

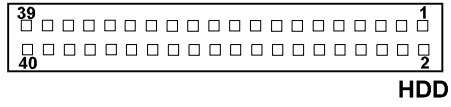
PIN	ASSIGNMENT	
	Keyboard	PS/2 Mouse
1	KBDATA	MSDATA
2	MSDATA	MSDATA
3	GND	GND
4	IOVSB	IOVSB
5	KBCLK	MSCLK
6	MSCLK	MSCLK



2-13 HARD DISK DRIVE CONNECTOR

HDD : Hard Disk Connector

The HDD disk pin assignments are as follows :



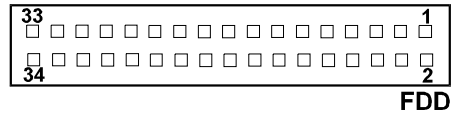
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	REST	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	NC	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	NC
29	NC	30	GND
31	IRQ14	32	IO16
33	A1	34	NC
35	A0	36	A2
37	CS0	38	CS1
39	HDLED	40	GND

2-14 FLOPPY DISK DRIVE CONNECTOR

FDD : Floppy Disk Driver Connector

You can use a 34-pin daisy-chain cable to connect a two-FDDs. On one end of this cable is a 34-pin flat cable to attach the FDD on the board, the other side is to attach two FDDs.

The pin assignments are as follows :

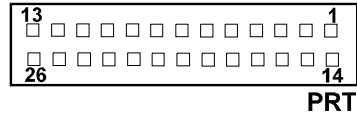


PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	RPM
3	GND	4	NC
5	GND	6	NC
7	GND	8	INDEX
9	GND	10	MTR0
11	GND	12	DRV1
13	GND	14	DRV0
15	GND	16	MTR1
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WDATA
23	GND	24	WGATE
25	GND	26	TRK0
27	GND	28	WRPRT
29	GND	30	RDATA
31	GND	32	SEL
33	GND	34	DSKCHG

2-15 PRINTER CONNECTOR

PRT : Printer Connector

As to link the Printer to the card, you need a cable to connect both DB25 connector and parallel port. The pin assignments are as follows :



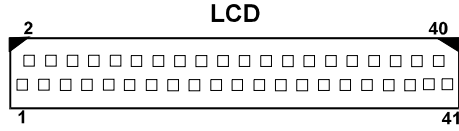
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AUTFE
2	P0	15	ERROR
3	P1	16	INIT
4	P2	17	SLCTIN
5	P3	18	GND
6	P4	19	GND
7	P5	20	GND
8	P6	21	GND
9	P7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

2-16 LCD PANEL CONNECTOR

LCD : LCD Panel Connector

The connector LCD is a 41-pin, dual-in-line header used for Flat Panel displays.

The pin assignments are as follows :

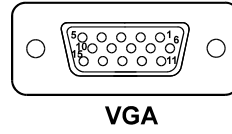


PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	P20	2	GND
3	P16	4	VCC
5	P21	6	P0
7	P17	8	P8
9	P22	10	P1
11	P18	12	P9
13	P23	14	P2
15	P19	16	P10
17	VCC	18	P3
19	FLM	20	P11
21	MDE	22	P4
23	LP	24	P12
25	SHFCLK	26	P5
27	3.3V	28	P13
29	3.3V	30	P6
31	ENABKL	32	P14
33	LCDVDD	34	P7
35	ENVEE	36	P15
37	GND	38	+12V
39	GND	40	+12V
41	NC		

2-17 VGA CRT CONNECTOR

VGA : VGA CRT Connector
The pin assignments are as follow:

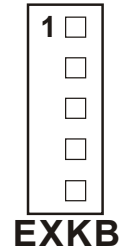
PIN	ASSIGNMENT
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	NC
13	HSYNC
14	VSYNC
15	NC



2-18 EXTERNAL KEYBOARD CONNECTOR

EXKB : External Keyboard Connector
The pin assignments are as follows :

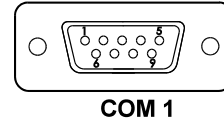
PIN	ASSIGNMENT
1	KBCLK
2	KBDATA
3	NC
4	GND
5	VCC



2-19 COM1 CONNECTOR

COM1 : COM1 Connector, DB9 male connector
 The COM1 Connector assignments are as follows :

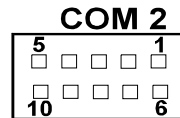
PIN	ASSIGNMENT
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



2-20 COM2 CONNECTOR

COM2 : COM2 Connector
 The COM2 Connector assignments are as follows :

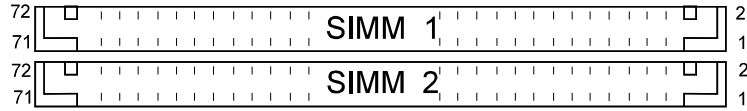
PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	DCD	TX-	TX-
2	RX	TX+	TX+
3	TX	RX+	RX+
4	DTR	RX-	RX-
5	GND	GND	GND
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC



2-21 MEMORY INSTALLATION

The PC-430 Embedded Card can support 4 DRAM banks in two 72-pin SIMM sockets on board.

Note: SIMM 1, 2 for single & double Bank DRAM module (72pin x 36bit x 2)



DRAM BANK CONFIGURATION

SIMM 1 BANK 0,1	SIMM 2 BANK 2,3	TOTAL MEMORY
4M		4M
4M	4M	8M
8M		8M
8M	4M	12M
8M	8M	16M
16M		16M
16M	8M	24M
16M	16M	32M
32M		32M
32M	16M	48M
32M	32M	64M
64M		64M
64M	32M	96M
64M	64M	128M

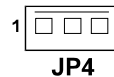
2-22 PANEL POWER CONNECTOR

JP4 : Panel Power Connector

This Connector acts as an inverter to supply proper power to panel LCD.

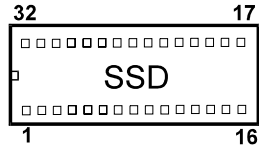
The pin assignments are as follows :

PIN	ASSIGNMENT
1	LCD+12V
2	GND
3	LCD V _{DD} (+5V)



2-23 SOLID-STATE DISK SOCKET

SSD : 32-pin Disk-on-chip Socket.
 The pin assignments are as follows:



PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	17	SD3
2	NC	18	SD4
3	NC	19	SD5
4	SA12	20	SD6
5	SA7	21	SD7
6	SA6	22	CE
7	SA5	23	SA10
8	SA4	24	OE
9	SA3	25	SA11
10	SA2	26	SA9
11	SA1	27	SA8
12	SA0	28	NC
13	SD0	29	NC
14	SD1	30	VCC
15	SD2	31	WE
16	GND	32	VCC

2-24 SSD MEMORY MAPPING SELECTION

JP5, JP6 : SSD Memory Mapping Selection.

A 32-pin SSD socket supports an SSD up to 144MB. This PnP flash ROM SSD can be installed as one of user's hard disks. If set as Drive C, it can be used as a boot-up hard disk. The SSD Memory Mapping are as follows :

Note: No manufacturer's default setting is done on this SSD. User should set the jumper according to the following Memory Map.

SSD Memory Map	JUMPER SETTING (pin closed)		JUMPER ILLUSTRATION
	JP5	JP6	
CC000h-CDFFFh	1-2	3-4	
D0000h-D1FFFh	3-4	1-2	
D4000h-D5FFFh	3-4	3-4	
D8000h-D9FFFh	5-6	1-2	
DC000h-DDFFFh	5-6	3-4	
E0000h-E1FFFh	7-8	1-2	

2-25 POWER CONNECTOR

PWR : Power Connector

The pin assignments are as follows :

PIN	ASSIGNMENT
1	NC
2	+5V
3	+12V
4	-12V
5	GND
6	GND



PWR

SOFTWARE UTILITIES

CHAPTER 3

This chapter comprises the detailed information of VGA driver and Watchdog function. It also describes how to install the configuration.

Section includes:

- VGA Drivers Utilities
- Flash BIOS Update
- Watchdog Timer Configuration

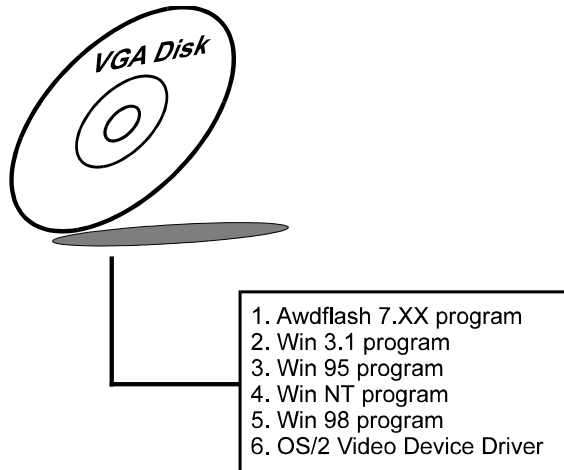
3-1. INTRODUCTION

Enclosed with our PC-430 package is our driver utility, which may come in a form of a CD ROM disc or floppy diskettes. For CD ROM disc user, you will only need some of the files contained in the CD ROM disc, please kindly refer to the following chart:

File name (Assume that CD ROM drive is D:)	Purpose
D:\VGA\C&T\CT6555x	For VGA driver installation
D:\Flash\Awdflash.exe	For BIOS update

3-2. VGA DRIVER UTILITY

The VGA interface embedded with our PC-430 can support a wide range of display mode, such as SVGA, STN, TFT....etc. You can display CRT and LCD Panel simultaneously on this board, but make sure that the modes for CRT and LCD Panel are the same. If not, only one of them can be displayed.



3-2-1. Installation of VGA Driver for PCI

1. Install VGA Driver to Windows 3.1

- (1). To install VGA driver to Windows 3.1, please insert Utility Disk into floppy disk drive A/B or CD ROM drive under your Windows 3.1 system, and go to directory where VGA driver is located.
- (2). Click Setup.exe file for VGA driver installation directly. Follow the instructions on the screen and complete the installation.
- (3). Once installation is completed, you must shut down system and restart in order for changes to take effect.

2. Install VGA Driver to Windows 95

- (1). Click START, SETTINGS, then CONTROL PANEL.
- (2). On CONTROL PANEL, click the DISPLAY icon and enter the SETTINGS tab of the DISPLAY PROPERTIES window.
- (3). Select the SETTINGS page, push the CHANGE DISPLAY TYPE button. Click the CHANGE button in the "Adaper Type" area.
- (4). Push the "HAVE DISK BUTTON" and press OK.
- (5). Specify the path for the new driver and press the <Enter> key. The "Select Device" dialog box will appear. Select the "Chips and Tech 65550 PCI".
- (6). Follow the remaining instructions that appear on the screen to complete the rest of the installation, and then restart your computer.

3. Install VGA driver to Windows NT 3.5x/4.0

- (1). To install VGA drivers to Windows 3.5x/4.0 is as you normally would. Click START, then SETTINGS, then CONTROL PANEL of the operating system.
- (2). Select the DISPLAY icon to start the DISPLAY PROPERTIES window, then choose the SETTING tab, then DISPLAY TYPE.
- (3). In the CHANGE DISPLAY TYPE window, click on the CHANGE button in the ADAPTER TYPE, this will bring up the SELECT DEVICE window.

- (4). In the CHANGE DISPLAY window, click on Have Disk. Follow the instructions appearing on the screen until you complete the whole installation.
- (5). Once installation is completed, the system must be shut down and restarted for the new drivers to take effect.

4. Install VGA driver to OS/2 Warp Operation System

(1) Preliminary Steps:

- (i) OS/2 DOS Support must be installed.
- (ii) If you previously installed SVGA support, you must reset the system to VGA mode. VGA is the default video mode enable when OS/2 is to be installed.
- (iii) To restore VGA mode, Use SELECTIVE INSTALL and select VGA for PRIMARY DISPLAY. For more information on this procedure, see the section on Changing Display Adapter Support in the OS/2 User's Guide.

(2) Start Driver installation

- (i) Open an OS/2 full screen or windowed session.
- (ii) Place into Drive A/B the Utility Disk, which contains the 65550 Display Driver.
- (iii) At the OS/2 command prompt , type the following commands to copy the files to the OS/2 drive:
Type A: and press ENTER to make this the default drive.
Type Setup A: C: and press ENTER
- ☞ When the setup Program is completed, you will need to perform a shut down and then restart the system in order for changes to take effect.
- (iv) After restarting the system, first open the OS/2 System folder.
- (v) Then open the System Setup folder.
- (vi) Open the Display Driver Install Object.
- (vii) When the Display Driver Install window appears, select PRIMARY DISPLAY, and click OK.
- (viii) When the Primary Display Driver List window appears, select "Chips and Technologies 65550" from the list of Adapter types, then select OK to install the video driver.

- (ix) When installation is complete, you should shut down and restart the system for the changes to take effect. And also make sure to remove the install Utility Disk before restarting system.

3-3. FLASH BIOS UPDATE

3-3-1. System BIOS Update:

Users of PC-430 can use the program "Awdflash.exe" contained in the Utility Disk for system BIOS and VGA BIOS update.

3-3-2. To update VGA BIOS for LCD Flat Panel Display:

As PC-430 user, you have to update the VGA BIOS for your specific LCD flat panel you are going to use. For doing this, you need two files. One is the "Awdflash.exe" file and the other is the VGA BIOS C&T 65550 file for LCD panel display. Both file must be provided by the vendor or manufacturer. When you get these two files ready, follow the following steps for updating your VGA BIOS:

1. Install "Awdflash.exe" from Utility Disk to Drive C.
2. Insert the VGA BIOS file you have obtained from the vendor.
3. Type the path to Awdflash.exe and execute the VGA BIOS update with file 430xxxxx.bin
C:\UTIL\AWDFLASH>AWDFLASH 430xxxxx.bin
4. The screen will display the table below:

FLASH MEMORY WRITER v7.XX (C) Award Software 1999 All Rights Reserved	
For ALI-1487/89-2A4KDP6LC-0	DATE: 12/12/1999
Flash Type: MXIC 28F1000PPC/12V	
File Name to Program: 430xxxxx.bin	
Checksum: XXXXX	
Error Message : Do You Want To Save BIOS (Y/N)	

If you want to save up the original BIOS, enter "Y" and press < Enter > . If you choose "N", the following table will appear on screen.

FLASH MEMORY WRITER v7.XX (C) Award Software 1999 All Rights Reserved
For ALI-1487/89-2A4KDP6LC-0 DATE: 12/12/1999 Flash Type: MXIC 28F1000PPC/12V File Name to Program: 430xxxxx.bin Checksum: XXXXX
Error Message : Are You Sure To Program (Y/N)

Select "Y", and the BIOS will be renewed. When you are refreshing the BIOS, do not turn off or reset the system, or you will damage the BIOS. After you have completed all the programming, the screen displays the table below:

FLASH MEMORY WRITER v7.XX (C) Award Software 1999 All Rights Reserved
For ALI-1487/89-2A4KDP6LC-0 DATE: 12/12/1999 Flash Type: MXIC 28F1000PPC/12V File Name to Program: 430xxxxx.bin Checksum: XXXXX Reset System or Power off to accomplish update process!
F1: Reset F10: Exit

Please reset or power off the system, and then the Flash BIOS is fully implemented.

3-4. WATCHDOG TIMER CONFIGURATION

The watchdog timer can reset the system automatically. It is defined at I/O port **443H**. When you want to enable the watchdog timer, please write I/O port **443H**, then the system will reset itself. When you want to disable the function, write I/O port **441H**, the system will run the command to stop the Watchdog function.

In PC-430 watchdog function, you must write your program so when it writes I/O port address 443 for enable watchdog and write I/O port address 441 for disable watchdog. The timer's intervals have a tolerance of 25% so you should program an instruction that will refresh the timer about every second.

The following program shows you how to program the watch timer in your program.

Watchdog enable program:

```
MOVAX, 000FH(choose the values you need; start from 0)
MOVDX, 443H
OUTDX, AX
```

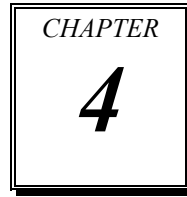
Watchdog disable program:

```
MOVAX, 000FH(this value can be ignored)
MOVDX, 441H
OUTDX, AX
```

The Watchdog Timer control table is as follow:

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	64
2	E	8	10	6	72
3	D	16	11	5	80
4	C	24	12	4	88
5	B	32	13	3	96
6	A	40	14	2	104
7	9	48	15	1	112
8	8	56	16	0	120

GREEN PC FUNCTION

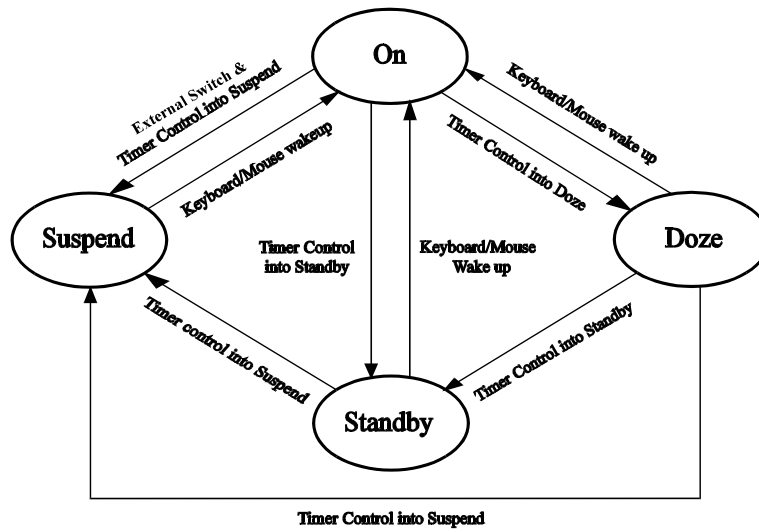


This chapter gives you the concise information for Green PC Function.

Sections include:

- Power Saving Block Diagram
- CPU Doze Mode
- System STANDBY Mode
- System SUSPEND Mode

4-1. POWER SAVING BLOCK DIAGRAM



4-2. CPU DOZE MODE

1. After out of the timer, CPU clock is slow down to 8MHz.
2. Sound 1 beep.
3. Flash LED to indicate power saving status.
4. Monitor Activity, according to the setting of Advanced Setup.
5. Any activity occurs, system will exit from Doze mode to On mode.

4-3. SYSTEM STANDBY MODE

1. After out of the timer, CPU clock is slow down to 8MHz.
2. Sound 2 beeps.
3. Flash LED to indicate power saving status.
4. Level 1 cache are disabled.
5. VGA monitor displays blank screen.
6. Fixed disk driver motor will be spin off.
7. Any activity occurs, system will exit from Standby mode to On mode.

4-4 SYSTEM SUSPEND MODE

1. After out of the timer, CPU clock is slow down to 8MHz.
2. Sound 3 beeps.
3. Flash LED to indicate power saving status.
4. Level 2 cache are disabled.
5. VGA monitor displays blank screen.
6. Fixed disk driver motor will be spin off.
7. Monitor activity according to the setting of Advanced Setup.
8. When system in Suspend mode, only Keyboard / Mouse / Alarm resume can wakeup system.

AWARD BIOS SETUP

CHAPTER

5

This chapter states out how to set up the Award BIOS.

Section includes:

- Introduction
- Entering Setup
- The Standard CMOS Setup
- The BIOS Features Setup
- The Chipset Features Setup
- Power Management Setup
- PCI Configuration Setup
- Load BIOS defaults
- Load Setup Defaults
- Password Setting
- IDE HDD Auto Detection
- Save and Exit Setup

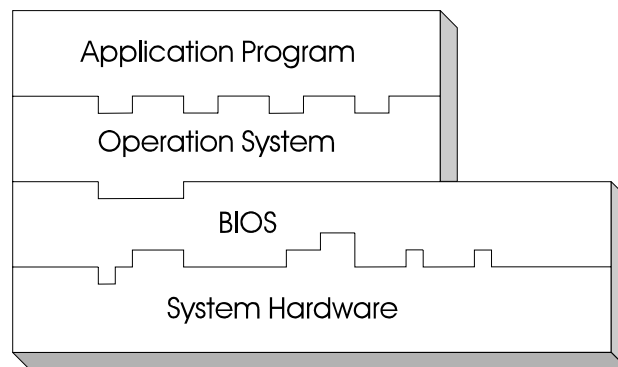
5-1. INTRODUCTION

This chapter will show you the function of the BIOS in managing the features of your system. The PC-430 Embedded Card is equipped with the BIOS for system chipset from Award Software Inc. This page briefly explains the function of the BIOS in managing the special features of your system. The following pages describe how to use the BIOS for system chipset Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drives, and memory.

The operating system relies on the BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip, to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS enables you to make basic changes to your system's hardware without having to write a new operating system.

The following diagram illustrates the interlocking relationships between the system hardware, BIOS, operating system, and application program:



5-2 ENTERING SETUP

Power on the computer and press < Del > immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press < Del > key or simultaneously press <Ctrl>, < Alt >, and < Esc > keys.

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

As long as this message is present on the screen you may press the key (the one that shares the decimal point at bottom of the number keypad) to access the setup program. In a moment, the main menu of the Award SETUP program will appear on the screen:

ROM PCI / ISA BIOS (2A4KDP6L) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PCI CONFIGURATION SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑↓→← :Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Time, Date, Hard Disk Type.....	

Setup program initial screen

You may use the cursor up/down keys to highlight the individual menu items. As you highlight each item, a brief description of that item's function appears in the lower window. If you have a color monitor you can use the Shift F2 keys to scroll through the various color combinations available.

5-3 THE STANDARD CMOS SETUP MENU

Highlight STANDARD CMOS SETUP and press < ENTER > and the screen will display the following table:

ROM PCI / ISA BIOS (2A4KDP6L)						
STANDARD CMOS SETUP						
AWARD SOFTWARE, INC.						
Date (mm:dd:yy)	:	Tue, May 19	1998			
Time (hh:mm:ss)	:	18 : 24	: 14			
		CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS
Drive C : Auto (0Mb)		0	0	0	0	0
Drive D : Auto (0Mb)		0	0	0	0	0
Drive A : 1.44M , 3.5 in.						
Drive B : None						
Video : EGA/VGA						
Halt On: All Errors						
		Base Memory:		640K		
		Extended Memory:		7168K		
		Other Memory:		384K		

		Total Memory:		8192K		
Esc : Quit		↑↓→← : Select Item		Pu/Pd/+/- : Modify		
F1 : Help		(Shift) F2 : Change Color				

CMOS setup screen

In the above table the base memory size and the extended memory size are displayed. This is automatically read from your systems, and you do not need to set these parameters. The screen shows a calendar. The week display will depend on the date set in your system clock and the flashing indicating the current date. Since you have not yet set the time and date, the date displayed is probably incorrect. Information on each item is

Date:

< Month >, < Date > and < Year >. Ranges for each value are in the CMOS Setup Screen, and the week-day will skip automatically.

Time:

< Hour >, < Minute >, and < Second >. Use 24 hour clock format, i.e., for PM numbers, add 12 to the hour. For examples, 4: 30P.M. You should enter the time as 16:30:00.

Drive C type / Drive D type:

The categories identify the types of hard disk drive C or drive D that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Normal BIOS. Type 1 or Type 45 are predefined. Type User is user-definable.

Primary Master/Primary Slave/Secondary Master/Secondary Slave :

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press PgUp / <+> or PgDn / <-> to select a numbered hard disk type or type the number and press < Enter >. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press < Enter >. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be "Type 1".

If the controller of HDD interface is SCSI, the selection shall be "None"
If the controller of HDD interface is CD-ROM, the selection shall be "None"

TYPE:

This is the number designation for a drive with certain identification parameters.

CYLS.:

This is the number of cylinders found in the specified drive type.

HEADS:

This is the number of heads found in the specified drive type.

WPCOM:

WPcom is the read delay circuitry which takes into account the timing differences between the inner and outer edges of the surface of the disk platter. The number designates the starting cylinder of the signal.

LZONE:

Lzone is the landing zone of the heads. This number determines the cylinder location where the heads will normally park when the system is shut down.

SIZE (CAPACITY):

This is the formatted capacity of the drive based on the following formula:
(# of heads) X (# of cylinders) X (# of sets) X (512bytes/sects)

DRIVE A AND DRIVE B:

The options are 360KB 5.25in, 1.2KB 5.25in, 720KB 3.5in, 1.44MB 3.5in, 2.88MB 3.5in and None. Not Installed could be used as an option for diskless workstations.

VIDEO:

Options are Monochrome, Color 40, VGA/EGA, Color 80.

HARD DISK ATTRIBUTES:

Type	Cylinders	Heads	V-P comp	LZone	Sect	Capacity
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	30
4	940	8	512	940	17	62
5	940	6	512	940	17	46
6	615	4	65535	615	17	20
7	642	8	256	511	17	30
8	733	5	65535	733	17	30
9	900	15	65535	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	49
13	306	8	128	319	17	20
14	733	7	65535	733	17	42
15	000	0	0000	000	00	00
16	612	4	0000	663	17	20
17	977	5	300	977	17	40
18	977	7	65535	977	17	56
19	1024	7	512	1023	17	59
20	733	5	300	732	17	30
21	733	7	300	732	17	42
22	733	5	300	733	17	30
23	306	4	0000	336	17	10
24	977	5	65535	976	17	40
25	1024	9	65535	1023	17	76
26	1224	7	65535	1223	17	71
27	1224	11	65535	1223	17	111
28	1224	15	65535	1223	17	152
29	1024	8	65535	1023	17	68
30	1024	11	65535	1023	17	93
31	918	11	65535	1023	17	83
32	925	9	65535	926	17	69
33	1024	10	65535	1023	17	85
34	1024	12	65535	1023	17	102
35	1024	13	65535	1023	17	110
36	1024	14	65535	1023	17	119
37	1024	2	65535	1023	17	17
38	1024	16	65535	1023	17	136
39	918	15	65535	1023	17	114
40	820	6	65535	820	17	40
41	1024	5	65535	1023	17	42
42	1024	5	65535	1023	26	65
43	809	6	65535	852	17	40
44	809	6	65535	852	26	61
45	776	8	65335	775	33	100
47			AUTO			

Award Hard Disk Type Table

5-4 The BIOS FEATURES SETUP MENU

Choose the "BIOS FEATURES SETUP" in the main menu, the screen shown as below.

ROM PCI/ISA BIOS (2A4KDP6L)			
BIOS FEATURES SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000 -CFFFF Shadow	: Disabled
External Cache	: Enabled	D0000- D7FFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D8000- DFFFF Shadow	: Disabled
Boot Sequence	: A,C, SCSI		
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up Numlock Status	: ON		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250	Esc : Quit	↑↓→← : Select Item
Security Option	: Setup	F1 : Help	Pu/Pd/+/- : Modify
PS/2 mouse function control	: Enabled	F5 : Old Values	(Shift)F2 : Color
PCI/VGA Palette snoop	: Disabled	F6 : Load BIOS Defaults	
OS Select For DRAM>64MB	: Non-OS2	F7 : Load Setup Defaults	

BIOS Features Setup

The BIOS FEATURES SETUP allows you find true certain features supported by the chipset and Award BIOS. It also includes support for shadow RAM under which the contents of the ROM BIOS can be copied into memory at boot up, enhancing performance. When you change any of the setting, you may recall the default settings at any time from the main menu.

This is detailed later. To get help on each item, highlight the relevant item and press the F1 key. A Windows will appear on your screen detailing the various options available for each item. A brief introduction of each setting in the BIOS FEATURES SETUP program is given below.

CPU INTERNAL CACHE:

This item should always be Enable, If your system is 486 CPU. Even if you have installed the external cache. If you have no external cache installed this item should be enabled to allow use of the internal 8K cache in the 486 CPU.

EXTERNAL CACHE:

Enable or disable this function according to whether you want external cache enabled or disabled.

QUICK POWER ON SELF TEST:

You can enable or disable this item to speed up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

BOOT SEQUENCE:

You may define whether the system will look first at drive A: and then at drive C: when booting up, or vice versa.

BOOT UP FLOPPY SEEK:

You may enable / disable this item to define whether the system will look for a floppy disk drive to boot at power-on, or directly to the hard disk drive.

BOOT UP NUMLOCK STATUS:

Use this item to enable / disable the NumLock on your keyboard automatically at power-on.

BOOT UP SYSTEM SPEED:

Select High to configure your system in the turbo speed mode at boot up, select Low to configure your system in normal speed mode. Whichever setting you choose you will still be able to use the turbo switch to toggle between the tow modes during use.

GATE 20A OPTION:

When you set this category as Fast. The A20 signal is controlled by chipset specific method.

MEMORY PARITY CHECK:

Enable or Disable this item according to whether you wish the system to check the memory parity during boot up or not. If you disable this item even if the BIOS encounters a parity error it will be ignored. We recommend that you always enable the item in order to ensure that the memory is good each time you turn your PC on.

TYPEMATIC RATE SETTING:

Enable this item if you wish to be able to configure the characteristics of your keyboard. Typematic refers to the way in which characters are entered repeatedly if a key is held down. For example, if you press and hold down the "A" key, the letter "a" will repeatedly appear on your screen on your screen until you release the key. This item is disable by default.

TYPEMATIC RATE (CHARS-SEC):

You can use this item to define the typematic rate delay of your keyboard, i.e. the rate at which characters will be repeated when a key held down.

TYPEMATIC DELAY (MSEC):

You can use this item to define the period after which the typematic function become active i.e. how long after you press a key the characters will be repeated.

SECURITY OPTION:

This category allows you to limit access to the system and Setup, or just to Setup. To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

5-5 CHIPSET FEATURES SETUP

Choose the "CHIPSET FEATURES SETUP" from the main menu, the screen shown as below.

ROM PCI/ISA BIOS (2A4KDP6L) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.	
Auto Configuration	: Enable
AT-BUS Clock	: CLK/4
DRAM Read Timing	: Normal
DRAM Write Timing	: Normal
SRAM Read Timing	: 3-1-1-1
SRAM Write Timing	: 0 Wait
Hidden Refresh	: Disabled
Memory Hole 15M-16m	: Disabled
ISA I/O Recovery	: Enabled
Fast-Back-to-Back	: Enabled
Esc : Quit ↑↓→← : Select Item F1 : Help Pu/Pd+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

Chipset Features Setup

By moving cursor to the desired selection and pressing < F1 > key, the all options for the desired selection will be displayed for choice. User has to use select the desired option.

AUTO CONFIGURATION FUNCTION:

When this option is Enabled, the BIOS automatically configures cache and clock settings based on detection of the CPU clock speed, you cannot change the other parameters. Set this option to Disabled to manually set DRAM, cache and I/O bus clock operating parameters.

DRAM TIMING OPTION:

The number of wait states added on reads to DRAM. Fewer wait states improve performance.

SRAM TIMING OPTION:

The number of wait states added on reads to SRAM. Fewer wait states improve performance.

AT BUS CLOCK:

Defines the clock value for AT bus. Usually, AT bus clock should be programmed to 8Mhz, e.g. when system clock is 33Mhz, choose 4/1 CLKIN. All values derived from CLKIN is called synchronous mode. The 7.159Mhz option is called asyc. mode.

5-6 POWER MANAGEMENT SETUP

Choose "POWER MANAGEMENT SETUP" option on the main menu, a display will be shown on screen as below :

ROM PCI/ISA BIOS (2A4KDP6L)			
POWER MANAGEMENT SETUP			
AWARD SOFTWARE, INC.			
Power Management	:Disable	IRQ5 (LPT 2)	: ON
PM Control by APM	:Yes	IRQ6 (Floppy Disk)	: ON
Video Off Option	Susp,Stby->off	IRQ7 (LPT 1)	: ON
Video Off Method	:V/H Sync+Blank	IRQ8 (RTC Alarm)	: OFF
Modem Use IRQ	: 3	IRQ9 (IRQ Redir)	: ON
		IRQ10 (Reserved)	: OFF
		IRQ11 (Reserved)	: OFF
** PM Timers**		IRQ12 (PS/2 Mouse)	: ON
HDD Standby Timer	:Disabled	IRQ13 (Coprocessor)	: OFF
Doze Timer Select	:Disabled	IRQ14 (Hard Disk)	: ON
Standby Timer Select	:Disabled	IRQ15 (Reserved)	: OFF
Inactive Timer Select	:Disabled		
** PM Events **			
VGA	:OFF		
FDD(3FXh)	:ON		
LPT & (1FXh)	:LPT/COM		
HDD (1FXh)	:ON		
NMI	:OFF		
IRQ3 (COM 2)	:ON		
IRQ4 (COM 1)	:ON		
		Esc : Quit	↑↓→← : Select Item
		F1 : Help	Pu/Pd/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Power Management Setup

This category determines how much power consumption for system after selecting below items. Default value is Disable. Having made all the settings above, press < Esc > to return to the main menu.

POWER MANAGEMENT:

This item determines how much power consumption for system. When you define it as Max Saving are used all timers MIN value.

PM CONTROL BY APM:

When this item is set to be YES, the system BIOS will wait for APM's prompt before it enter any PM mode e.g. DOZE, STANDBY or SUSPEND. If APM is installed, & if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode.

DOZE MODE TIMEOUT:

Sets the time interval after inactivity when the system enters Doze mode. This options as following, from 10 Sec to 2 Hours or Disabled.

STANDBY MODE TIMEOUT:

Sets the time interval after system inactivity when the system enters STANDBY mode. This options as following: From 30 Sec to 2 Hours or Disabled.

SUSPEND MODE TIMER:

Sets the time interval after system inactivity when the system enters SUSPEND mode. This options as following: From 30 Sec to 2 Hours or Disabled.

5-7 PCI CONFIGURATION SETUP

Choose “PCI CONFIGURATION SETUP” from the main menu, a display will be shown on screen as below:

ROM PCI/ISA BIOS (2A4KDP6L)			
PCI CONFIGURATION			
AWARD SOFTWARE, INC.			
PnP BIOS Auto-Config	: Disabled	CPU to PCI Write Buffer	: Enabled
Slot 1 Using INT#	: AUTO	CPU to PCI Byte Merge	: Enabled
Slot 2 Using INT#	: AUTO	PCI to DRAM Buffer	: Enabled
Slot 3 Using INT#	: AUTO		
1st Available IRQ	: 10		
2nd Available IRQ	: 11		
3rd Available IRQ	: 12		
4th Available IRQ	: 9		
PCI IRQ Active by	: Level		
PCI IDE 2nd Channel	: Enabled		
PCI IDE IRQ Map To	: PCI-AUTO		
Primary IDE INT#	: A		
Secondary IDE INT#	: B		
		Esc : Quit	↑↓→← : Select Item
		F1 : Help	Pu/Pd/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

PCI CONFIGURATION

You can manually configure the PCI Device's IRQ. Highlight the selected item and pressing <F1> key, then all options for the desired selection will be displayed for choice. User has to use select the desired options. Having made all the above setting according to your configuration. Press <Esc> to return to the main menu.

5-8 LOAD BIOS DEFAULTS

AUTO CONFIGURATION WITH BIOS DEFAULTS

"LOAD BIOS DEFAULTS" loads the default BIOS values. When the diagnostic aid of your system becomes unusable, choose this option and the following message appears :

Load BIOS Default (Y / N) ? Y

To use the BIOS defaults, change the prompt to "Y" and press < Enter >, the CMOS is load automatically when you power on the PC-430.

5-9 LOAD SETUP DEFAULTS

AUTO CONFIGURATION WITH SETUP DEFAULTS

This Main Menu item uses the default SETUP values. Use this option as a diagnostic aid of your system behaves erratically. Choose this item and the following message appears:

Load SETUP Default (Y/N)?Y

To use the SETUP defaults, change the prompt to "Y" and press <Enter> The CMOS is load automatically form SETUP default values:

5-10 INTEGRATED PERIPHERALS

Choose “INTEGRATED PERIPHERALS SETUP” from the main menu, a display will be shown on screen as below:

ROM PCI/ISA BIOS (2A4KDP6L)	
INTEGRATED PERIPHERALS	
AWARD SOFTWARE, INC.	
On-Chip Local Bus IDE : Enabled	
IDE Buffer for DOS & Win : Enabled	
The Second Channel IDE : Enabled	
IDE HDD Block mode : Enabled	
IDE Primary Master PIO : Auto	
IDE Primary Slave PIO : Auto	
IDE Secondary Master PIO : Auto	
IDE Secondary Slave PIO : Auto	
Onboard FDC Controller : Enabled	
Onboard UART 1 : Auto	
Onboard UART 2 : Auto	
Onboard UART 2 Mode : Standard	
Onboard Parallel Port : 378/IRQ7	Esc : Quit ↑↓→← : Select Item F1 : Help Pu/Pd/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
Parallel Port Mode : Normal	

INTEGRATED PERIPHERAL SETUP

By moving the cursor to the desired selection and pressing <F1> key, all the desired options for the desired selection will be displayed for choice. User has to use select the desired option. Having made all the setting according to your selection, press <Esc> to return to the Main Menu.

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 optimal number of block read/writes per sector the drive can support.

IDE PRIMARY MASTER/SLAVE PIO:

IDE SECONDARY MASTER/SLAVE PIO:

The four IDE PIO fields allow you to set a PIO mode (0-4) 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.

ONBOARD FDC CONTROLLER:

Select Enable if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled.

ONBOARD PARALLEL PORT:

Select a logical LPT port address and corresponding interrupt for the physical parallel port.

PARALLEL PORT MODE:

Select an operating mode for the onboard parallel (printer) port. Select Normal unless you are certain your hardware and software both support one of the other available modes.

5-11 PASSWORD SETTING

If you want to enable this item you should choose the "PASSWORD SETTING" option from the main menu, the following message will appear at the center of the screen to assist you in creating a password.

Enter Password:

Type the password, up to eight characters, and press < Enter >. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press < Enter >. You may also press < Esc > to abort the selection and not enter a password.

To disable password, just press < Enter > when you are prompted to enter password. A message will confirm the password being disable. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disabled

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

5-12 IDE HDD AUTO DETECTION

Choose the "IDE HDD AUTO DETECTION" option . The screen will be shown as below.

ROM PCI / ISA BIOS (2A4XDP69)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

MODE	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	
Drive C : (Mb)	0	0	0	0	0	-----

Select Driver C Option (N=Skip) : N

Option	Size	Cyls	Heads	Precomp	Landzone	Sectors	Mode
2(Y)	1277	619	64	0	2476	63	LBA
1	1278	2477	16	65535	2476	63	Normal
3	1277	1238	32	65536	2476	63	Large

Note: Some Oses (like SCO-UNIX) must use "Normal" for installation
ESC: Skip

IDE HDD AUTO DETECTION Screen

AUTO DETECTION

BIOS setup will display all possible modes that supported by the HDD including NORMAL, LBA, & LARGE.

If HDD does not support LBA mode, 'LBA' option will be shown.

If no of cylinders is less then or equal to 1024, no 'LARGE' option will be shown.

Users can select a mode which is appropriate for them.

HDD MODE

The Award BIOS supports 3 HDD mode: NORMAL, LBA, & LARGE

NORMAL mode:

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, heads & sectors for NORMAL mode are 1024, 16, & 63.

no. Cylinder	(1024)
x no. Head	(16)
x no. Sector	(63)
x no. Per sector	(512)

Total: 528 Mega byte

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (logical Block Addressing) mode:

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, head & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, The IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabyte which is obtained by the following formula:

no. Cylinder	(1024)
x no. Head	(255)
x no. Sector	(63)
x no. Per sector	(512)

Total: 8.4 Giga byte

LARGE mode:

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The BIOS provides another alternative to support these kinds of HDD.

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinder is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT 13h in order to access the right HDD address the right HDD address.

Maximum HDD size:

no. Cylinder	(1024)
x no. Head	(32)
x no. Sector	(63)
x no. Per sector	(512)

Total:	1 Giga byte

REMARKS:

To support LBA or LARGE mode of HDDs, there must be some software involved. All these software are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA(LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

5-13 SAVE & EXIT SETUP

When you have completed adjusting all the settings as required, you must have these setting into the CMOS RAM. Select SAVE & EXIT and press the <Enter> key, when you confirm that you wish to save the settings your machine will be automatically rebooted and the changes you have made will be implemented. You may call up the setup program at any time to adjust any of the individual items by pressing the key during boot up. If wish to cancel any changes you have made, select EXIT WITHOUT SAVING and the original setting stored in the CMOS will be retained.

EXPANSION BUS



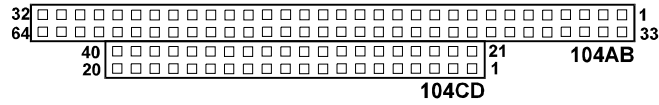
This appendix indicates you the pin assignments.

Section includes:

- PC-104 Connector Pin Assignment
- ISA BUS Pin Assignment

PC-104 CONNECTOR PIN ASSIGNMENT

104AB, 104CD : PC-104 Connector

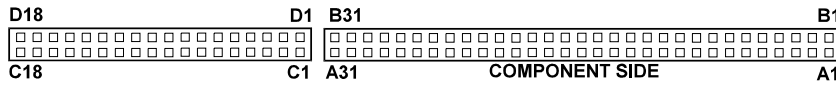


The PC-104 can support multi-pieces of PC-104 modules. This card has two connectors : one (104AB) consists of 64 pin, dual-in-line header, the other one (104CD) consists of 40 pin, dual-in-line header
The pin assignments for connector 104AB & 104CD are as follow:

104AB				104CD			
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	33	IOCHK	1	GND	21	GND
2	REST	34	D7	2	MEMCS16	22	SBHE
3	VCC	35	D6	3	IOCS16	23	LA23
4	IRQ9	36	D5	4	IRQ10	24	LA22
5	-5V	37	D4	5	IRQ11	25	LA21
6	DRQ2	38	D3	6	IRQ12	26	LA20
7	-12V	39	D2	7	IRQ15	27	LA19
8	0WS	40	D1	8	IRQ14	28	LA18
9	+12V	41	D0	9	DACK0	29	LA17
10	GND	42	IOCHRDY	10	DRQ0	30	MEMR
11	SMEMW	43	AEN	11	DACK5	31	MEMW
12	SMEMR	44	A19	12	DRQ5	32	D8
13	IOW	45	A18	13	DACK6	33	D9
14	IOR	46	A17	14	DRQ6	34	D10
15	DACK3	47	A16	15	DACK7	35	D11
16	DRQ3	48	A15	16	DRQ7	36	D12
17	DACK1	49	A14	17	VCC	37	D13
18	DRQ1	50	A13	18	MASTER	38	D14
19	REFRESH	51	A12	19	GND	39	D15
20	CLK	52	A11	20	GND	40	KEY PIN
21	IRQ7	53	A10				
22	IRQ6	54	A9				
23	IRQ5	55	A8				
24	IRQ4	56	A7				
25	IRQ3	57	A6				
26	DACK2	58	A5				
27	TC	59	A4				
28	BALE	60	A3				
29	VCC	61	A2				
30	OSC	62	A1				
31	GND	63	A0				
32	GND	64	GND				

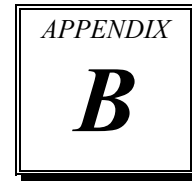
ISA BUS PIN ASSIGNMENT

The ISA BUS for this card is called “Gold Fingers”. It is divided into two sets : one consists of 62 pins; the other consists of 36 pins.
The pin assignments are as follow :



B		A		D		C	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	GND	A1	-I/O CH CHK	D1	-MEMCS16	C1	SBHE
B2	RESET	A2	SD07	D2	-I/OCS16	C2	LA23
B3	+5V	A3	SD06	D3	IRQ10	C3	LA22
B4	IRQ9	A4	SD05	D4	IRQ11	C4	LA21
B5	-5V	A5	SD04	D5	IRQ12	C5	LA20
B6	DRQ2	A6	SD03	D6	IRQ15	C6	LA19
B7	-12V	A7	SD02	D7	IRQ14	C7	LA18
B8	OWS	A8	SD01	D8	-DACK0	C8	LA17
B9	+12V	A9	SD00	D9	DRQ0	C9	-MEMR
B10	GND	A10	-I/O CH RDY	D10	-DACK5	C10	-MEMW
B11	-SMEMW	A11	AEN	D11	DRQ5	C11	SD08
B12	-SMEMR	A12	SA19	D12	-DACK6	C12	SD09
B13	-IOW	A13	SA18	D13	DRQ6	C13	SD10
B14	-IOR	A14	SA17	D14	-DACK7	C14	SD11
B15	-DACK3	A15	SA16	D15	DRQ7	C15	SD12
B16	-DRQ3	A16	SA15	D16	+5V	C16	SD13
B17	-DACK1	A17	SA14	D17	-MASTER	C17	SD14
B18	-DRQ1	A18	SA13	D18	GND	C18	SD15
B19	-REFRESH	A19	SA12				
B20	BCLK	A20	SA11				
B21	IRQ7	A21	SA10				
B22	IRQ6	A22	SA09				
B23	IRQ5	A23	SA08				
B24	IRQ4	A24	SA07				
B25	IRQ3	A25	SA06				
B26	-DACK2	A26	SA05				
B27	T/C	A27	SA04				
B28	BALE	A28	SA03				
B29	+5V	A29	SA02				
B30	OSC	A30	SA01				
B31	GND	A31	SA00				

TECHNICAL SUMMARY



This section introduces you the maps concisely.

Section includes:

- Interrupt Map
- RTC & CMOS RAM Map
- Timer & DMA Channels Map
- I / O & Memory Map

INTERRUPT MAP

IRQ	ASSIGNMENT
0	System TIMER interrupt from TIMER-0
1	Keyboard output buffer full
2	Cascade for IRQ 8-15
3	Serial port 2
4	Serial port 1
5	Parallel port 2
6	Floppy Disk adapter
7	Parallel port 1
8	RTC clock
9	Available
10	Available
11	Available
12	Available
13	Math coprocessor
14	Hard Disk adapter
15	Available

RTC & CMOS RAM MAP

CODE	ASSIGNMENT
00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	Floppy Disk drive type byte
11	Reserve
12	Hard Disk type byte
13	Reserve
14	Equipment byte
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	Date Century byte
33	Information Flag
34-3F	Reserve
40-7f	Reserved for Chipset Setting Data

TIMER & DMA CHANNELS MAP

Timer Channel Map :

Timer Channel	Assignment
0	System timer interrupt
1	DRAM Refresh request
2	Speaker tone generator

DMA Channel Map :

DMA Channel	Assignment
0	Available
1	IBM SDLC
2	Floppy Disk adapter
3	Channel-3 Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

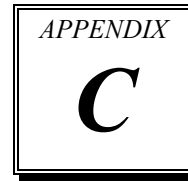
I/O & MEMORY MAP**Memory Map :**

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/ EGA / CGA / MONOCHROME adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFFF	System BIOS ROM
0100000-BFFFFFFF	System extension memory

I/O Map :

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports.
040-05F	Timer control registers.
060-06F	Keyboard interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
278-27F	Parallel port-2
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port-1
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

TROUBLE SHOOTING



This section outlines the error messages that may occur when you operate the system. It also gives you some suggestions on how to solve the problems.

Section includes:

- Trouble Shooting for Error Messages
- Trouble Shooting for POST Code

TROUBLE SHOOTING FOR ERROR MESSAGE

The following information informs you the error messages and the trouble shooting. Please adjust your systems according to the messages below. And make sure all the components and connectors are in proper position and firmly attached. If the errors still encountered, please contact with your distributor for maintenance.

POST BEEP :

Currently there are two kinds of beep codes in BIOS. The one code 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 sounds followed by three short beeps. The other one code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

CMOS BATTERY FAILURE :

When the CMOS battery is out of work or has run out, the user has to replace the whole unit.

CMOS CHECKSUM ERROR :

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

DISPLAY SWITCH IS SET INCORRECTLY :

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the video selection.

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, also make sure the disk is formatted correct device. 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. Assure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER :

When this error occurs. Be sure the cord is exactly installed in the bus. Make sure the correct hard drive type is selected in Setup. Also check 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 check the controller whether in proper Setup. If there are 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 Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

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 the last boot. In EISA mode use Configuration Utility to re-configure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

MEMORY VERIFYING ERROR :

It indicates an error verifying a value 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.

TROUBLE SHOOTING FOR POST CODES

When you power on your PC, and the screen display nothing. You have to insert the POST Card for test. The address for ISA POST port is 80h. Make sure the card is in correct slot. The lists below indicate you the error messages. Please follow the instruction to adjust your system. If the error still occurred, please contact with your distributor for maintenance.

C0 : Turn off OEM specific cache, shadow.....

03 : Initialize all the standard devices with default values Standard devices includes :
DMA controller (8237).
Programmable Interrupt Controller (8259).
Programmable Interval Timer (8254).
RTC chip.

05 : 1.Keyboard Controller Self-Test.
2.Enable Keyboard Interface.

07 : Verifies CMOS's basic R/W functionality.

BE : Program defaults values into chipset according to the MODBINable Chipset Default Table.

C1 : Auto-detection of onboard DRAM & Cache.

C5 : Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster.

08 : Test the first 256K DRAM.

09 : 1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table.
2. OEM specific cache initialization (if needed).

- 0A :** 1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Spurious) Interrupt Handler.
2. Issue CPUID instruction to identify CPU type.
3. Early Power Management initialization (OEM specific).

- 0B :** 1. Verify the RTC time is valid or not.
2. Detect bad battery.
3. Read CMOS data into BIOS stack area.
4. PnP initializations including (PnP BIOS only).
 -Assign CSN to PnP ISA card.
 -Create resource map from ESCD.
5. Assign I/O & Memory for PCI devices (PCI BIOS only).

0C : Initialization of the BIOS Data Area (40 : 0N-40:FF).

- 0D :** 1. Program some of the Chipset's value according to Setup. (Early Setup Value Program).
2. Measure CPU speed for display & decide the system clock speed.
3. Video initialization including Monochrome ,CGA, EGA/VGA. If no display device found, the speaker will beep.

- 0E :** 1. Initialize the APIC (Multi-Processor BIOS only).
2. Test video RAM (If Monochrome display device found).
3. Show messages including :
 -Award Logo, Copyright string, BIOS Date code & Part No.
 -OEM specific sign on messages.
 -Energy Star Loge (Green BIOS only).
 -CPU brand, type & speed.
 -Test system BIOS checksum (Non-compress Version only).

0F : DMA channel 0 test.

10 : DMA channel 1 test.

11 : DMA page registers test.

14 : Test 8254 Timer 0 Counter2.

- 15** : Test 8259 interrupt mask bits for channel 1.
- 16** : Test 8259 interrupt mask bits for channel 2.
- 19** : Test 8259 functionality.
- 30** : Detect Base Memory & Extended Memory Size.
- 31** : 1. Test Base Memory from 256K to 640K.
2. Test Extended Memory from 1M to the top of memory.
- 32** : 1. Display the Award Plug & Play BIOS Extension message (PnP BIOS only).
2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port....according to setup value.
- 3C** : Set flag to allow users to enter CMOS Setup Utility.
- 3D** : 1 Initialize Keyboard.
2 Install PS2 mouse.
- 3E** : Try to turn on Level 2 cache.
Note : Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h.
- BF** : 1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program).
2. If auto-configuration is enabled, programmed the chipset with pre-defined value in the MODBINable Auto-Table.
- 41** : Initialize floppy disk drive controller.
- 42** : Initialize Hard drive controller.
- 43** : If it is a PnP BIOS, initialize serial & parallel ports.
- 45** : Initialize math coprocessor.

- 4E** : If there is any error detected (such as video, kb....), show all the error messages the screen & wait for user to press <F1> key.
- 4F** : 1. If password is needed, ask for password.
2. Clear the Energy Star Logo (Green BIOS only).
- 50** : Write all CMOS values currently in the BIOS stack area back into the CMOS.
- 52** : 1. Initialize all ISA ROMs.
2. Later PCI initializations (PCI BIOS only).
 -assign IRQ to PCI devices.
 -initialize all PCI ROMs.
3. PnP Initializations (PnP BIOS only).
 -assign I/O, Memory, IRQ & DMA TO PnP ISA devices.
 -initialize all PnP ISA ROMs.
4. Program shadows RAM according to Setup settings.
5. Program parity according to Setup setting.
6. Power Management Initialization.
 -Enable/Disable global PM.
 -APM interface initialization.
- 53** : 1. If it is NOT a PnP BIOS, initialize serial & parallel ports.
2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value.
- 60** : Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting.
- 61** : 1. Try to turn on Level 2 cache.
 Note : if L2 cache is already turned on in POST 3D, this part will be skipped.
2. Set the boot up speed according to Setup setting.
3. Last chance for Chipset initialization.
4. Last chance for Power Management initialization (Green BIOS only).
5. Show the system configuration table.

- 62** : 1. Setup daylight saving according to Setup value.
2. Program the NumLock, typematic rate & typematic speed according to Setup setting.
- 63** : 1. If there is any changes in the hardware configuration, update the ESCD information (PnP BIOS only).
2. Clear memory that have been used.
3. Boot system via INT 19H.
- FF** : System Booting. this means that the BIOS already pass the control right to the operating system.

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