

PEB-1431V

Embedded System Board

User's Manual

P/N: B8980770 Version 1.0

Copyright © Portwell, Inc., 2002. All rights reserved.
All other brand names are registered trademarks of their respective owners.

EC Declaration of Conformity (To Be Added)

For the following equipment:

Product Name:

Model Name:

Trade Name:

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The equipment was evaluated and passed the test, the following standards were applied :

EMC :	EN 55022	(1994/ A1:1995 Class A)
	EN 50082-2	(1991)
	EN 61000-4-2	(1995)
	EN 61000-4-3	(1996)
	EN 61000-4-4	(1995)
	EN 61000-3-2	(1995)
	EN 61000-3-3	(1995)

The following manufacturer is responsible for this declaration :

Portwell, Inc.
(Company Name)

3F, No.88, Sec.1, Nei-Hu Rd., Taipei, Taiwan, R.O.C.
(Company Address)

Taipei, R.O.C.
Place

Date

Legal Signature of
Authorized Person

Table of Contents

How to Use This Manual

Chapter 1 System Overview	1-1
1.1 Introduction.....	1-1
1.2 Check List	1-2
1.3 Product Specifications.....	1-2
1.3.1 Mechanical and Environmental	1-4
1.3.2 Mechanical Drawing.....	1-4
1.4 System Architecture	1-5
1.4.1 TPC Atlas.....	1-5
1.4.2 STPC Atlas Integrated Graphics.....	1-5
1.4.3 PC/104 Interface.....	1-5
1.4.4 SDRAM Interface.....	1-5
1.4.5 IDE Interface	1-5
1.4.6 STPC Atlas and Winbond W83977F-A.....	1-6
1.4.7 Compact Flash Interface	1-6
Chapter 2 Hardware Configuration	2-1
2.1 Jumper Setting.....	2-1
2.2 Connector Allocation	2-2
Chapter 3 System Installation.....	3-1
3.1 Graphic Driver installation for STPC Atlas integrated GRAPHICS.....	3-1
3.2 IDE Interface.....	3-1
3.3 SDRAM Interface	3-1
3.4 Compact Flash interface	3-2
3.5 Watch Dog Timer Programming	3-2
Chapter 4 BIOS Setup Information.....	4-1
4.1 Entering Setup.....	4-1
4.2 Main Menu	4-2
4.3 Standard CMOS Features Setup	4-3
4.4 IDE Adaptors Setup Menu	4-4
4.5 Advanced BIOS Features Setup.....	4-6
4.6 Advanced Chipset Features Setup	4-8
4.7 Integrated Peripherals.....	4-10
4.8 Power Management Setup	4-12
4.9 PnP/PCI Configuration Setup	4-14
4.10 Default Menu	4-16
4.11 Setup Password.....	4-16
4.12 Exiting Seleting	4-17
4.13 POST Messages	4-17
4.14 BIOS POST Check Point List	4-22
4.15 Flash BIOS Utility	4-28

Appendix A

Appendix B

How to Use This Manual

The manual describes how to configure your PEB-1431V system to meet various operating requirements. It is divided into four chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and CF flash disk to get a safe installation and provides a guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : <http://www.portwell.com/>.

Chapter 1

System Overview

This manual describes in detail the Portwell PEB-1431V PC/104 Embedded System Board. This manual aims to provide all necessary information to users who may interest in using all PEB-1431V's functions.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

We strongly recommend that you study this manual carefully before attempting to alter PEB-1431V's configurations. In the case, something in this manual is not clear or users have any suggestion on this manual. Contact our Customer Service department with the relevant details. Portwell Technical Service Group's web site is <http://www.portwell.com/>.

1.1 Introduction

The PEB-1431V is a compact PC/104 CPU Module that equips with STPC Atlas low-power processor and integrated VGA.

This model is incredibly compact with flexible extension. There is a PC/104 interface, which is cable to add extra devices. For an embedded system, Watch Dog Timer is also one standard feature. It helps to free the system from undesired hanging without human interface. This is unique for many Embedded System applications.

Other features include a built-in TFT LCD interface, a compact Flash socket for type II Compact Flash storage card, two serial ports, one parallel port, and on board 16MB of SDRAM.

1.2 Check List

The PEB-1431V package includes the following basic items accompany with this manual.

- 1 PEB-1431V All-in-One STPC Atlas Computing Module
- 1 User's Manual
- 1 CD-ROM contains the followings:
 - VGA drivers and utilities
 - Other driver and utilities (if have)
- Cable set includes the followings:
 - 1 PS/2 keyboard and mouse Y cable (10-pin, Mini-DIN)
 - 1 IDE 2.5" HDD cable (44-pin, pitch 2.0mm, connect two IDE devices)
 - 1 FDD cable (34-pin, pitch 2.0mm)
 - 1 bracket with one Printer port cable (26-pin, pitch 2.0mm)

If any of these items is damaged or missed, please contact your vendor and save all packing materials for future replacement and maintenance.

1.3 Product Specifications

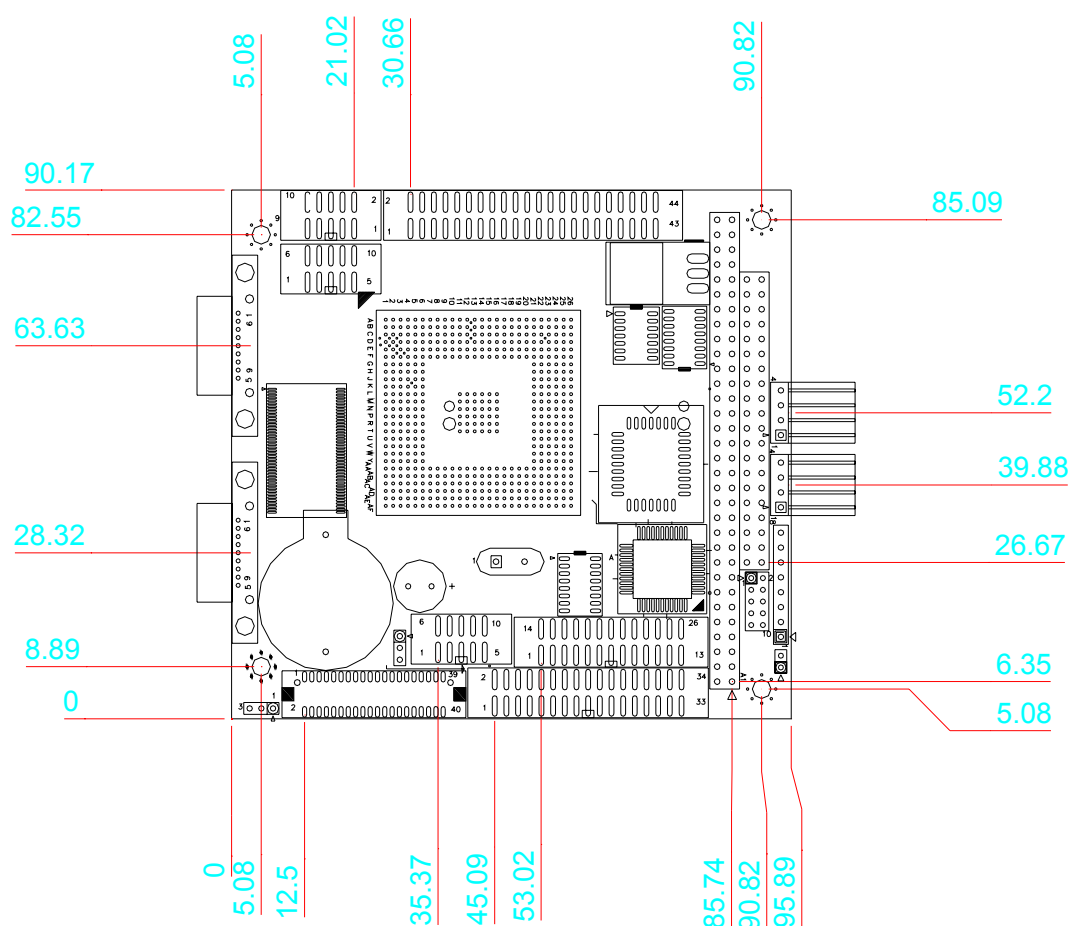
- **Main processor**
Onboard STPC Atlas 133MHz, BGA package
- **BIOS**
AMI 256KB Flash BIOS
- **Chipset**
STPC Atlas integrated
- **I/O chipset**
Winbond W83977F-A
- **Memory**
Onboard 16 Mbytes SDRAM
- **Enhanced IDE**
Supports two IDE devices. Supports PIO mode 3 & 4 with data transfer rate up to 22MB/sec.
- **FDD interface**
Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
- **Parallel port**
Interface for bi-directional parallel port x 1. Supports SPP, ECP, and EPP modes

- **Serial port**
One external D-SUB 9 connector supports RS-232
One external D-SUB 9 connector supports RS-422/485
- **KB/Mouse connector**
Internal header PS2 Keyboard/Mouse connector x 1
- **Watchdog timer**
Support watchdog timer from 0.5 to 64 sec by hardware count & software trigger
- **DMA**
7 DMA channels (8237 equivalent)
- **Interrupt**
15 interrupt levels (8259 equivalent)
- **Power management**
I/O peripheral devices support power saving and doze/standby/suspend modes
APM 1.2 compliant
- **Display chipset**
STPC Atlas integrated
- **Display memory**
Shared display memory up to 4MB
- **Display type**
Supports interlaced or non-interlaced CRT
Support for VGA and SVGA active matrix TFT flat panels with 9,12,18-bit interface
- **Resolution**
Up to 1280x1024x75Hz CRT display
Programmable panel size up to 1024 by 1024 pixels
- **SSD interface**
One CF socket supports Type II Compact Flash Card (Support 8-320MB Compact flash)
- **Expansion interface**
One 8-bit 104-pin connector onboard
- **Power connectors**
4-pin FDD x 2

1.3.1 Mechanical and Environmental

- Power supply voltage: $\pm 5V$, $\pm 12V$
- Typical power requirement: $+5V @ 1.6A$
- Operating temperature: 32 to 131°F (0 to 55°C)
- Board size: 96mm x 90mm

1.3.2 Mechanical Drawing



1.4 System Architecture

1.4.1 TPC Atlas

The STPC Atlas system on chip provide the basic functionality and buses of the system:

- Interface to SDRAM, 64-bit data bus. PCI interface provided by STPC Atlas.
- VGA controller with video memory shared with system memory (UMA).
- IDE interface support Ultra DMA. Tow connectors are provided: A 44 pin pitch 2.0mm standard IDE interface on the primary controller and a Compact Flash connector on the secondary controller.

1.4.2 STPC Atlas Integrated Graphics

The STPC Atlas integrated Graphics is very cost efficient since almost no additional components are required. This is achieved by using the SDRAM as frame-buffer and by integrating the graphics engine. It provides both CRT and Panel display interfaces.

1.4.3 PC/104 Interface

The STPC Atlas system on chip provides an ISA Bus that may operate in master or slave mode. The bus master has the ability to generate bus cycles and thereby transfer data without involvement of the CPU or DMA (Direct memory access). A 104-pin PC/104 connector is equipped onboard for future expansion.

1.4.4 SDRAM Interface

This on board 16 MB SDRAM are recommended to use.

1.4.5 IDE Interface

A primary as well as a secondary IDE controller is provided by the STPC Atlas which supports Ultra DMA mode and PCI bus mastering for the data transfer.

Access to these controllers is provided by a standard IDE 44-pin connector and a Compact Flash type II connector on the solder side of this board.

1.4.6 STPC Atlas and Winbond W83977F-A

The STPC Atlas integrated Super I/O chip provides most input / output interfaces of the system as the following:

- COM 1. A RS-232 driver is used whereby RS-232 are provided. Driver uses charge pumps whereby only +5V is required
- COM 2. A RS-422/485 driver is used whereby RS-422/485 are provided. Selection of the mode is made by hardware jumper
- LPT. Support for SPP, EPP and ECP modes
- Floppy interface
- Keyboard interface
- PS/2 Mouse interface
- Provision of buffered ISA data bus for BIOS
- NVRAM with battery backup for BIOS configuration and real time clock

1.4.7 Compact Flash Interface

A Compact Flash type II connector is connected to the secondary IDE controller. The Compact Flash storage card is IDE compatible. It is an ideal replacement for standard IDE hard drives. The solid-state design offers no seek errors even under extreme shock and vibration conditions. The Compact Flash storage card is extremely small and highly suitable for rugged environments, thus providing an excellent solution for mobile applications with space limitations. It is fully compatible with all consumer applications designed for data storage PC card, PDA, and Smart Cellular Phones, allowing simple use for the end user. The Compact Flash storage card is O/S independent, thus offering an optimal solution for embedded systems operating in non-standard computing environments. The Compact Flash storage card is IDE compatible and offers various capacities.

The following block diagram shows the architecture and main components of PEB-1431V.

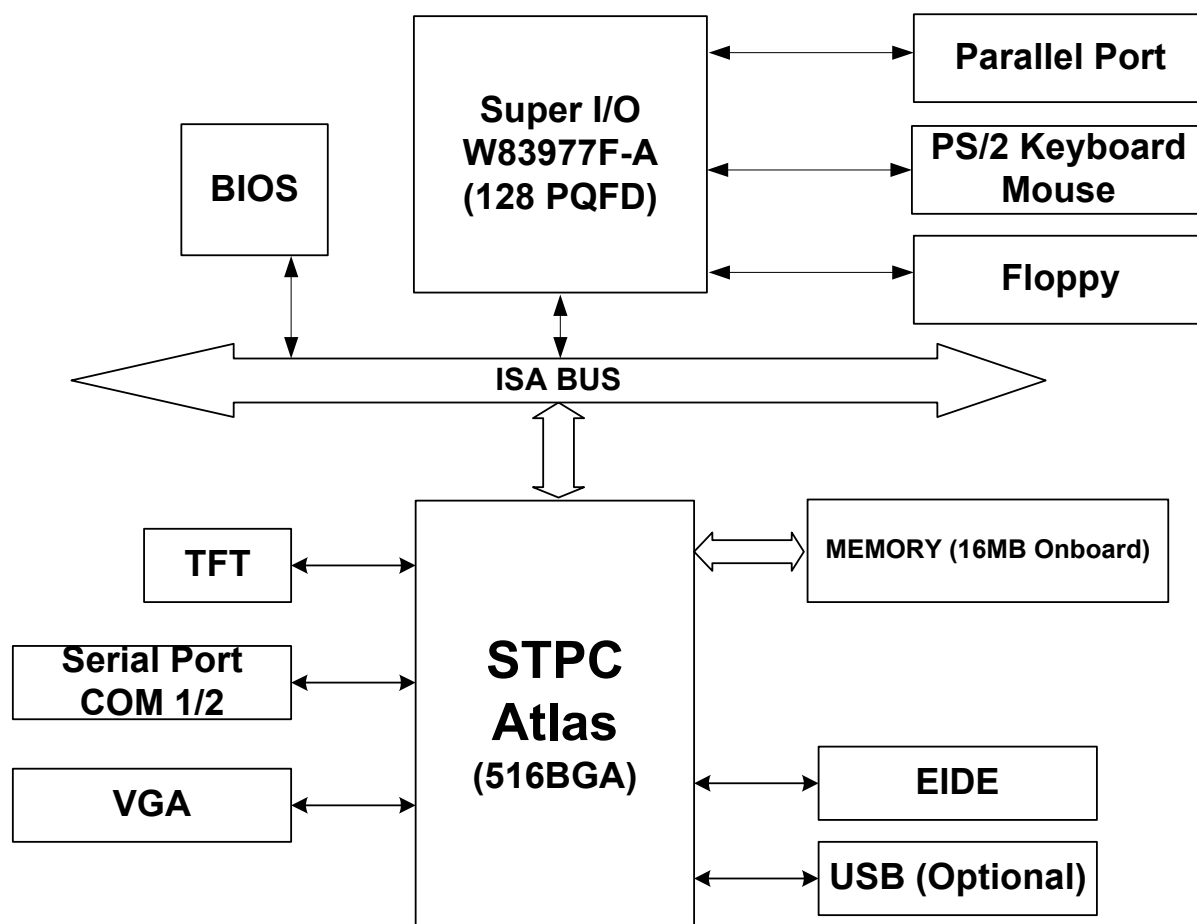


Figure 1-1 PEB-1431V System Block Diagram

The two key components on board are the STPC Atlas and the Windbond Super I/O chip. These two devices provide the ISA and PCI bus to which all the major components are attached.

Chapter 2

Hardware Configuration

This chapter indicates jumpers', headers' and connectors' location. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

The jumper settings are used to select options for different features. The adjustment made aims to let users customize PEB-1431V's features. In the following sections, **short** means covering a jumper cap over jumper pins; **open** or **NC** (Not Connected) means removing a jumper cap from jumper pins.

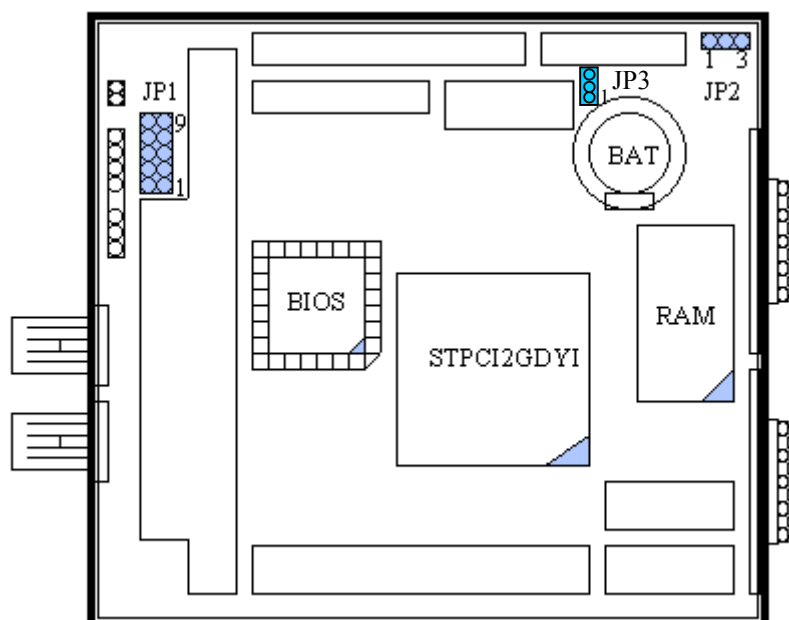


Figure 2-1 Jumper Location Diagram

JP1: Watch Dog Time Function

JP1	Function
1-2 Short	Disable WDT Function ★
1-2 Open	Enable WDT Function
3-4 Short	Allocate I/O port 543/343
3-4 Open	Allocate I/O port 533/033 ★

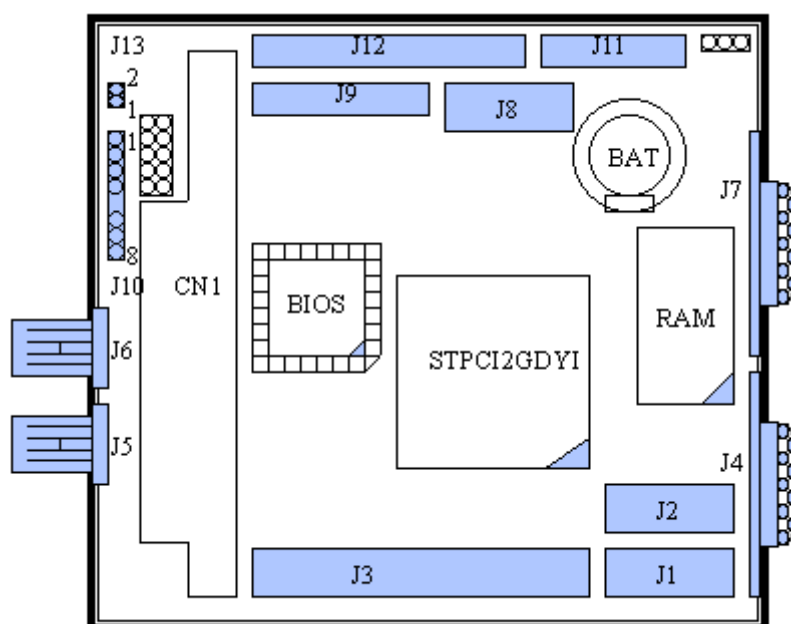
5-6	7-8	9-10	Time-out Interval
Short	Short	Short	0.5 Sec
Short	Short	NC	1 Sec★
Short	NC	Short	2 Sec
Short	NC	NC	4 Sec
NC	Short	Short	8 Sec
NC	Short	NC	16 Sec
NC	NC	Short	32 Sec
NC	NC	NC	64 Sec

JP2: CMOS Clear

JP2	Function
1-2 Short	Normal ★
2-3 Short	Clear CMOS

JP3: COM2 RS-422/485 Selection Jumper

JP3	Function
1-2 Short	COM2 RS-422Enable ★
2-3 Short	COM2 RS-485Enable

2.2 Connector Allocation**Figure 2-2 Connector Location Diagram**

Connector's Function List

Connector Location	Description
J1	Two USB Connector
J2	PS/2 Keyboard& Mouse connector
J3	IDE Interface Connector
J4	D-SUB 9 pin connector (COM1)
J5	+5V, +12V Power Connector
J6	-5V, -12V power connector
J7	D-SUB 9 pin connector (COM2)
J8	VGA Connector
J9	Parallel Port Connector
J10	CPLD 8-pin connector
J11	TFT LCD Panel Connector
J12	Floppy disk interface
J13	Reset Header
J14	Compact Flash Socket

Pin Assignments of Connectors**J1: Two-port USB Interface Connector (2 x 5 shrouded header)**

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	GND
3	USBD0-	4	GND
5	USBD0+	6	USBD1+
7	GND	8	USBD1+
9	GND	10	+5V

J2: PS/2 Keyboard/Mouse Connector (2 x 5 shrouded header)

PIN No.	Signal Description
1	Mouse Data
2	NC
3	GND
4	+5V
5	Mouse Clock
6	Keyboard Data
7	NC
8	GND
9	+5V
10	Keyboard Clock

J3: IDE Interface Connector (44 pin)

PIN No.	Signal Description	PIN No.	Signal 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	Pull-down
29	DMA ACK#	30	Ground
31	INT REQ	32	N/C
33	SA1	34	CBLID#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground
41	+5V	42	+5V
43	Ground	44	Ground

J4: Serial Port-1 D-SUB 9 pin Connector

PIN No.	Signal Description
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 (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

J5: +5V, +12V Power Connector

PIN No.	Signal Description
1	+12V
2	GND
3	GND
4	+5V

J6: -5V, -12V Power Connector

PIN No.	Signal Description
1	-12V
2	GND
3	GND
4	-5V

J7: Serial Port-2 D-SUB 9 pin Connector

PIN No.	Signal Description
1	RS-422 TX- / RS-485 TX-
2	RS-422 RX+
3	RS-422 TX+ / RS-485 TX+
4	RS-422 RX-
5	Ground (GND)
6	N/C
7	N/C
8	N/C
9	N/C

J8: VGA Connector (2 x 5 shrouded header)

PIN No.	Signal Description
1	R
2	G
3	B
4	VSYNC
5	HSYNC
6	VGA_I2CSCL
7	Ground
8	VGA_I2CSDA
9	Ground
10	N/C

J9: Parallel Port Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J10: CPLD 8-pin Connector

PIN No.	Signal Description
1	+5V
2	TDO
3	TDI
4	N/C
5	N/C
6	TMS
7	Ground
8	TCK

J11: TFT LCD Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	GND
3	R0	4	R1
5	R2	6	R3
7	R4	8	R5
9	GND	10	GND
11	G0	12	G1
13	G2	14	G3
15	G4	16	G5
17	GND	18	GND
19	B0	20	B1
21	B2	22	B3

23	B4	24	B5
25	GND	26	GND
27	FPLINE	28	FPFRAME
29	DE	30	DCLK
31	N/C	32	N/C
33	TFT PWM	34	N/C
35	VCC	36	+12V
37	VCC	38	+12V
39	TFT_ENVCC	40	TFT_ENVDD

J12: FDC Interface Connector

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

J13: Reset Header

PIN No.	Signal Description
1	RESET
2	GND

Chapter 3

System Installation

This chapter provides you with instructions on how to set up your computer system using PEB-1431V Embedded System Board. The additional information shows you how to install graphic in Operating System.

3.1 Graphic Driver installation for STPC Atlas integrated GRAPHICS

The STPC Atlas integrated Graphics is very cost efficient since almost no additional components are required. This is achieved by using the SDRAM as frame-buffer and by integrating the graphics engine and display interface. This controller provides both CRT and Panel display interfaces.

Driver Support

PEB-1431V provides one CD-Title to support on-board VGA device drivers in various operating systems. Before installing the device driver, please see the reference files in each sub-directory. **If you have problems to install drivers directly from CDROM, please copy the files into your hard drive before you proceed with the driver installation.**

- **VGA:** This driver supports Windows-4.0, Windows-9X, Linux and QNX.

3.2 IDE Interface

A primary IDE controller is provided by the STPC Atlas system on chip, which supports Ultra DMA mode and PCI bus mastering for the data transfer.

Access to these controllers is provided by a standard IDC 44-pin connector and a Compact Flash type II connector on the solder side of this board.

3.3 SDRAM Interface

This board 16MB SDRAM are recommended to use.

3.4 Compact Flash interface

A Compact Flash type II connector is connected to the secondary IDE controller. The Compact Flash storage card is IDE compatible. It is an ideal replacement for standard IDE hard drives. The solid-state design offers no seek errors even under extreme shock and vibration conditions. The Compact Flash storage card is extremely small and highly suitable for rugged environments, thus providing an excellent solution for mobile applications with space limitations. It is fully compatible with all consumer applications designed for data storage PC card, PDA, and Smart Cellular Phones, allowing simple use for the end user. The Compact Flash storage card is O/S independent, thus offering an optimal solution for embedded systems operating in non-standard computing environments. The Compact Flash storage card is IDE compatible and offers various capacities.

3.5 Watch Dog Timer Programming

There are one manners to activate the Watch-Dog Timer (WDT) function. You can utilize hardware jumper setting and programmed by software command. After this feature is enabled, a system reset will be generated unless an application triggers the timer periodically within time-out period. This allows the system to restart in an orderly way in case of any abnormal condition is found.

This WDT comes with 8 possible ranges of time intervals from 0.5 s to 64 sec., which can be adjusted by setting jumper positions. It could be enabled and programmed by reading I/O port 0533H or 0543H to issue trigger continuously, and disabled by reading I/O port 0033H or 0343H. A tolerance of 30% timer limit must be considered. For instance, if the time-out interval is set to 1second, the WDT trigger command must be issued within 700ms at least.

The below example gives you a reference algorithm for WDT programming via I/O port 0533H and 0033H in your application program:

Enable WDT

```
MOV    DX, 0533H
IN     AL, DX
```

Re-trigger WDT

```
MOV    DX, 0533H
IN     AL, DX
```

Disable WDT

```
MOV    DX, 0033H
IN     AL, DX
```

Chapter 4

BIOS Setup Information

PEB-1431V is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PEB-1431V communicate with peripheral devices and check its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message “Hit if you want to run SETUP” appears, press key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try “COLD START” again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from “WARM START” by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to continue, to enter SETUP

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - / PU / PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from nine setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix – Award BIOS
CMOS Setup Utility.

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations	Load Fail-Safe Defaults Load Optimized Defaults Set Password Save & Exit Setup Exit Without Saving
Esc: Quit F9: Menu in BIOS ↑ ↓ ← →: Select Item F10: Save & Exit Setup	

4.3 Standard CMOS Features Setup

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

■ Screen shot

Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

Standard CMOS Features		Item Help
Date (mm:dd:yy)	: Tue, Oct 1 2002	Menu Level ► Change the date, month, Year and century
Time (hh:mm:ss)	: 16:51:23	
IDE primary Master	: Press Enter	
IDE primary Slave	: None	
IDE Secondary Master	: None	
IDE Secondary Slave	: None	
Drive A	: [1.44M, 3.5 in.]	
Drive B	: [None]	
Video	: [EGA/VGA]	
Halt On	: [All, But Keyboard]	
Base Memory	: 640K	
Extended Memory	: 11264K	
Total Memory	: 12288K	
↑↓→←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1: General Help F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults		

■ Menu selections

Item	Options	Description
Date	Mm:dd:yy	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	Hh:mm:ss	Set the system time
IDE Primary Master	Options are in its sub menu	Press <enter> to enter sub menu of details options
IDE Primary Slave	Options are in its sub menu	Press <enter> to enter sub menu of details options
IDE Secondary Master	Options are in its sub menu	Press <enter> to enter sub menu of details options
IDE Secondary Slave	Options are in its sub menu	Press <enter> to enter sub menu of details options

Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	11264K	Displays the amount of extended memory detected during boot up
Total Memory	12288K	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or CDROM drive. It uses a separate sub menu to configure each hard disk drive.

■ Screen shot

Phoenix- AwardBIOS CMOS Setup Utility IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master Access Mode	Auto Auto	Menu Level ➤➤
Capacity	20491 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	39703	
Head	16	
Precomp	0	
Landing Zone	39702	
Sector	63	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Menu selections

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features Setup

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

■ Screen shot

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	: Disabled	Item Help
First Boot Device	: Floppy	Menu Level ►
Second Boot Device	: HDD-0	
Third Boot Device	: CDROM	
Boot Other Device	: Enable	
Boot Up NumLock Status	: On	
Security Option	: Setup	
OS Select For DRAM > 64MB	: Non-OS2	
Video BIOS Shadow	: Enabled	
C8000 - CBFFF Shadow	: Disable	
CC000 - CFFFF Shadow	: Disable	
D0000 - D3FFF Shadow	: Disable	
D4000 - D7FFF Shadow	: Disable	
D8000 - DBFFF Shadow	: Disable	
DC000 - DFFFF Shadow	: Disable	
↑↓→←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1:General Help F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults		

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

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

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Note:

Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand.

First Boot Device/Second Boot Device/Third Boot Device

The BIOS attempts to load the operating system from the floppy disk first, then from Hard Disk 0, from CD-ROM last.

The choice: Floppy, LS120, HDD, CDRom, HDD-0, HDD-1, HDD-2, Disabled.

Boot Other Device

The BIOS load the operating system from other device that you choice.

The choice: Enable, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: On, Off.

Security Option

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 the prompt.

Note :

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.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

Shadow Memory (from address C8000 – DFFFF)

Each of segments provides options “Disabled” and “Enabled” for faster adapter’s ROM execution. However this shadow function is Chipset oriented and dependent on system hardware feature. Select “Enabled” to enable shadowing function for each memory segment.

4.6 Advanced Chipset Features Setup

This section allows you to configure the system based on the specific features of the chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM (SDRAM) . It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. 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.

■ Screen shot

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

Auto Configuration	: Disabled	Item Help
Memory Hole (15M - 16M)	: Disabled	Menu Level ►
SDRAM CAS Latency Time	: 3	
SDRAM RAS Precharge Time	: 2	
SDRAM RAS to CAS Delay	: 2	
Video Memory Size	: 4.0 M	
CPU Internal Cache	: Enabled	
↑↓→←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1: General Help F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults		

Auto Configuration

This item allows you to enable/disable auto configuration.

The choice: Enabled, Disabled.

Memory Hole (15-16M)

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Enabled, Disabled.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

SDRAM CAS Latency Time

This option controls the number of SCLKs between the times a read command is sampled by the SDRAM and the time memory controller chipset samples correspondent data from the SDRAMs.

The choice: 2, 3 SCLKs.

SDRAM RAS Precharge Time

This option controls the number of SCLKs for RAS# precharge. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance.

The choice: 2, 3 SCLKs.

SDRAM RAS-to-CAS Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to 3 SCLKs.

The choice: 2, 3 SCLKs.

Video Memory Size

The choice: None, 512K, 1.0M, 2.0M, 4.0M.

CPU Internal Cache

This option is used to enable or disable CPU L1 cache. Set this option to "enabled" to Acquire better system performance.

4.7 Integrated Peripherals

■ **Screen shot**

Phoenix - AwardBIOS CMOS Setup Utility

Integrated Peripherals Features

IDE HDD Block Mode	: Enabled	Item Help Menu Level ►
Onboard Serial Port 1	: 3F8/IRQ4	
Onboard Serial Port 2	: 2F8/IRQ3	
Onboard FDC Controller	: Enabled	
Onboard Serial Port 3	: 3E8	
Serial Port 3 Use IRQ	: IRQ10	
Onboard Serial Port 4	: 2E8	
Serial Port 4 Use IRQ	: IRQ9	
Onboard Parallel Port	: 378	
Parallel Port Use IRQ	: IRQ5	
Parallel Port Mode	: SPP	
LPT ECP Mode Use DMA	: 3	

↑ ↓ → ←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1: General Help
 F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults

IDE HDD Block Mode

This item allows you to enable/disable IDE HDD Block Mode. The function is to collect the data that is nearby the one being read and leave them in the system buffer. Buffered data can be used with faster transmission rate so as to enhance system performance.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Display address and corresponding interrupt for the first and second serial ports.
Port1: 3F8/IRO4, Port2: 2F8/IRO3.

The choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto.

Onboard FDC Controller

This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The choice: Enabled, Disabled.

Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel (printer) port.

The choice: 378H, 278H, 3BCH, Disabled.

Parallel Port Use IRQ

Select a interrupt number for the parallel (printer) port.

The choice: IRQ5, IRQ7, IRQ10, IRQ11.

Parallel Port Mode

Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode.

The choice: SPP, ECP+EPP1.7, EPP1.7+SPP, EPP1.9+SPP, ECP, ECP+EPP1.9, and PIRNTER.

LPT ECP Mode Use DMA

Select a proper DMA channel for onboard ECP Mode parallel port.

The choice: 0, 1, 3.

4.8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

■ Screen shot

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

Power Management	: User Define	Item Help
PM Control by APM	: Yes	Menu Level ►
Video Off Option	: Susp,Stby -> Off	
Video off Method	: V/H SYNC+Blank	
HDD Power Down	: Disabled	
Doze Mode	: Disabled	
Standby Mode	: Disabled	
Suspend Mode	: Disabled	
DMA Request (DRQ)	: Disabled	
PCI master device (PCIM)	: Disabled	
Parallel I/O (PIO)	: Disabled	
Serial I/O (SIO)	: Disabled	
↑↓→←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1: General Help F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults		

Power Management

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

There are three selections for Power Management, three of which have fixed mode settings.

The choice: User Define, Min Saving, Max Saving.

PM Control by APM

When enabled, an Advanced Power Management device will be activated.

The choice: No, Yes.

Video off Option

This determines the mode in which video controller.

The choice: Susp, Stby→off, All Modes →off, Always on or Suspend →off ".

Video off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Initial display power management signaling.

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.

The choice: Disabled, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Doze Mode

Monitor blanked when the system enters any power saving mode.

The choice: Disabled, 50 MS, 100 MS, 500MS, 4 Second, 8 Second, 16 Second.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

The choice: Disabled, 2 Min, 4 Min, 6 Min, 8 Min, 12 Min, 16 Min.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 4 Min, 8 Min, 12 Min, 16 Min, 32 Min, 48 Min, 64 Min.

DMA Request (DRQ)

When Enabled, the DMA device will be activated to APM function.

The choice: Disable, Enable.

PCI master device (PCIM)

When Enabled, the PCI master device will be activated to APM function.

The choice: Disable, Enable.

Parallel I/O (PIO)

When Enabled, the Parallel port device will be activated to APM function.

The choice: Disable, Enable.

Serial I/O (SIO)

When Enabled, the serial port device will be activated to APM function.

The choice: Disable, Enable.

4.9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, 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.

■ Screen shot

Phoenix – AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

Reset Configuration Data : Disabled	Item Help
Resources Controlled By : Auto (ESCD)	Menu Level ►
X IRQ Resources Press Enter	
X DMA Resources Press Enter	
PCI/VGA Palette Snoop : Disabled	
↑ ↓ → ←: Move Enter: Select +/- PU/PD/: Value F10: Save ESC: Exit F1:General Help F5: Previous Value F6: Fail-Safe Defaults F7: Optimized Defaults	

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 choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure all the boot and plug and play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto(ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The choice: IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ12, IRQ14, IRQ15 assigned to.

DMA Resources

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the DMA channel:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The choice: DMA-0, DMA-1, DMA-3, DMA-5, DMA-6, DMA-7 assign to.

PCI VGA Palette Snoop

Some display cards that non-standard VGA such as graphics accelerations or MPEG video cards may not show colors properly. User can choose "Enabled" settings to correct this display mismatch problem and support any ISA adapter card installed in the computer requires VGA palette snooping.

The choice: Disabled, Enabled.

4.10 Default Menu

Selecting “Defaults” from the main menu shows you two options which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ?

Pressing ‘Y’ loads the Fail-Safe default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ?

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4.11 Setup Password

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. You will be asked to confirm the password. Type the password again and press <Enter>.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled.

PASSWORD ENABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 4). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

4.12 Exiting Seleting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing “Y” stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? **N**

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

4.13 POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message. If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

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

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

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.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note:

When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure 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

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration**PLEASE RUN EISA CONFIGURATION UTILITY**

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

Note:

When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are 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 at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. 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 SINCE LAST BOOT

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

Memory Verify Error at ...

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 NOT FOUND

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

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found
PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.

Note:

When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found
PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

Note:

When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

Note:

When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

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.

Wrong Board In Slot
PLEASE RUN EISA CONFIGURATION UTILITY

The board ID does not match the ID stored in the EISA non-volatile memory.

Note:

When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) → Floppy Type mismatch.

Hard Disk(s) fail (80) → HDD reset failed

Hard Disk(s) fail (40) → HDD controller diagnostics failed.

Hard Disk(s) fail (20) → HDD initialization error.

Hard Disk(s) fail (10) → Unable to recalibrate fixed disk.

Hard Disk(s) fail (08) → Sector Verify failed.

Keyboard is locked out - Unlock the key.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail.

BIOS reports the memory test fail if the onboard memory is tested error.

4.14 BIOS POST Check Point List

AWARDBIOS provides all IBM standard Power On Self Test (POST) routines as well as enhanced AWARDBIOS POST routines. The POST routines support CPU internal diagnostics. The POST checkpoint codes are accessible via the Manufacturing Test Port (I/O port 80h).

Whenever a recoverable error occurs during the POST, the system BIOS will display an error message describing the message and explaining the problem in detail so that the problem can be corrected.

During the POST, the BIOS signals a checkpoint by issuing one code to I/O address 80H. This code can be used to establish how far the BIOS has executed through the power-on sequence and what test is currently being performed. This is done to help troubleshoot faulty system board.

If the BIOS detects a terminal error condition, it will halt the POST process and attempt to display the checkpoint code written to port 80H. If the system hangs before the BIOS detects the terminal error, the value at port 80H will be the last test performed. In this case, the terminal error cannot be displayed on the screen. The following POST checkpoint codes are valid for all AWARD BIOS products with a core BIOS date of 07/15/95 version 6.27 (Enhanced).

CODE (hex)	DESCRIPTION
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: - Disable shadow RAM - Disable L2 cache (socket 7 or below) - Program basic chipset registers
C1h	Detect memory - Auto-detection of DRAM size, type and ECC. - Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	Test special keyboard controller for Winbond 977 series Super I/O chips. Enable keyboard interface.
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional). Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check

CODE (hex)	DESCRIPTION
	for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyril or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. Early PCI initialization: - Enumerate PCI bus number - Assign memory & I/O resource - Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address. Initialize the APIC for Pentium class CPU. Program early chipset according to CMOS setup. Example: onboard IDE controller. Measure CPU speed. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved

CODE (hex)	DESCRIPTION
2Ch	Reserved
2Dh	Initialize multi-language. Put information on screen display, including Award title, CPU type, CPU speed
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	Calculate total memory by testing the last double word of each 64K page.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. Initialize the APIC for P6 class CPU. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved

CODE (hex)	DESCRIPTION
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	Display PnP logo Early ISA PnP initialization - Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	Initialize Init_Onboard_Super_IO switch. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	Initialize floppy controller. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature)

CODE (hex)	DESCRIPTION
	Enter AWDFLASH.EXE if : - AWDFLASH is found in floppy drive. - ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported. - If errors occur, report errors & wait for keys - If no errors occur or F1 key is pressed to continue: • Clear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	Call chipset power management hook. Recover the text font used by EPA logo (not for full screen logo) If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	USB final Initialization NET PC: Build SYSID structure Switch screen back to text mode Set up ACPI table at top of memory. Invoke ISA adapter ROMs Assign IRQs to PCI devices Initialize APM Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	Enable L2 cache Program boot up speed Chipset final initialization.

CODE (hex)	DESCRIPTION
	Power management final initialization Clear screen & display summary table Program K6 write allocation Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

4.15 Flash BIOS Utility

Utilize AWARD Flash BIOS programming utility to update on-board BIOS for the future new BIOS version. Please contact your technical window to get this utility if necessary.

Note:

Remark or delete any installed Memory Management Utility (such as HIMEM.SYS, EMM386.EXE, QEMM.EXE, ..., etc.) in the CONFIG.SYS files before running Flash programming utility.

Appendix A

I/O Port Address Map

Each Peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port address used.

Memory Area	Size	Device Description
0000 - 003F	1K	Interrupt Area
0040 - 004F	0.3K	BIOS Data Area
0050 - 006F	0.5K	System Data
0070 - 04C6	17K	DOS
04C7 - 0582	2.9K	Program Area
0583 - 9FFF	617K	[Available]
9FFF - 9FFF	0.1K	Unused
= Conventional memory ends at 640K =		
A000 - AFFF	64K	VGA Graphics
B000 - B7FF	32K	Unused
B800 - BFFF	32K	VGA Text
C000 - C7FF	32K	Video ROM
C800 - C949	5.2K	Unused
C94A - DFFF	90K	High RAM
E000 - EFFF	64K	Page Frame
F000 - FFFF	64K	System ROM
HMA	64K	First 64K Extended

Appendix B

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM 2
IRQ 4	System ROM	COM 1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ