WBX-6200F

Intel Pentium-M / Celeron-M
Fanless Engine Box

User's Manual

Version V1.1

Copyright Notice

Safety Precautions

Before getting started, read the following important cautions.

1. The WBX-6200F Engine Box may not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.

2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.

3. Disconnect the power from the WBX-6200F Engine Box before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the WBX-6200F Engine Box is properly grounded.

4. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the system.

5. The WBX-6200F Engine Box is not susceptible to intense shock or vibration. When assembling the WBX-6200F Engine Box, make sure it is securely installed.

6. If opening the cover for maintenance is a must, only a trained

technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- ✓ Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.

- ✓ When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

7. Follow below instructions and notice the caution for replacing and disposing of the RTC Lithium battery CR2032 for safety consideration:

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instruction.

Acknowledgments

IMPORTANT NOTE: When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed (At this point, press Ctrl-Alt-F1 simultaneously, if you are using CRT monitor. If you are using LVDS LCD panel, press Ctrl-Alt-F3. If you are using DVI monitor, press Ctrl-Alt-F4.)

Table of Contents

How to Use This Manual

This manual is written for the system integrator, PC technician and knowledgeable PC end user. It describes how to configure your WBX-6200F Engine Box to meet various operating requirements. The user's manual is divided into three chapters, with each chapter addressing a basic concept and operation of the server board.

Chapter 1: System Overview - presents what you have inside the box and gives you an overview of the product specifications and basic system architecture for the WBX-6200F Engine Box.

Chapter 2: System Installation - describes how to set up the system.

Chapter 3: BIOS Setup Information - specifies the meaning of each setup parameter, how to get advanced BIOS performance and update to a new BIOS. Additionally, the POST checkpoint list will give you a guide for troubleshooting.

The contents of this manual are subject to change without prior notice. These changes will be incorporated in new editions of this manual. i-Tech may make supplements or changes for the product described in this manual at any time.

System Overview

Introduction

WBX-6200F Engine Box series are based-on the features of high performance for Pentium-M or Celeron-M platform with low power consumption.

WBX-6200F Engine Box is mainly designed for industrial automation or digital signage solution with slim and true fanless feature. With GPIO connector for data collection and device control, and storage can support internal DOM and external Compact Flash memory card, or one 2.5″ HDD.

Features

The WBX-6200F Engine Box features:

- **CPU**

    Intel Pentium-M / Celeron-M 1.8GHz with socket

- **System Memory**

    DDR 266/333 SODIMM x 1 (without ECC)

- **Mass Storage Device**

    Internal 2.5″ HDD drive bay with anti-vibration kit

- **IDE interface**

    UDMA 100 IDE interface x 2

- **CF interface**

    1 x bootable Compact Flash slot (onboard) for CF type I/II

    storages

- **PCMCIA interface**

  One PCI card-bus interface for Complies with PC Card 95/97/98, Card-32(32 bit), PCMCIA V2.1/JEIDA 4.2(16 bit), supports type I/II

  (PCMCIA and CF cannot be used simultaneously)

- **Mini-PCI interface**

  1 x 32-bit Mini-PCI socket (support 802.11b/g and DVB modules)

- **Audio Function**

  Realtek ALC202 AC97 Audio Codec, interface with Line-in, Line-out and Microphone-in ports

- **Ethernet Function**

  ICH4 + 86562ET PHY 10/100 Base-T Ethernet with external RJ-45 connector, WOL/PXE function

- **BIOS**

  AMI BIOS, 4 MB Flash EEPROM, Plug-and-Play compatible

- **Watchdog Function**

  1~255 minutes, software programmable

System Specification

NOTE: Specifications are subject to change without notice.

Parts		Specifications
System Board	CPU	Intel Pentium-M / Celeron-M 1.8GHz with socket
	System memory	DDR 266/333 SODIMM x 1 (without ECC)
	I/O interfaces	- VGA port x 1 / DVI x 1
		- Serial port (RS-232 x 2, RS-232 /422/485 x 1)
		- PS/2 keyboard/mouse port
		- Parallel port x 1
		- GPIO: 4-bit input, 4-bit output
		- LAN RJ-45 x 1
		- PCMCIA or CF x 1 (not simultaneously)
USB and Audio		- USB 2.0 port x 4
		- Microphone input connector - Line input connector - Line output connector
Storage device	Hard disk drive	Internal 2.5" HDD drive bay with anti-vibration kit
AC-to-DC Power Adapter	Output power	Max. 80 Watt
	Input voltage	AC 100 ~ 240V / 47 ~ 63 Hz, 1.9A
	Output voltage	DC12V @ 6.66A
Dimension		292 x 200 x 66 mm (L x W x H)
Weight		3.2 kg

Environment	Temperature	Operating: 0 ℃ ~ 40 ℃ Storage: −20 ℃ ~ 60 ℃
	Humidity	10% ~ 90% @ RH, non-condensing

System View

I/O connectors
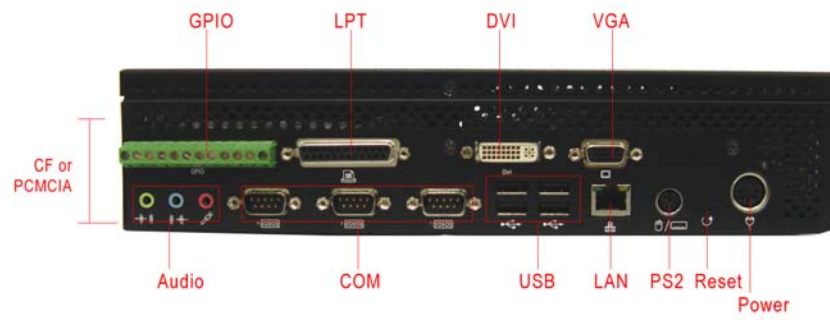
Unpacking

After unpacking the shipping carton, you should find these standard items:

■ The WBX-6200F Engine Box

■ Accessory box including the followings:

- AC adapter x 1
- AC power cord x 1
- 40-pin 2.54 mm pitch IDE cable x 1
- Y cable for PS2 keyboard and mouse x 1
- 4-pin IDE device power cable x 1
- Mounting bracket x 2, M3L6 screw x 8
- CD-ROM for drivers, utility, Quick installation Guide and user manual

Inspect all the items. If any item is damaged or missing, notify your dealer immediately.

Getting Started

This chapter tells you how to set up the system.

Setting Up the System

The following is a summary of the steps in setting up the system for use.

> **CAUTION: Make sure that power to the system and each of the devices to be connected is switched OFF before plugging in the connectors.**

1. Make any required external connections such as the keyboard, and mouse.

2. Plug the appropriate end of the power cord into the power connector of the system. Then plug the other end of the power cord to an electrical outlet.

3. Press the power switch of the system to turn on the system's power.

4. If necessary, run the BIOS SETUP program to configure the system (see Chapter 3).

5. Install the software drivers if necessary.

Installing System Software

Recent releases of operating systems from major vendors include setup programs, which load automatically and guide you through hard disk preparation and operating system installation. The guidelines below will help you determine the steps necessary to install your operating system on the Engine Box hard drive.

NOTE: *Some distributors and system integrators may have already pre-installed system software prior to shipment of your Engine Box.*

Installing software requires an installed HDD. Software can be loaded in the WBX-6200F Engine Box using any of below methods:

1. **Method 1: Use the Ethernet**

   You can use the Ethernet port to download software from the net to the HDD that has been pre-installed in WBX-6200F Engine Box.

2. **Method 2: Use the COM Port**

   By connecting another PC to the WBX-6200F Engine Box with an appropriate cable, you can use transmission software to transmit Operation System Software to the HDD that has been pre-installed in the WBX-6200F Engine Box.

3. **Method 3: Use a External CD-ROM**

   You can use the external CD-ROM to transmit the software to the HDD that has been pre-installed in the WBX-6200F Engine Box.

Installing the Drivers

After installing your system software, you will be able to set up the LAN, VGA, Audio and USB functions. All drivers are stored in a CD disc, which can be found in your accessory pack.

The various drivers and utilities in the disc have their own text files that help users install the drivers and understand their functions.

BIOS Setup Information

WBX-6200F is equipped with the AMI 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, WBX-6200F communicates with peripheral devices and checks 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.

Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> 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 Run SETUP or Resume

In 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.

Keys to navigate within setup menu

Key	Functions
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Enter Key	Go to Sub Screen
Tab key	Select field
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F10 key	Save all the CMOS changes and exit

Main Menu

Once you enter WBX-6200F AMI BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from seven setup functions and one exit choice. Use left/right arrow keys to switch among setup menus or use up/down arrow keys to move among bios options in the menu.

> **NOTE: It is strongly recommended to reload Optimal Setting**
> **if CMOS is lost or BIOS is updated.**

Main Menu

Item	Description
AMIBIOS Version	AMIBIOS version number (Display Only)
BIOS Build Date	AMIBIOS build date (Display Only)
BIOS ID	AMIBIOS identification number (Display Only)
Processor Type	Processor Manufacturer Information (Display Only)
Processor Speed	The speed of processor (Display Only)
Processor Count	Number of Physical Processors (Display Only)
System Memory Size	Amount of systm memory (Display Only)
System Time	Change the system time
System Date	Change the system date

Advanced Settings

This setup reference table includes all the Optimal, Failsafe, and Other options setting in each BIOS setup item. It is very easy to cross reference. If you want to go details, you can directly refer to item description in sub-section.

There are six submenus in this menu: CPU Configuration, IDE configuration, Super IO configuration, Hardware Health Configuration, ACPI Configuration and USB Configuraton.

CPU Configuration

BIOS Items	Description
Module Version	(Display Only)
Manufacturer	Manufacturer of the processor (Display Only)
Brand String	the hard coded text string the is contained in the processor. (Display Only)
Frequency	the operating frequency of the processor. (Display Only)
FSB Speed	the front side bus speed of the processor. (Display Only)
Cache L1	The level one cache that is reported by the processor. (Display Only)
Cache L2	The level two cache that is reported by the processor. (Display Only)

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
CPU TM function	Disabled	Enabled	Disabled
Intel SpeedStep Tech.	Automatic	Disabled	Maximun Speed Minimun Speed

CPU TM function

If '**Enabled**', CPU will slow down to 600Mhz when CPU's temperature rise to 80°C.

Intel SpeedStep Tech.

This option specifies how CPU works with Intel SpeedStep Technology.
'**Maximum**': CPU speed is set to maximum.
'**Minimum**': CPU speed is set to minimun.
'**Automatic**': CPU speed controlled by Operation system.
'**Disabled**': Default CPU speed.

IDE Configuration

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
OnBoard PCI IDE Controller	Both	Both	Disabled Primary Secondary
OnBoard PCI IDE Operate Mode	Legacy Mode	Lagacy Mode	Native Mode

Primary IDE Master Primary IDE Slave Secondary IDE Master Seconday IDE Slave	-	-	[Submenu]
Type	Auto	Auto	Not Installed Auto CD/DVD ARMD
LBA/Large Mode	Auto	Auto	Disabled
Block (Multi-Sector Transfer) Mode	Auto	Auto	Disabled
PIO Mode	Auto	Auto	0, 1, 2, 3, 4
DMA Mode	Auto	Auto	SWDMA0 SWDMA1 SWDMA2 MWDMA0 MWDMA1 MWDMA2 UDMA0 UDMA1 UDMA2
S.M.A.R.T.	Auto	Auto	Disabled Enabled
32Bit Data Transfer	Enabled	Disabled	-
ARMD Emulation Type	Auto	Auto	Floppy, Hard Disk
Hard Disk Write Protect	Disabled	Disabled	Enabled

OnBoard PCI IDE Controller

This option specifies the onboard IDE controller channels that will be used. The settings are Disabled, Primary, Secondary, or Both.

OnBoard PCI IDE Operate Mode

Notice!! Native Mode ONLY for Windows XP and 2000.

Primary IDE Master

Primary IDE Slave

Secondary IDE Master

Secondary IDE Slave

System will auto-detect all available IDE devices. Devices can be configured in sub-menu by pressing 'Enter' key

Type

This option sets the type of device that the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) has completed.

Option	Description
Not Installed	Set this value to prevent the BIOS from searching for an IDE disk drive on the specified channel
Auto	Set this value to allow the BIOS auto detect the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel. This is the default setting.
CD/DVD	This option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS will not attempt to

	search for other types of IDE disk drives on the specified channel.
ARMD	This option specifies an ATAPI Removable Media Device. This includes, but is not limited to: ZIP, LS-120

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

Block (Multi-Sector Transfer) Mode

This option sets the block mode multi sector transfers option.

PIO Mode

IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive andthe programmable IDE controller. As the PIO mode increases, the cycle time decreases.

DMA Mode

This setting allows you to adjust the DMA mode options. The Optimal and Fail-Safe

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures.

32Bit Data Transfer

This option sets the 32-bit data transfer option.

ARMD Emulation Type

ATAPI Removable Media Device (ARMD) is a device that uses removable media, such as the LS120, MO (Magneto-Optical), or Iomega Zip drives. If you want to boot up from media on an ARMD, it is required that you emulate boot up from a floppy or hard disk drive. This is especially necessary when trying to boot to DOS. You can select the type of emulation used if you are booting from such a device.

This option only appears when an ARMD device is installed.

Hard Disk Write Protect

Default value is '*Disabled*'.

If '**Enabled**', it will prevent you from making any changes to the hard disk drive. Essentially, the hard disk drive acts as a CD-ROM disc would.

Super IO Configuration

BIOS Setup Items	Optimal	Failsafe	Other Options/

	Default	**Default**	**Remark**
Parallel Port Address	378	Disabled	278, 3BC
Parallel Port Mode	Normal	Normal	Bi-Directional ECP EPP ECP & EPP
Parallel Port IRQ	IRQ7	IRQ7	IRQ5
Keyboard PowerOn	Disabled	Disabled	Specific Key Any Key
Specific Key PowerOn	-	-	Enter Password
Mouse PowerOn	Disabled	Disabled	Left Button Right Button
Serial Port1 Address	3F8	3F8	Disabled, 3F8, 2F8, 3E8, 2E8 2F0, 2E0
Serial Port1 IRQ	4	4	4, 9, 10, 11
Serial Port2 Address	2F8	2F8	Disabled, 3F8, 2F8, 3E8, 2E8 2F0, 2E0
Serial Port2 IRQ	3	3	3, 9, 10, 11
Serial Port3 Address	2F0	2F0	Disabled, 3F8, 2F8, 3E8, 2E8 2F0, 2E0
Serial Port3 IRQ	11	11	4, 5, 6, 7, 9, 10, 11, 12
Serial Port4 Address	2E0	2E0	Disabled, 3F8, 2F8, 3E8, 2E8 2F0, 2E0

Serial Port4 IRQ (reserved for touchscreen)	10	10	3, 5, 6, 7, 9, 10, 11, 12

Parallel Port Address

This option specifies the I/O address used by the parallel port.

Parallel Port Mode

This option specifies the parallel port mode. Available options are: Normal, Bi-Directional, EPP, ECP.

Parallel Port IRQ

This option specifies the IRQ used by the parallel port.

Keyboard PowerOn

This option specifies how the system can be turned on by using the keyboard. Options are '***Disabled***', '**Specific key**', '**Any key**'.

Specific Key PowerOn

If Keyboard PowerOn is set to '**Specific key**', here you can set password to initiate poweron.

Mouse PowerOn

This option specifies how the system can be turned on by using the mouse. Options are Disabled, Left button, Right button.

Serial Port1 Address, Serial Port2 Address, Serial Port3 Address, Serial Port4 Address

This option specifies the base I/O port address of serial ports.
Notice!! Serial Port4(COM4) is reserved for touchscreen Controller.

Serial Port4 option will not shown in Models without touchscreen

Serial Port1 IRQ, Serial Port2 IRQ
Serial Port3 IRQ, Serial Port4 IRQ

This option specifies the IRQ of serial ports.

ACPI Configuration

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
General ACPI Configuration	-	-	[Submenu]
Suspend Mode	S1 (POS)	S1 (POS)	S3 (STR) Auto
Chipset ACPI Configuration	-	-	[Submenu]
APCI ACPI SCI IRQ	Disabled	Disabled	Enabled
USB Device Wakeup From S3	Disabled	Disabled	Enabled

Suspend Mode

This option allows you to configure Suspend Mode settings.

APIC ACPI SCI IRQ

This option enable/disable the APIC ACPI SCI IRQ.

USB Device Wakeup From S3

This option enable/disable USB device wakeup from s3.

USB Configuration

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
USB Function	Enabled	Disabled	-
Legacy USB Support	Enabld	Enabled	Disabled Auto
USB 2.0 Controller	Enabled	Disabled	-
USB 2.0 Controller Mode	HiSpeed	FullSpeed	-
BIOS EHCI Hand-Off	Enabled	Enabled	Disabled

USB Function

This option enable/disable USB device controllers, system can address up to 6 USB ports.

Legacy USB Support

This option enable/disable legacy USB support.

'*Auto*' option disables legacy support if no USB devices are connected.

USB 2.0 Controller

This option enable/disable USB 2.0 controller.

USB 2.0 Controller Mode

This option configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).

BIOS EHCI Hand-Off

This is a walkaround for OSes without EHCI hand-off support.

The EHCI ownership change should claim by EHCI driver.

PCIPnP Settings

PCI/Pnp Settings

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
Clear NVRAM	No	No	Yes
Plug & Play O/S	No	No	Yes
PCI Latency Timer	64	64	32, 64, 96, 128, 160, 192, 224, 248
Allocate IRQ to PCI VGA	Yes	Yes	No
PCI IDE BusMaster	Disabled	Disabled	Enabled

Clear NVRAM

This option is used to clear NVRAM and check or update ESCD (Extended System Configuration Data) data after system power on.

Plug & Play O/S

Default value is '***No***', This allows the BIOS to configure the devices in the system.

If '**Yes**', this value allows the operating system to configure all Plug and Play devices not required during boot. Use this setting if your operating system supports plug and play devices.

PCI Latency Timer

This option allows the PCI Latency Timer to be adjusted. Basically, it allows you to set a delay to allow the BIOS to find all PCI devices. This option sets the latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks.

Allocate IRQ to PCI VGA

This option allows the system to adjust the Allocate IRQ to VGA setting.

If '*Yes*', System will assigns IRQ to PCI VGA card if card requests IRQ.

If '**No**', System does not assign IRQ to PCI VGA card even if card requests an IRQ.

PCI IDE BusMaster

This option enable/disable PCI busmastering for reading / writing to IDE drives.

Boot Settings

Boot Settings

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
Boot Settings Configuration	-	-	[Submenu] Configure Settings during System Boot
Quick Boot	Enabled	Enabled	Disabled
Quiet Boot	Disabled	Disabled	Enabled
AddOn ROM Display Mode	Force BIOS	Force BIOS	Keep Current
Bootup Num-Lock	On	On	Off
PS/2 Mouse Support	Auto	Auto	Disabled Enabled
Wait For 'F1' If Error	Enabled	Enabled	Disabled
Hit 'DEL' Message Display	Enabled	Enabled	Disabled
Interrupt 19 Capture	Disabled	Disabled	Enabled
Boot Device Priority	-	-	[Submenu] Specifies the Boot Device Priority sequence
1st Boot Device 2nd Boot Device --- 12th Boot Device	-	-	Options are varied by actual Devices Configuraton.
Hard Disk Drives	-	-	[Submenu] Specifies the Boot

			Device Priority sequence from available Hard Drives
1st Drive 2nd Drive --- 12th Drive	-	-	Options are varied by actual Devices Configuraton.

Boot Setting Configuration

Quick Boot

This option enable/disable quick boot mode.

If '***Enabled'***, this will allow BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quiet Boot

This option enable/disable quiet boot mode.

If '**Enabled**', this will display OEM Logo instead of POST messages.

If '***Disabled***', this will display normal POSt messages.

AddOn ROM Display Mode

This option sets display mode for option ROM.

If "***Force BIOS***", this value displays the option ROM even if the option ROM is set to not display during boot.

If "**Keep Current**", this value allows the option ROM to determine whether or not it is displayed.

Bootup Num-Lock

This option turns on/off Num-lock at boot.

PS/2 Mouse Support

This option turns on/off PS/2 mouse support at the BIOS level.

Default value is '**Auto**', this value allows the BIOS to determine if a PS/2 mouse is being used..

Wait For 'F1' If Error

This option specifies how system act if error occurs at boot.

If '**Enabled**', this value allows the system to halt on errors while it waits for you to press the <F1> key if the BIOS detects an error during POST.

If '**Disabled**', this value prevents the system from waiting for you to press the <F1> key if the BIOS detects an error during POST.

Hit 'DEL' Message Display

This option turns on/off the "Press DEL to run Setup" message in POST.

Interrupt 19 Capture

This option enable/disable option ROMS to trap interrupt 19.

Boot Device Priority

Specifies the Boot Device Priority sequence in sub-menu.

1st Boot Device, 2nd Boot Device, ... , 12th Boot Device

Set the boot device options to determine the sequence in which the computer checks which device to boot from.

Hard Disk Drives

1st Drive, 2nd Drive, ... , 12th Drive

Specifies the Boot Device Priority sequence from available Hard Drives.

Security Settings

Security Settings

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
Change Supervisor Password	-	-	Enter Password
Change User Password	-	-	Enter Password
Boot Sector Virus Protection	Disabled	Disabled	Enabled

Change Supervisor Password

Install or change the password.

Change User Password

Install or change the password.

Boot Sector Virus Protection

This option enable/disable Boot Sector Virus Protection.

Chipset Settings

Chipset Settings

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
NorthBridge Configuration	-	-	[Submenu] Optoins for NB
DRAM Frequency	Auto	200 Mhz	200 Mhz 266 Mhz 333 Mhz Auto
Configure DRAM Timing by SPD	Enabled	Enabled	Disabled
Memory Hole	Disabled	Disabled	15MB-16MB
Internal Graphics Mode Select	Enabled, 16MB	Enabled, 8MB	Disabled Enabled, 1MB Enabled, 4MB Enabled, 8MB Enabled, 16MB Enabled, 32MB
Graphics Aperture Size	64MB	64MB	64MB, 128MB, 256MB
Boot Display Device	CRT+DVI	-	CRT, DVI
SouthBridge Configuration	-	-	[Submenu] Options for SB
OnBoard AC'97 Audio	Auto	Auto	Disabled
OnBoard LAN	Enabled	Disabled	-
Restore on AC Power Loss	Power Off	Power Off	Power Off Power On

			Last State

Northbridge Configuration

DRAM Frequency

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

Configure DRAM Timing by SPD

SPD (Serial Presence Detect) is located on the memory module. The BIOS can read information coded in SPD during system boot up.

Memory Hole

Default value is '*Disabled*'. This value prevents a memory hole being reserved in system memory between 15 MB – 16 MB for ISA adapter ROMs.

If '15 MB-16 MB', this value reserves the area of system memory between 15 MB – 16 MB for ISA adapter ROMs. When this area is reserved, it cannot be cached.

Internal Graphics Mode Select

This option specifies the amount of system memory used by the Internal graphics device.

Graphic Aperture Size

Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is similar to a buffer. The BIOS will automatically report the starting address of this buffer to the operating system.

Boot Display Device

This option specifies the boot display device.

Southbridge Configuration

OnBoard AC'97 Audio

This option enable/disable OnBoard AC'97 Audio controller.

OnBoard Lan

This option enable/disable ICH4 OnBoard LAN controller.

Restore on AC Power Loss

This function allows you to set whether or not to restart the system after power interruptions.

Default values is '*Power Off*', use this value if you want the system to always power off after a power interruption.

If '**Power On**', use this value if you want the system to always power on after a power interruption

If '**Last State**', Use this value if you want the system to power on if the system was on before a power interruption. If the system was not on, it will stay off when power is restored.

Power Settings

Power Settings

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options/ Remark
Power Management/ APM	Enabled	Enabled	Disabled
Video Power Down Mode	Suspend	Disabled	Disabled Standby Suspend
Hard Disk Power Down Mode	Suspend	Disabled	Disabled Standby Suspend
Standby Time Out	Disabled	Disabled	Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min
Suspend Time Out	Disabled	Disabled	Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min
Keyboard & PS/2 Mouse	MONITOR	MONITOR	IGNORE
FDC/LPT/COM Ports	MONITOR	MONITOR	IGNORE
Primary master IDE	MONITOR	MONITOR	IGNORE
Primary slave IDE	MONITOR	MONITOR	IGNORE
Secondary master IDE	MONITOR	MONITOR	IGNORE
Secondary slave IDE	MONITOR	MONITOR	IGNORE

CPU Thermal	Enabled	Disabled	Enabled
Thermal Active Temperature	90°C/194°F	90°C/194°F	60°C/140°F 65°C/149°F 70°C/158°F 75°C/167°F 80°C/176°F 85°C/185°F 90°C/194°F
Thermal Slow Clock Ratio	50%	50%	87.5% 75.0% 62.5% 50% 37.5% 25% 12.5%
Power Button Mode	On/Off	On/Off	Suspend
Resume On Ring	Disabled	Disabled	Enabled
Resume On PME#	Disabled	Disabled	Enabled
Resume On RTC Alarm	Disabled	Disabled	Enabled
RTC Alarm Date (Days)	15	15	Every Day, 01-31
System Time	12:30:30	12:30:30	Enter time

Power Management / APM

This option allows Power Management/APM support.

Video Power Down Mode

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

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired.

Standby Time Out

This option specifies the length of time the system needs to be inactive before it enters standby mode.

Suspend Time Out

This option specifies the length of time the system needs to be inactive before it enters suspend mode.

Keyboard & PS/2 Mouse FDC/LPT/COM Ports Primary master IDE Primary slave IDE Secondary master IDE Secondary slave IDE

If '*Monitor*', this value allows the MB to wake up when one of the device selected is used.

If '**Ignore**', this value prevents the MB from waking up when the selected device is used.

System Thermal

This option enable/disable an out-of-threshold thermal reading to generate a power management event.

Thermal Active Temperature

A temperature reading higher than specified temperature will generate a power management event. The CPU clock will throttle back a certain percentage as dictated by the value in the Thermal Slow Clock Ratio field.

Thermal Slow Clock Ratio

This option allows the Thermal Throttle Ratio to be selected. This type of throttling is used to lower power consumption and reduce thermals.

Power Button Mode

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

If '***On/Off***', pushing the power button turns the computer on or off.

If '**Suspend**', Pushing the power button places the computer in Suspend mode or FullOn power mode.

Resume On Ring

This option enable/disable RING to generate a wake event.

Resume On PME#

This option enable/disable PME to generate a wake event.

Resume On RTC Alarm

This option enable/disable RTC to generate a wake event.

RTC Alarm Date (Days)

Choose '**Everyday**' or '**01**'...'**31**' to specify the RTC Alarm Date.

System Time

Choose the wakeup time for the RTC Alarm.

Exit Options

Exit Options

BIOS Setup Items	Description
Save Changes and Exit (F10)	Exit System setup after saving the changes.
Discard Changes and Exit (ESC)	Exit system setup without saving any changes.
Discard Changes (F7)	Discards changes done so far to any of the setup questions
Load Optimal Defaults (F9)	Load Optimal Default values for all the setup questions

POST Code Checkpoints

Code	Description
E0h	Verify the Boot Block BIOS checksum. Disable the internal cache, DMA, and interrupt controllers. Initialize the system timer. Start memory refresh.
E1h	Initialize the chipset registers. Set the BIOS size to 128K. Make the 512 KB base memory available.
E2h	Test the base 64 KB of system memory. Send the BAT command to the keyboard controller. Make sure that <Ctrl> <Home> was pressed. Verify the main system BIOS checksum.
E3h	The main system BIOS is good. Transfer control to the main system BIOS.
E4h	Start the memory test.
E5h	The memory test is over. Initialize the interrupt vector table.
E6h	Initialize the DMA and interrupt controllers.
E7h	Determine the CPU internal clock frequency.
E8h	Initialize the I/O chipset, if any.
E9h	Program the CPU clock-dependent chip set parameters.
EAh	Enable the timer and the floppy diskette interrupt. Enable the internal cache. Copy the boot block BIOS and pass control to the boot block BIOS in the 0000h segment.
EDh	Initialize the floppy drive.
EEh	Look for a diskette in drive A:. Read the first sector of the diskette.
EFh	Floppy read error.
F0h	Search for S876P.ROM in the root directory of the floppy diskette in drive A:.
F1h	The S876P.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the S876P.ROM.
F3h	Start reading the S876P.ROM file, cluster by cluster.
F4h	The S876P.ROM file is not the correct size.
F5h	Disable the internal cache. Raise the Vpp. Enable Flash write and reset the Flash ROM.
FBh	Detect the flash type.

FCh	Start erasing flash blocks.
FDh	Program the Flash ROM in the E0000-EFFFFh region.
FEh	Start programming Flash at F0000-FFFFF region.
FFh	Flash programming is successful. The system reboots.

AMIBIOS Beep Codes

Number of Beeps	Error Type
1	Memory refresh timer error
2	Parity error in base memory (first 64K block)
3	Base memory read/write test error
4	Motherboard timer not operational
5	Processor error
6	8042 Gate A20 test error (cannot switch to protected mode)
7	General exception error (processor exception interrupt error)
8	Display memory error (system video adapter)
9	AMIBIOS ROM checksum error
10	CMOS shutdown register read/write error
11	Cache memory test failed

Flash BIOS Utility

Utilize AMI 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. Jumper Setting and Connectors List of CPU Board

This appendix gives the definitions and shows the positions of jumpers, headers and connectors. All of the configuration jumpers on WBX-6200F Engine Box are in the proper position. The default settings shipped from factory are marked with (default).

Jumpers Location and list

In general, jumpers on the single board computer are used to select options for certain features. To select any option, cover the jumper cap over (SHORT) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for "Not Connect".
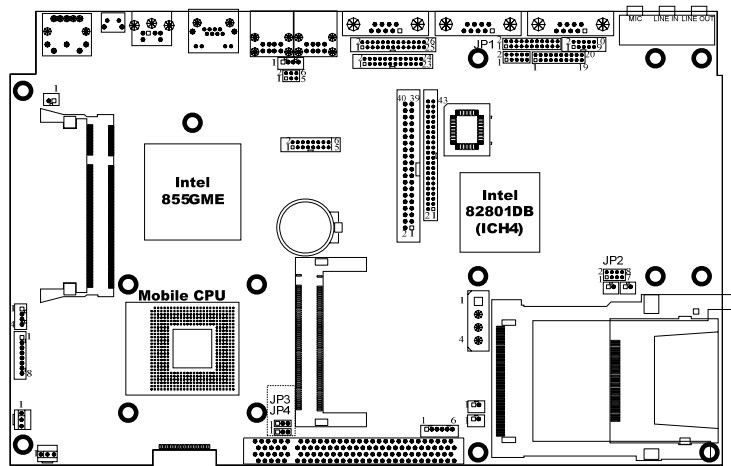
Jumper List

CONNECTOR	FUNCTION	REMARK
JP1	COM2 Function Selection	
JP3	Panel Power Selection	
JP4	CMOS Clear	
JP5	Backlight level	

Jumper Setting

JP1 –COM2 Function Selection

Description	Jumper Setting
RS-232	5-6, 9-11, 10-12, 15-17, 16-18
RS-422	3-4, 7-9, 13-15, 14-16, 21-22
RS-485	1-2, 7-9, 8-10, 19-20

JP3 – Panel Power Selection

Description	Jumper Setting
+3.3V	1-2
+5V	2-3

JP4 – CMOS Clear

Description	Jumper Setting
Normal	1-2
CMOS Clear	2-3

JP5 – Backlight level

Setting	Description
1-2	+5V
3-4	+ 3.3 V (15″)
5-6	0V (17′)

Connector Definitions

Connectors Location
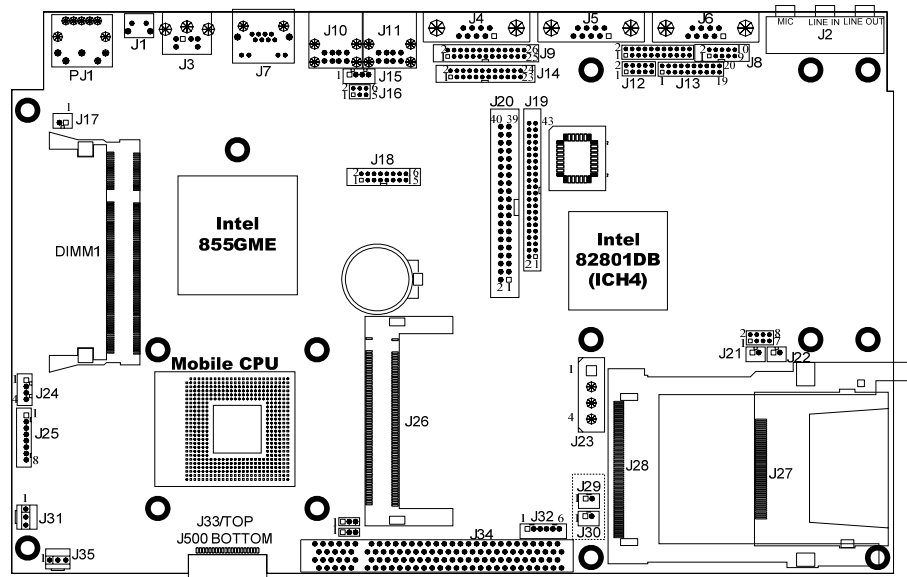
CAUTION:
When connecting the power connector to the

motherboard, make sure that the system is not connected to an electrical outlet.

When connecting a signal cable (also called ribbon cable), Pin 1 of the cable should be aligned with Pin 1 of the connector on the motherboard. Pin 1 side of the cable is identified by a color, usually red, stripe. Pin 1 of the motherboard connector is identified by the number 1 imprinted or an additional shading on the board.

Connectors List

The connectors on the PCBA of WBX-6200F Engine Box are used to connect external devices such as hard disk drives, printers, keyboard, serial ports, etc. Specifically, the PCBA of WBX-6200F Engine Box has the following connectors:

CONNECTOR	FUNCTION	REMARK
PJ1	Power Jack Connector	
J1	Reset Button	
J2	Audio Jack	
J3	KB/MS Connector	
J4	COM1	
J5	COM2	
J6	COM3	
J7	Ethernet Port	
J8	COM4	
J9	Parallel Port	
J10	USB Port	
J11	USB Port	
J12	IrDA (SIR + CIR)	
J13	GPIO Interface	
J14	DVI Interface	
J15	Internal USB	
J17	Power Button Interface	
J18	CRT Interface	
J19	Standard 44 Pin IDE Connector	
J20	Standard 40 Pin IDE Connector	
J21	Passive Speaker Connector	
J22	Passive Speaker Connector	
J23	HDD Power Connector	
J24	Power/HDD Indicator	
J26	Standard Mini-PCI Interface	
J27	Standard Compact Flash (IDE) Connector (Bootable)	
J28	Standard PCMCIA/Card Bus Connector	
J29	Panel Backlight Brightness Control	
J30	Panel Backlight Brightness Control	

CONNECTOR	FUNCTION	REMARK
J31	Fan Connector	
J33	LVDS Interface	
J34	Standard +5V PCI Slot	
J35	Fan Connector	
J500	LVDS Interface	

PJ1 – Power Jack Connector

Pin	Signal Description
1	Ground
2	DC In (+12V~+24V)
3	Ground
4	DC In (+12V~+24V)
5	Ground

J1 – Reset Button

J2 – Audio Jack

Pin	Signal Description
1	Line Out (stereo)
2	Line In (stereo)
3	Microphone (mono)

J3 – KB/MS Connector

Pin	Signal Description
1	KB data
2	MS data
3	Ground
4	+5V
5	KB clock
6	MS clock

J4, J6 – COM1, COM3

Pin	Signal Description
1	Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

J5 – COM2

Pin	Signal Description		
	RS-232	RS-422	RS-485
1	Carrier Detect	Transmit Data -	Transmit Data -
2	Receive Data	Transmit Data +	Transmit Data +
3	Transmit Data	Receive Data +	NC
4	Data Terminal Ready	Receive Data -	NC
5	Ground	NC	NC
6	Data Set Ready	NC	NC
7	Request to Send	NC	NC
8	Clear to Send	NC	NC
9	Ring	NC	NC

	Indicator		

J7 – Ethernet Port

Pin	Signal Description
1	Transmit Data+
2	Transmit Data-
3	Receive Data+
4	NC
5	NC
6	Receive Data-
7	NC
8	NC
LED1	LINK/ACTIVE LED
LED2	SPEED LED

J8 – COM4

Pin	Signal Description	Pin	Signal Description
1	Carrier Detect	2	Data Set Ready
3	Receive Data	4	Request to Send
5	Transmit Data	6	Clear to Send
7	Data Terminal Ready	8	Ring Indicator
9	Ground	10	+5V

J9 – Parallel Port

Pin	Signal	Pin	Signal

	Description		Description
1	Strobe	2	Auto feed
3	Data Bit 0	4	Error
5	Data Bit 1	6	Initialize
7	Data Bit 2	8	Select In
9	Data Bit 3	10	Ground
11	Data Bit 4		Ground
13	Data Bit 5		Ground
15	Data Bit 6		Ground
17	Data Bit 7		Ground
19	Acknowledge		Ground
21	Busy		Ground
23	Paper End		Ground
25	Select		NC

J10, J11 – USB Port

Pin	Signal Description
1	+5V
2	Data -
3	Data +
4	Ground

J12 – IrDA (SIR + CIR)

Pin	Signal Description	Pin	Signal Description
1	+5V	2	NC
3	NC	4	Consumer IR data receive
5	IR data receive	6	+5VSB
7	Ground	8	NC
9	IR data	10	NC

	transmit		

J13 – GPIO Interface

Pin	Signal Description	Pin	Signal Description
1	GPO 1	2	GPI 1
3	GPO 2	4	GPI 2
5	GPO 3	6	GPI 3
7	GPO 4	8	GPI 4
9	GPO 5	10	GPI 5
11	GPO 6	12	GPI 6
13	GPO 7	14	GPI 7
15	GPO 8	16	GPI 8
17	+5V	18	+5V
19	Ground	20	Ground

Pin head on Chassis

1	2	3	4	5	6	7	8	9	10
+5V	GPO4	GPO3	GPO2	GPO1	Ground	GPI4	GPI3	GPI2	GPI1

J14 – DVI Interface

Pin	Signal Description	Pin	Signal Description
1	TMDS Data 2-	2	TMDS Data 2+
3	TMDS Data2 shield	4	DDC Clock
5	DDC Data	6	Analog Vertical Snyc

7	TMDS Data 1-	8	TMDS Data 1+
9	TMDS Data1 shield	10	+5V
11	Ground (for +5V)	12	Hot Plug Detect
13	TMDS Data 0-	14	TMDS Data 0+
15	TMDS Data0 shield	16	TMDS Clock +
17	TMDS Clock -	18	TMDS Clock shield
19	Analog Green	20	Analog Red
21	Analog Blue	22	Analog Horizontal Sync
23	Analog Ground	24	Analog Ground

J15 – Internal USB

Pin	Signal Description
1	+5V
2	Data -
3	Data +
4	Ground

J17 – Power Button Interface

Pin	Signal Description
1	+5V
2	Power on

J18 – CRT Interface

Pin	Signal Description	Pin	Signal Description
1	Red	2	Green
3	Blue	4	Ground
5	Ground	6	Ground
7	Ground	8	Ground
9	+5V	10	Ground
11	NC	12	DDC Data
13	Horizontal Sync	14	Vertical Sync
15	DDC Clock	16	NC

J19 – Standard 44 Pin IDE Connector (Primary, master)

J20 – Standard 40 Pin IDE Connector (Primary, slave)

J21, J22 – Passive Speaker Connector

J21 (Right Channel)		J22 (Left Channel)	
Pin	Signal Description	Pin	Signal Description
1	AMP. Out +	1	AMP. Out +
2	AMP. Out -	2	AMP Out -

J23 – HDD Power Connector

Pin	Signal Description
1	+12V

2	Ground
3	Ground
4	+5V

J24 – Power/HDD Indicator

Pin	Signal Description
1	HDD Active Indicator
2	+5V
3	+5V
4	Power indicator

J26 – Standard Mini-PCI Interface

J27 – Standard Compact Flash (IDE) Connector (Bootable, Secondary, and Master)

J28 – Standard PCMCIA/Card Bus Connector

## J29, J30 – Panel Backlight Brightness Control

J29		J30	
Pin	Signal Description	Pin	Signal Description
1	Back Light Up	1	Back Light Down
2	Ground	2	Ground

J31, J35 – Fan Connector

J31 (CPU)		J35 (System)	
Pin	**Signal Description**	**Pin**	**Signal Description**
1	Ground	1	Ground
2	Fan PWM Control	2	Fan PWM Control
3	Fan RPM Signal	3	Fan RPM signal

J34 – Standard +5V PCI Slot

Appendix B. System Assembly Reference
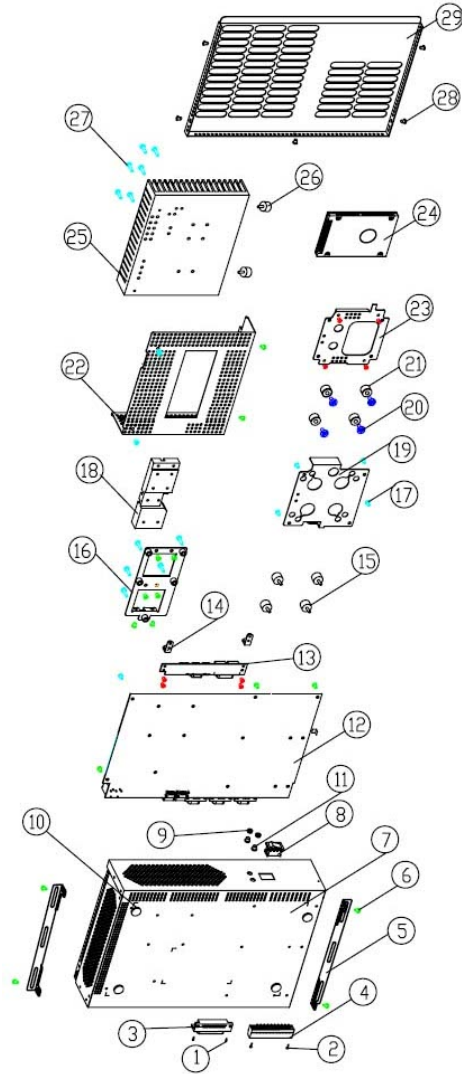
No.	Statement	Qty.
01	S-Stand off	12
02	Screws, M2 x 0.4P	2
03	Cable, LPT	1
04	Cable, GPIO	1
05	Bracket, SET	2
06	Screws, M3 x L6	11
07	Bracket, PCMCIA	1
08	Cable, switch	1
09	Cable, LED	1
10	Rubber foot	4
11	Housing, LED	2
12	Main board	1
13	VGA board	1
14	Bracket, DVI	1
15	Screw bushing, M3 x 0.5P	4
16	Bracket, CPU heatsink	1
17	Screws, MS+N, M3 x L6	5
18	Heatsink	1
19	Bracket, HDD	1
20	Screw washer, M3 x L8	4
21	Damper, vibration absorber	4
22	Bracket, heatsink	1
23	Bracket, HDD	1
24	HDD	1
25	Heatsink	1
26	Shock absorber	2
27	Screw washer, M3 x L12	11
28	Screw, 6#-32 3/16	7
29	Bracket, cover	1

Appendix C. Watchdog Timer

Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

```
outportb(0x4e,0x87);
outportb(0x4e,0x87);
//(Write twice to) enter the (chip) configuration mode



outportb(0x4e,0x07);
outportb(0x4f,0x08);
//Enter the logic device (8)
```

```
outportb(0x4e,0xf6);
outportb(0x4f,0xSec);
// 0xSec = seconds time out.
// For example:
// 0x00 -> Time-out diable
// 0x01 -> time-out occurs after 1 second
// 0x02 -> time-out occurs after 2 seconds
// 0xff -> time-out occurs after 255 seconds


outportb(0x4e,0xaa);
// Exit the (chip) configuration mode
```

Appendix D. Digital I/O Sample Code

SAMPLE CODE:
This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

[GPI sample code]:

```
// GPI 1~4

Data = inportb(0x4b8);

    // Data's bit4 = GPI 1
    // Data's bit5 = GPI 2
    // Data's bit6 = GPI 3
    // Data's bit7 = GPI 4

// GPI 5~8

Data = inportb(0x4b9);

    // Data's bit0 = GPI 5
    // Data's bit1 = GPI 6
    // Data's bit2 = GPI 7
    // Data's bit3 = GPI 8
```

[GPO sample code]:

```
// GPO 1~4

Data = inportb(0x48e);

Data = Data & 0b11xxxx11);
```

```
//where 'xxxx' means GPO1~4 output logic '0'
// for example:
// Data = Data & 0b11101011;
// means GPO1 & GPO3 ouput '0'
// GPO2 & GPO4 not changed
Data = Data : 0b00yyyy00;
//where 'yyyy' means GPO1~4 output logic '1'
// for example:
// Data = Data : 0b00010100;
// means GPO2 & GPO4 output '1'
// GPO1 & GPO3 not changed
outportb(0x48e,Data);

  // GPO 5~8


 Data = inportb(0x4b8);

 Data = Data & 0b1111xxxx);
//where 'xxxx' means GPO5~8 output logic '0'
// for example:
// Data = Data & 0b11111010;
// means GPO5 & GPO7 ouput '0'
// GPO6 & GPO8 not changed
Data = Data : 0b0000yyyy;
//where 'yyyy' means GPO5~8 output logic '1'
// for example:
// Data = Data : 0b00000101;
```

```
// means GPO6 & GPO8 output '1'
// GPO5 & GPO7 not changed
Outportb(0x4b8,Data);
```