IPC Series

BOX-PC
for IPC-BX/M360(PCI)C

User's Manual

CONTEC CO.,LTD.

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1. Introduction

The IPC-BX/M360(PCI)C is an IBM PC/AT compatible, box computer designed for industrial use based on the Ultra Low Voltage Intel(R) Celeron(R) Processor 400MHz, to operate as a completely nature-cooled (fanless) system.
The IPC-BX/M360(PCI)C is smaller in size than the IPC-BX/M400(PC)H while providing assorted interfaces such as USB 2.0, 100BASE-TX, and RS-232C. It can be a compact platform based on an OS for general-purpose PCs. As this series incorporates handpicked components such as the embedded types of CPU and chipset, it excels in environmental resistance and remains in stable supply for an extended period of time. You can therefore use the box computer under severe operating conditions such as FA with ease.
For the components of this package, refer to the bundled product guide. If you discover damaged or missing items, contact your retailer.

Features

- Equipped with the latest Ultra Low Voltage Intel(R) Celeron(R) Processor 400MHz (FSB 100MHz) CPU
- Very small size (system unit: 146 (W) x 157 (D) x 64 (H))
- Fan-less operation achieved by natural air-cooling
- High reliability and completely silent running (when fitted with the PC-SDD V series silicon disk from CONTEC)
- Long, reliable supply (The CPU and chip set are embedded versions.)
- Adopting the slot-in mounted HDD implements easy maintenance and replacement easy.
- Equipped with a DVI video output connector (VGA adapter bundled)
- Capable of starting up, even with the battery dead, using CMOS data retained by EEPROM
- Equipped with PC Card Slot, CF Card Slot (dedicated to memory card; bootable), 100BASE-TX x 2 ports and USB 2.0 x 4 ports
- Equipped with a secondary-IDE connector to allow an optional external CD-ROM drive to be connected
- Equipped with AC97 compliant audio features

Supported OS

- Windows 2000 Professional
- Windows XP Embedded
- Windows XP Professional

* The Windows 2000 Profession and Windows XP Embedded models have the recovery CD-ROM bundled for restoring the OS environment to the default state.

* The Windows XP Profession model has the OS install CD-ROM (DSP version) and driver & utility set CD-ROM [IPC-SLIB-01] bundled. To restore the OS environment to the default, install the OS and then individual drivers.

Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

Web Site

Japanese	http://www.contec.co.jp/
English	http://www.contec.com/
Chinese	http://www.contec.com.cn/

Latest product information

CONTEC provides up-to-date information on products.
CONTEC also provides product manuals and various technical documents in the PDF.

Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

Note! For product information

Contact your retailer if you have any technical question about a CONTEC product or need its price, delivery time, or estimate information.

Limited One-Year Warranty

CONTEC Products are warranted by CONTEC CO., LTD. to be free from defects in material and workmanship for up to one year from the date of purchase by the original purchaser.

Repair will be free of charge only when this device is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office, from which it was purchased.

This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original products. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

How to Obtain Service

For replacement or repair, return the device freight prepaid, with a copy of the original invoice. Please obtain a Return Merchandise Authorization number (RMA) from the CONTEC group office where you purchased before returning any product.

* No product will be accepted by CONTEC group without the RMA number.

Liability

The obligation of the warrantor is solely to repair or replace the product. In no event will the warrantor be liable for any incidental or consequential damages due to such defect or consequences that arise from inexperienced usage, misuse, or malfunction of this device.

Safety Precautions

Understand the following definitions and precautions to use the product safely.

Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

⚠ DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

Handling Precautions

⚠ WARNING

- Always check that the power supply is turned off before connecting or disconnecting power cables.
- Do not modify the product.
- Always turn off the power before inserting or removing circuit boards or cables.
- This product is not intended for use in aerospace, space, nuclear power, medical equipment, or other applications that require a very high level of reliability. Do not use the product in such applications.
- If using this product in applications where safety is critical such as in railways, automotive, or disaster prevention or security systems, please contact your retailer.

⚠ CAUTION

- Do not use or store the product in a location exposed to extremely high or low temperature or susceptible to rapid temperature changes.
  Example: - Exposure to direct sun
  - In the vicinity of a heat source
- Do not use the product in extremely humid or dusty locations. It is extremely dangerous to use the product with its interior penetrated by water or any other fluid or conductive dust. If the product must be used in such an environment, install it on a dust-proof control panel, for example.
- Avoid using or storing the device in locations subject to shock or vibration.
- Do not use the product in the vicinity of devices that generate strong magnetic force or noise. Such devices will cause this device to malfunction.
- Do not use or store the product in the presence of chemicals.
- The heat sink on top may become hot. To avoid being burned, do not touch that section while the product is in operation or immediately after turning off the power. Avoid installation in a location where people may come into contact with that section.

- To clean the BOX-PC, wipe it gently with a soft cloth dampened with either water or mild detergent. Do not use chemicals or a volatile solvent, such as benzene or thinner, to prevent pealing or discoloration of the paint.
- 2.5 inches hard disk drive (HDD) of our company has not guaranteed use by continuation and continuation power for 24 hours. When it is used by continuation operation and continuation power, a life fails extremely. In the case of a 24 hours operation system, use of our company silicon disk drive (SDD) is recommended.
- Hard disks have a limited life span. Please perform systematic backup and maintenance.
- CONTEC does not provide any guarantee for the integrity of data on hard disks.
- To prevent corruption of files, always shutdown the OS before turning off the BOX-PC.
- Be sure to unplug the power cable from a wall outlet before plugging or unplugging a PCMCIA card, CF card, or any connector.
- CONTEC reserves the right to refuse to service a product modified by the user.
- In the event of failure or abnormality (foul smells or excessive heat generation), unplug the power cord immediately and contact your retailer.
- To connect with peripherals, use a grounded, shielded cable.
- Component Life:

(1) Battery--- The internal calendar clock and CMOS RAM are backed by a Lithium primary battery. The backup time at a temperature of 25°C with the power disconnected is 10 years or more.

* Replacement of expendables is handled as a repair (there will be a charge).

- Connection USB apparatus

There is USB apparatus by which current flows conversely to BOXPC through a connection cable at the time of power supply off of BOXPC. When such apparatus is connected, since 5V power supply does not turn off completely, BOXPC may be unable to be started. In such a case, please remove USB apparatus and connect again after a power supply injection. However, please connect again before performing apparatus detection, when using USB apparatus as a boot device.

FCC PART 15 Class A Notice

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference at his own expense.

WARNING TO USER

Change or modifications not expressly approved the manufacturer can void the user's authority to operate this equipment.

2. Overview

Specifications

Table 2.1. Functional Specifications ***< 1 / 2 >***

Model		IPC-BX/M360(PCI)C
CPU		Ultra Low Voltage Intel(R) Celeron(R) Processor 400MHz, FSB100MHz
Chip set		VIA CLE266(VT8623+VT8235)
Memory	L2 Cache	256KB
	Main memory	512MB *1 (3.3V 200pin DDR SO-DIMM PC2100 Socket x 1)
	BIOS ROM	128KB E0000H - FFFFFH (Award)
Video	Controller	VIA VT8623 (Built into the controller)
	Video RAM	Main memory shared (Default 32MB, Up to 64 MB configurable by BIOS
	Video BIOS	64KB (C0000H - CFFFFF)
	Display I/F	DVI-I 29pin *2
System resolution		640 x 480(16,770,000 colors), 800 x 600(16,770,000 colors), 1,024 x 768(16,770,000 colors), 1,280 x 1,024(16,770,000 colors)
Audio		AC97 compliant LINE OUT: ϕ3.5 Stereo mini jack Full-scale output level 1.0Vrms(Typ.)
IDE HDD I/F	Primary	Ultra DMA/133 2.5 inch IDE HDD or silicon disk drive: 1 internal unit
	Secondary	Equipped with a dedicated 36pin, half-pitch connector (for connection of an optional CD-ROM) (left surface)
Serial I/F		RS-232C (general-purpose): 2ch (SERIAL PORT1, 2) 9pin D-SUB connector RS-422/485 (general-purpose): 1ch (SERIAL PORT1) [inside the RAS connector] *3 RS-232C (touch panel): 1ch (SERIAL PORT2) [inside the DVI connector] *4 *5
LAN	I/F	Ethernet 100BASE-TX/10BASE-T RJ-45 connector: 2ch
	Controller	Realtek RT8139DL x 2
PC Card Slot		PCMCIA Type I or II x 1 (Startup from ATA card not allowed) CardBus correspondence
CF Card Slot		CF CARD Type I, II x 1 (For memory card) (Secondary IDE) *6
USB I/F		4ch (USB 2.0 specification)
Keyboard I/F		Corresponding to PS/2 keyboard (6pin MINI DIN connector) (PS/2 mouse acceptable with the bundled keyboard/mouse branch cable)
General-purpose I/O		3 opto-isolated inputs and outputs (However, one output also serves as an external WDT output and one input also serves as remote reset. They become available when switched.)

Table 2.1. Functional Specifications < *2 / 2* >

Model		IPC-BX/M360(PCI)C
RAS function		WDT: 1sec - 255sec (RESET or external output is allowed at time expiration) Remote reset: External input signal
Expansion board slot		None
RTC/CMOS		Lithium backup battery life: 10 years or more The real-time clock is accurate within ±2 minutes (at 25°C) per month.
DC Power supply	Input supply voltage	10 - 12VDC (However, change is less then ±5% of power supply voltage)
	Current consumption	12V 2.5A (Max.)
	Current consumption (At shutdown) *7	12V 0.27A(Max.)
Physical dimensions (mm)		146(W) x 157(D) x 64(H) (No protrusion)
Weight		About 1.5kg
Supported OS		Windows 2000 Professional, Windows XP Embedded, Windows XP Professional

*1 512MB memory module is plugged. No more memory can be added.

*2 The interface can connect the PC to a CONTEC Panel Link input type display (using an optional cable) or an ordinary analog RGB input display (using the bundled DVI-analog RGB adapter).

*3 The SERIAL1 connector (RS-232C) and RS-422/485 are mutually exclusive. (RS-232C is used by factory default.)

*4 The interface is used for the CONTEC Panel Link or touch panel type display.

*5 The SERIAL2 connector (RS-232C) and touch panel function are mutually exclusive. (Touch panel function is used by factory default.)

*6 When starting Windows from CF card, CF card different from a general marketing article is required.
(Our company option CF card can start Windows. However, the capacity of CF card should choose the thing in which Windows installation is possible.)
Moreover, about operation of CF card, it is checking with our company option CF card. Operation of all the cards of general marketing is not secured.

*7 At ATX mode.

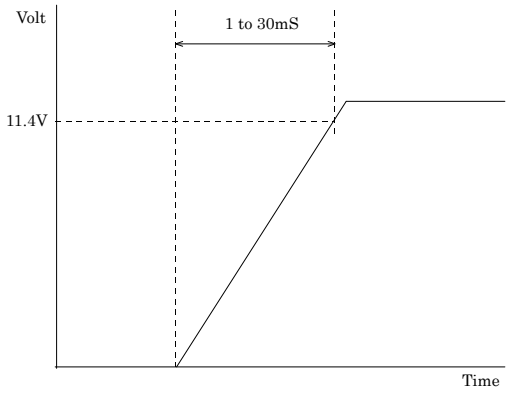
Table 2.2. Installation Environment Requirements

Parameter		Requirement description
Operating temperature		0 - 45°C (SDD in use) 5 - 40°C (HDD in use)
Storage temperature		-10 - 60°C
Operating humidity		10 - 90%RH(No condensation)
Floating dust particles		Not to be excessive
Corrosive gases		None
Line-noise resistance	Static electricity resistance	Contact discharge/4kV (IEC1000-4-2Level 2, EN61000-4-2Level 2) Atmospheric discharge/8kV (IEC1000-4-2Level 3, EN61000-4-2Level 3)
Vibration resistance *8	When the HDD is in operation.	10 - 50Hz/0.5G 25 min. each in x, y, and z directions (JIS C0040-compliant, IEC68-2-6-compliant)
	When the HDD is not in operation. (when deenergized)	10 - 57Hz/semi-amplitude 0.15mm 57 - 150Hz/2.0G 40 min. each in x, y, and z directions (JIS C0040-compliant, IEC68-2-6-compliant)
Impact resistance *7 *8		10G, half-sine shock for 11 ms in x, y, and z directions (JIS C0041-compliant, IEC68-2-27-compliant)
Grounding		Class D grounding (previous class 3 grounding)

*7 Not guaranteed in all environments while tried and tested for conformance under relevant test conditions. Not guaranteed for resistance to resonance which can occur in the vicinity of the natural frequency of the system unit.

*8 When the HDD is not in use.

Power Up Specification for DC Powered Models



System Configuration

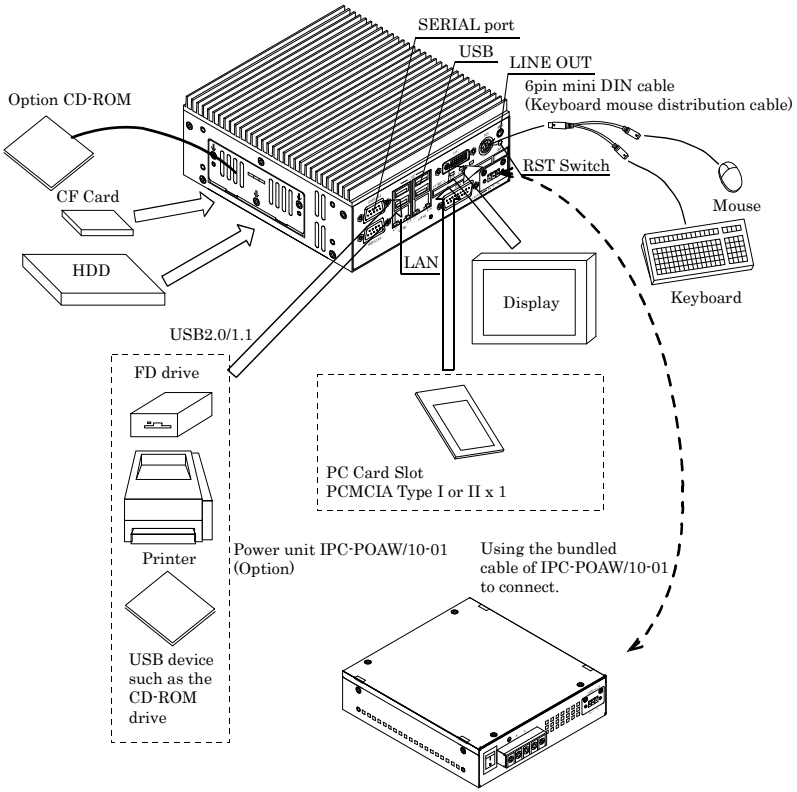


Figure 2.1. System Configuration

Physical Dimensions

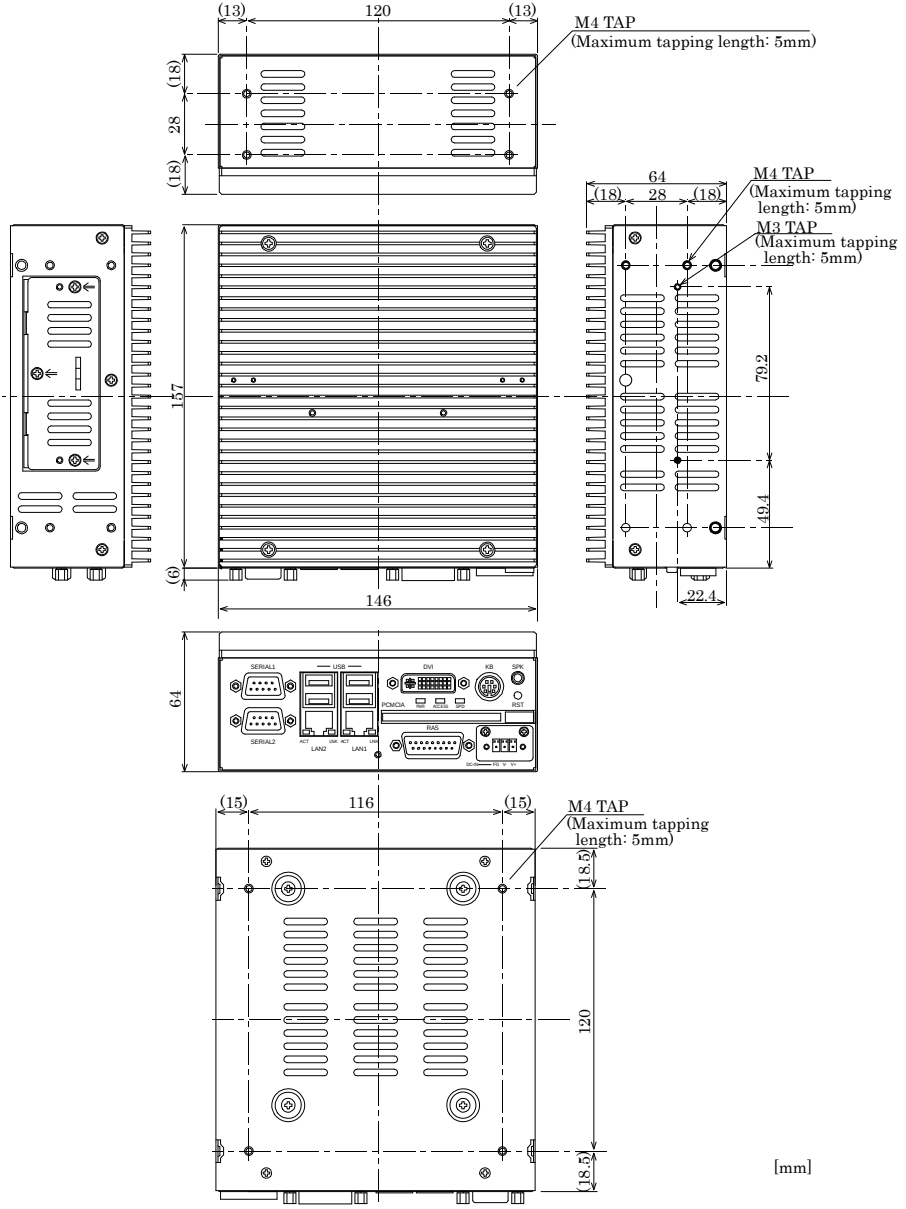


Figure 2.2. IPC-BX/M360(PCI)C

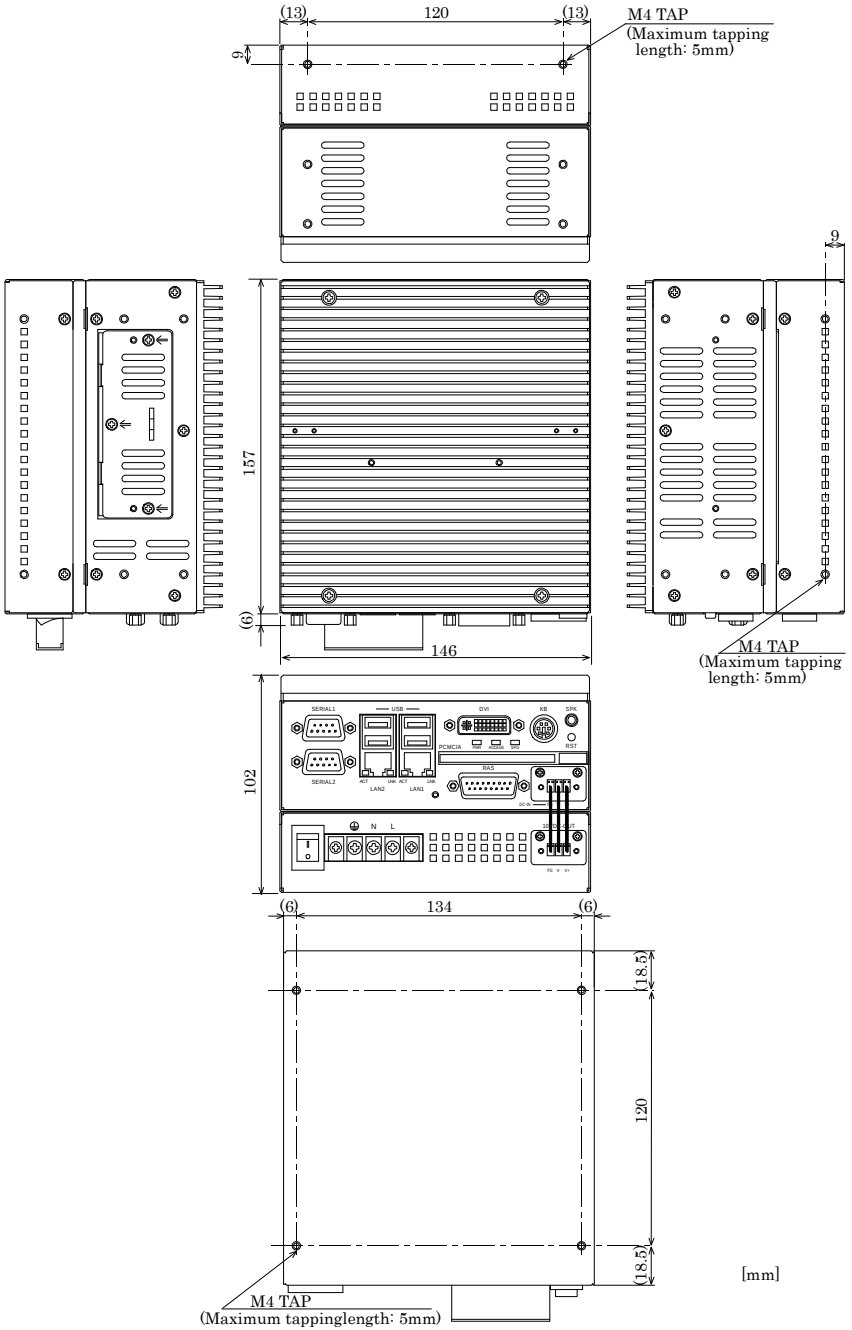


Figure 2.3. IPC-BX/M360(PCI)C (with optional power supply IPC-POAW/10-01 installed)

3. Hardware Setup

Before Using the BOX-PC for the First Time

Follow the next steps to set up the BOX-PC:

STEP1 Install the hard disk and set jumper switches.
By referring to the information in this chapter, set the BOX-PC.

STEP2 Connect cables.
Connect necessary external devices, such as a printer and a CRT, to the BOX-PC using appropriate cables.

STEP3 Turn on the power.
After verifying that you have correctly followed steps 1 and 2, turn on the power. If you feel something is wrong after turning on the power, turn off the power immediately and check to see if the BOX-PC has been set up correctly.

STEP4 Set up BIOS.
By referring to Chapter 4, set up BIOS. This setup requires a keyboard and a display.

* Before using the BOX-PC, be sure to execute "Load Optimized Defaults" to initialize the BIOS settings to their default values. (See Chapter 4, "Main Menu.")

⚠ CAUTION

If your BOX-PC is a Windows preinstalled model, be sure to connect the keyboard and mouse to it before turning the power on for the first time.

Hardware Setup

Removing the Left-side Cover and HDD Bracket

- Before you start, be sure that the power is turned off.
- Remove only those screws that are explained. Do not move any other screw.

(1) Remove the screws from the left-side cover and open the cover.

(2) Remove the hard disk bracket.

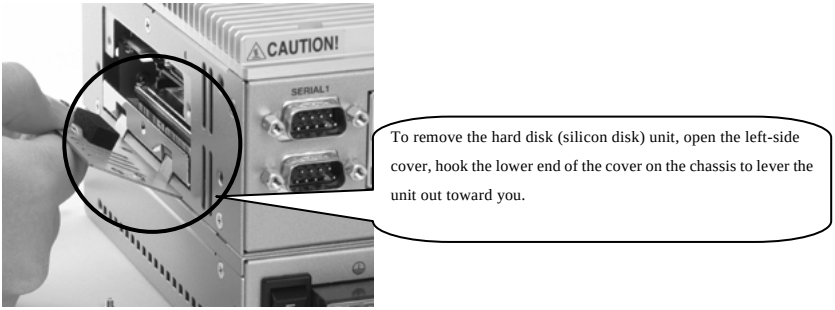


Figure 3.1. Removing the HDD bracket

(3) Connect the hard disk (silicon disk) to the HDD bracket.

(4) Insert the hard disk unit (silicon disk drive) as illustrated below and attach the left-side cover.

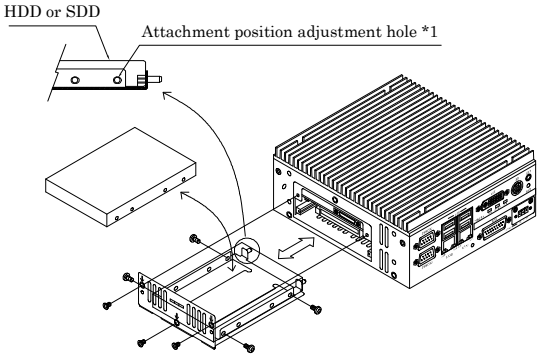


Figure 3.2. Removing and attaching the left-side cover, HDD bracket

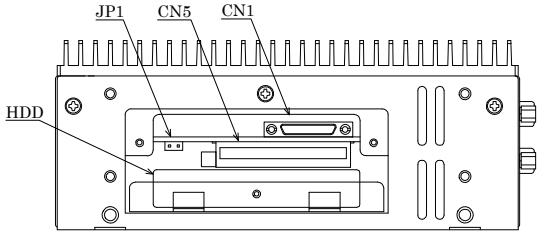
*1 A connector attachment position change with HDD(SDD). Please adjust HDD(SDD) attachment position adjustment hole after checking a side cover attachment.

⚠ CAUTION

Do not plug the HDD (SDD) with its pins bent.
Doing so may break the pins.

Locations and Settings of Internal Connectors and Jumpers

A jumper and connectors are located under the left-side cover as illustrated below.



< Left-side >

Figure 3.3. Locations and Settings of Jumpers, Connectors, and Switches inside the Top Cover

Table 3.1. Jumper List

Name	Function	Factory setting	Reference page
JP1	Sets RS-485 termination	Open	78, 79

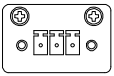
Table 3.2. Internal Connector List

Name	Function	Reference page
CN1	CD-ROM Connection Connector (36 pin half pitch)	81
CN5	CF Card Connector *1	82

*1 Insert the CF card with the bottom face down.

Power connection

Table 3.3. Power Connector

Connector type	DC input connector	Type	DFK-MC1,5/3-GF-3,81 (Made by PHONIX CONTACT)
 1 2 3		Pin No.	Signal name
		1	FG
		2	GND
		3	VCC

Connect the power unit IPC-POAW/10-01(option) for the IPC-BX/M360(PCI)C.

(1) Check that the power unit's SW is turned to be OFF.

(2) Connect the DC cable of power unit to the power connector on the computer itself.

(3) Fasten the DC cable with its built-in screws on both sides.

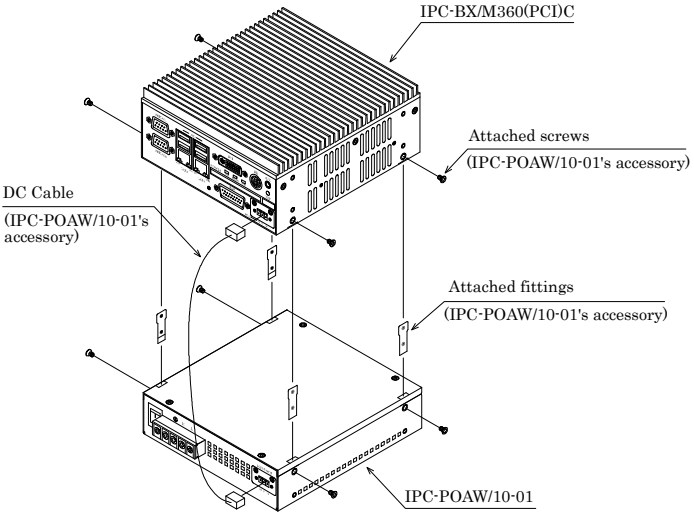


Figure 3.4. Connecting the IPC-BX/M360(PCI)C to the IPC-POAW/10-01(option)

An external power cable connector [MC1,5/3STF-3,81] is bundled. You can use this connector to connect a 10-V to 12-V external power supply. (A power supply of at least 30W is required to operate the IPC-BX/M360(PCI)C normally.)

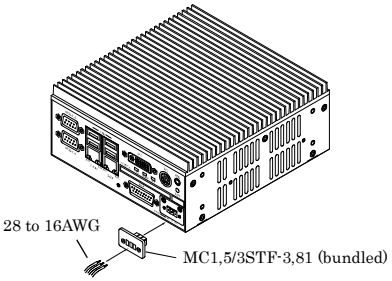


Figure 3.5. Connection with power cable connector in use

Installation method

The system unit can be installed in one of the orientations in (1) to (3) below. (Using the bundled system unit brackets)

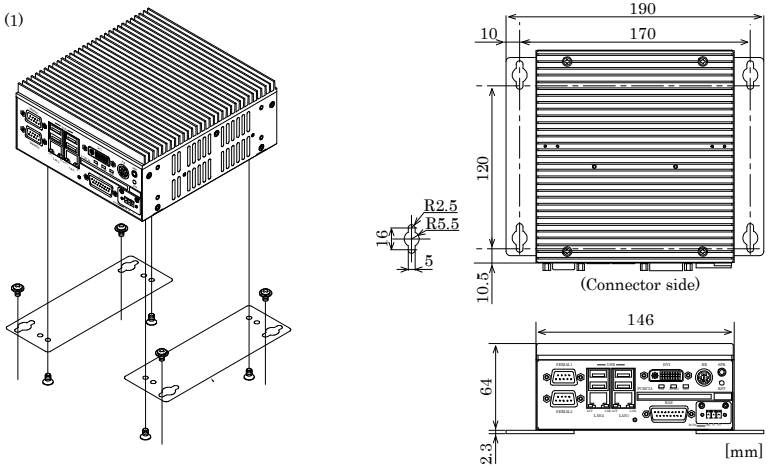


Figure 3.6. Installation method ***< 1 / 3 >***

(2)

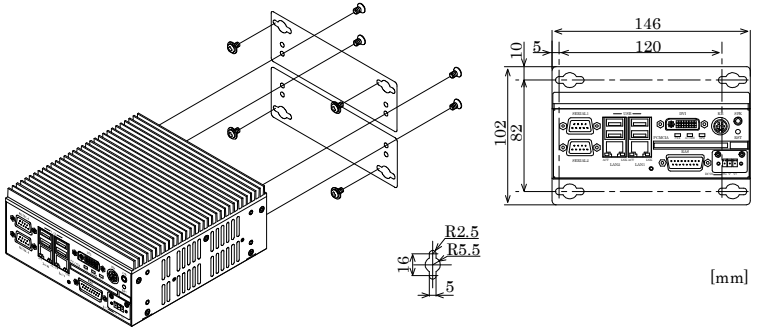


Figure 3.6. Installation method ***< 2 / 3 >***

(3)

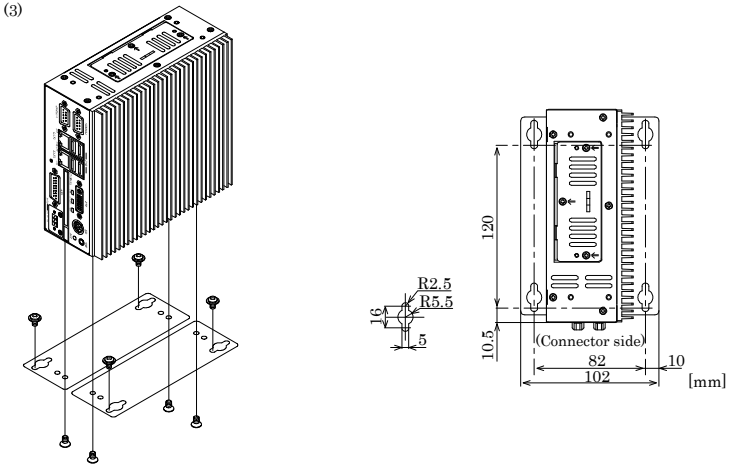


Figure 3.6. Installation method ***< 3 / 3 >***

Installation Requirements

The BOX-PC can be installed in any orientation O. Avoid orientation x's installation *1 since it might not adequately dissipate heat. Similarly, to maintain the operating temperature within the range specified in the specifications, ensure a clearance between the unit and surrounding equipment of at least 100mm for the top and rear and 50mm for the bottom and sides. (Meet these requirements even with the IPC-POAW/10-01 (option) connected.)

*1 Do not install the system unit with the heat sink upside down, on the ceiling, or with the HDD unit slot (left-side cover) blocked by the wall.

Installation Orientation

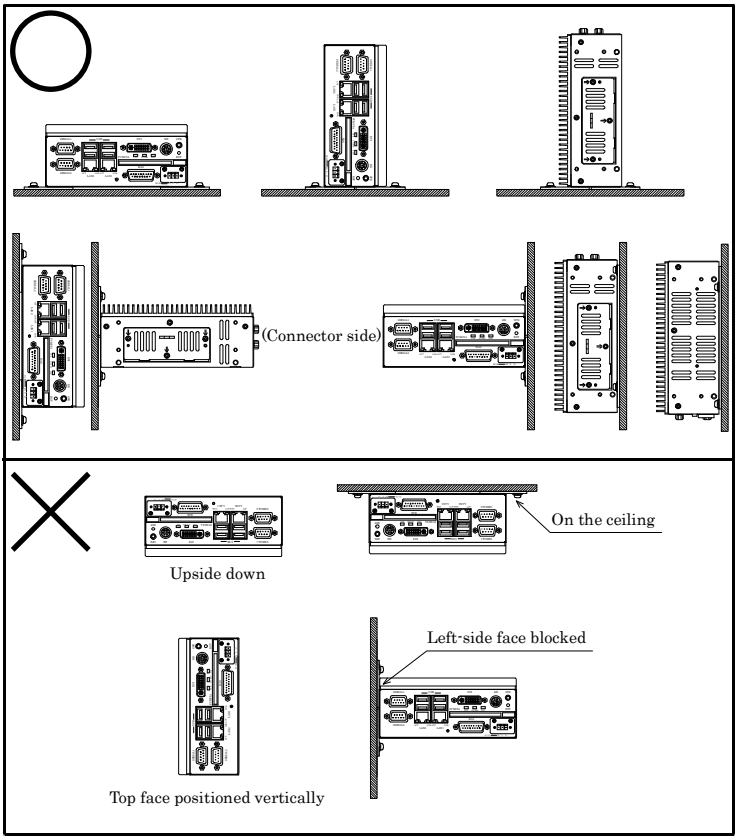


Figure 3.7. Installation Orientation

Distances between the BOX-PC and Its Vicinity

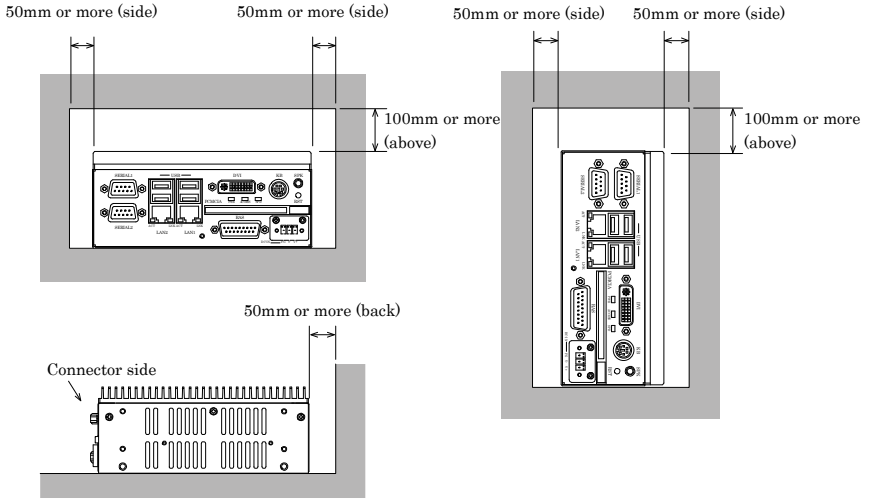


Figure 3.8. Distances between the BOX-PC and Its Vicinity

4. BIOS Setup

BIOS Setup

BIOS setup sets various settings during startup. When using the system for the first time, be sure to run BIOS setup. Once set up, the specified details will be backed up.

Starting the Setup Screen

When you turn on the system power supply, the BOX-PC displays the following initial screen as long as the system is normal. Press the <DEL> key at the keyboard.

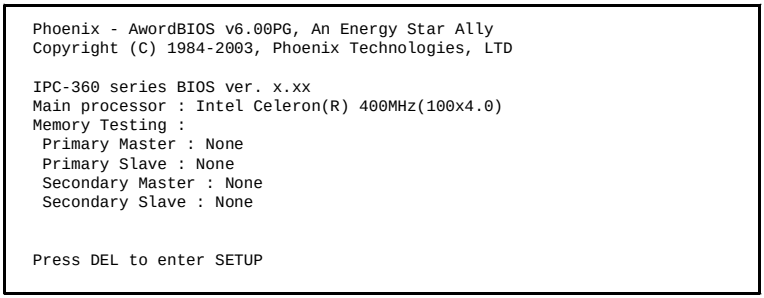


Figure 4.1. Initial Screen

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the <PageUp> and <PageDown> keys to change entries, press <F1> for help and press <Esc> to quit.

Table 4.1. Using Setup program

Key	Function
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)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ 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(EEPROM) 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
F5 key	Load previous values from CMOS(EEPROM)
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS(EEPROM) changes and exit

Getting Help

Press <F1> to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc> or the <F1> key again.

Note on the setup

Information in this chapter is subject to change without notice.

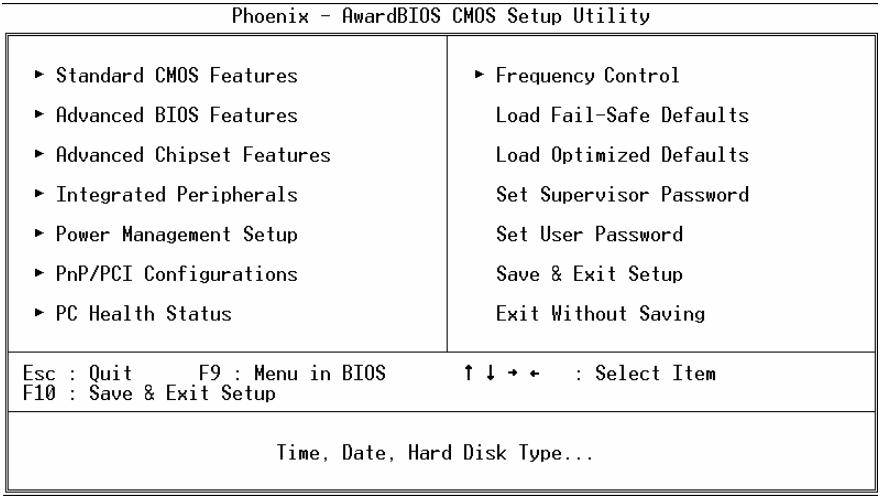


Figure 4.2. Main window

Main Menu

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

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories.

Standard CMOS Features

Use this menu to set the standard CMOS function available on your system.

Advanced BIOS Features

This section allows you to configure your system for basic operation.

Advanced Chipset Features

Use this menu to set up some features of the chipset.

Integrated Peripherals

Use this menu to set up peripheral devices such as IDE and PCI devices.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configuration

Use this menu to configure the PCI bus system.

PC Health Status

Use this menu to reference internal voltages and temperatures of the PC.

Frequency/Voltage Control

You do not have to use this menu for setup on this machine.

Load Fail-Safe Defaults

Use this menu to load the Fail-Safe Defaults values.

Load Optimized Defaults

Use this menu to load the BIOS appropriate default values.

Supervisor / User Password

Use these menu items to specify passwords for BIOS Setup.

You can set up all the BIOS setup items in supervisor mode but not in user mode.

⚠ CAUTION

Once a password is registered, even the password function itself cannot be cancelled without the password. Passwords should be handled with great care.

Save & Exit Setup

Use this option to save all the changes made on the Setup screen to CMOS (EEPROM) and reboot the PC.

Exit Without Save

Use this option to reboot the PC with the last saved settings without saving any changes made on the Setup screen to CMOS (EEPROM).

Standard CMOS Setup

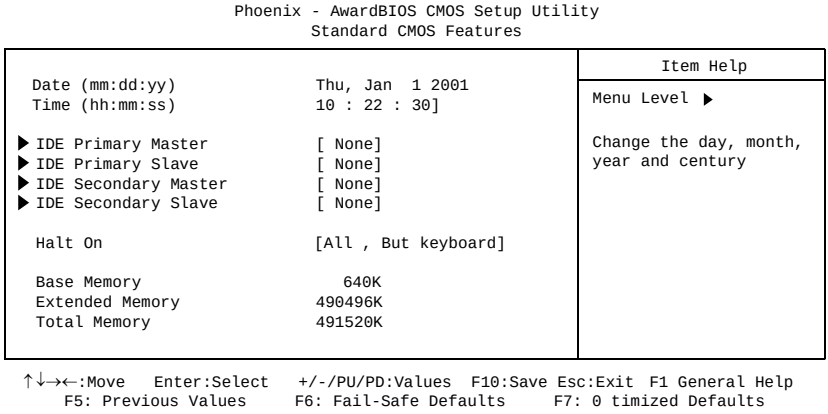


Figure 4.3. Standard CMOS Setup Window (factory setting)

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Selection from the **Standard CMOS Setup**

This table shows the selections that you can make on the **Standard CMOS Setup**.

Table 4.2. Selecting item of the Standard CMOS Setup

Item	Option	Description
Date	Month DD YYYY	Sets the date on the equipment calendar clock. Note that the 'Day' automatically changes when you set the date.
Time	HH : MM : SS	Sets the time on the equipment calendar clock.
IDE Primary Master	None Auto Manual	Set the type of HDD(SDD *1) to be used as the first drive. Selecting this field changes the screen to the submenu for manually setting drive configuration data such as the number of cylinders. This field is set to [Auto] by default. You can leave it intact for normal use.
IDE Primary Slave	None Auto Manual	Connection not allowed. Set to "None."
IDE Secondary Master	None Auto Manual	Usually, set this item to "None." If you have connected a CD-ROM drive to the secondary IDE connector, set this to "Auto" or "Manual" as required.
IDE Secondary Slave	None Auto Manual	Usually, set this item to "None." If you have connected a CF card to the CF connector, set this to "Auto" or "Manual" as required.
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	The default is "All, but Keyboard"; you usually do not have to change this setting.
Base Memory	N/A	Displays the detected amount of memory installed on the system.
Extended Memory	N/A	Displays the detected amount of memory installed on the system.
Total Memory	N/A	Displays the detected amount of memory installed on the system.

*1 To use a PC-SDD V series product with a capacity of 500 MB or less, set the item to "Manual" and select the CHS mode. For drive information such as the number of cylinders, see the manual for the PC-SDD series.

Advanced BIOS Features Setup

This section allows you to configure your system for basic operation.

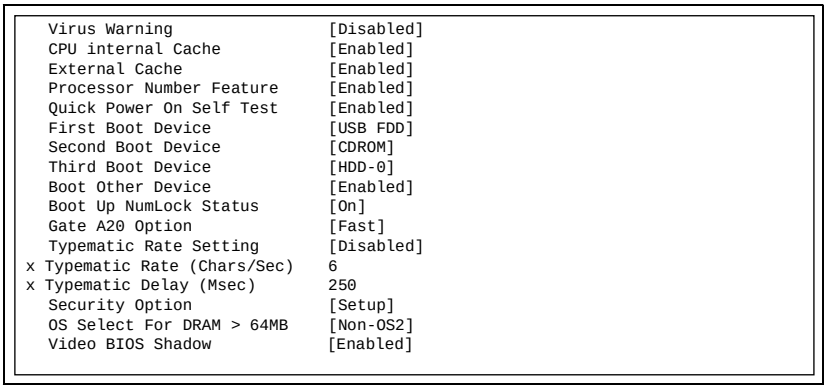


Figure 4.4. Advanced BIOS Features Window (factory setting)

Virus Warning

If you enable this feature, a warning message is displayed when a program (a virus in particular) attempts to write to the boot sector or partition table of the hard disk drive. If a warning message appears, run an antivirus program. This feature protects only the boot sector. Note that the feature does not protect the entire hard disk drive.

⚠ CAUTION

A virus warning message may be displayed in response to various diagnostic and installation programs which access the boot sector table. You should disable Virus Warning before running such a program.

Enabled	Displays a warning message when an attempt is made 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.

Description	Choice
CPU internal Cache The default is "Enabled"; you usually do not have to change this setting.	Enabled Disabled
External Cache The default is "Enabled"; you usually do not have to change this setting.	Enabled Disabled
Processor Number Feature The default is "Enabled"; you usually do not have to change this setting.	Enabled Disabled
Quick Power On Self Test Setting this item to "Disabled" causes Power On Self Test (POST) to be performed in more detail. The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled
First/Second/Third/Boot Device BIOS starts booting the system in the device order selected here. Set these items depending on the devices connected. - HDD-0 : Internal HDD (SDD) *1 - CD-ROM : Optional CD-ROM drive (IDE connection) - HDD-1 : Card plugged in the CF connector on the system unit *1 (IDE connection) - HDD-2/3 : Not available - USB-FDD/CDROM/HDD : Device connecting to the USB - LAN : For boot-up from a network *2	HDD-0 CDROM HDD-1 HDD-2 HDD-3 USB-FDD USB-CDROM USB-HDD LAN Disabled
Boot Other Device In the case that it is not possible boot with the First/Second/Third setting devices, BIOS tries the boot from other devices. The default is "Enabled"; you usually do not have to change this setting.	Disable Enable
Boot Up NumLock Status Select a NumLock key status at system startup. The default is "On"; you usually do not have to change this setting.	Off On
Gate A20 option The default is "Fast"; you usually do not have to change this setting.	Normal Fast

*1 If the system unit contains no HDD (SDD), "HDD-0" causes the system to be booted from the card in the CF connector on the system unit. ("HDD-1" is disabled.)

*2 Boot-up from a network uses the PXE (Pre-Boot eXecution Environment) client feature.
Boot-up from a LAN requires a server supporting the PXE client. (Such as a Windows remote install server)

Description	Choice
Typematic Rate Setting The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
Typematic Rate (Chars/Sec) This item is disabled with "Typematic Rate Setting" set to "Disabled." You usually do not have to change this setting.	6 8 10 12 15 20 24 30
Typematic Delay (Msec) This item is disabled with "Typematic Rate Setting" set to "Disabled." You usually do not have to change this setting.	250 500 750 1000
Security Option Select whether the password is required every time the system boots or only when you enter setup. Select whether the password be requested whenever the system boots up or only upon startup of Setup. The default is "Setup"; you usually do not have to change this setting. System: The system won't boot up and access to Setup will be denied unless the correct password is 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.	Setup System

⚠ CAUTION

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.

Description	Choice
OS Select For DRAM > 64MB The default is " Non-OS2"; you usually do not have to change this setting.	Non-OS2 OS2
Video BIOS Shadow The default is " Enabled"; you usually do not have to change this setting.	Disabled Enabled

Advanced Chipset Features Setup

Use this menu to set up some features of the chipset.

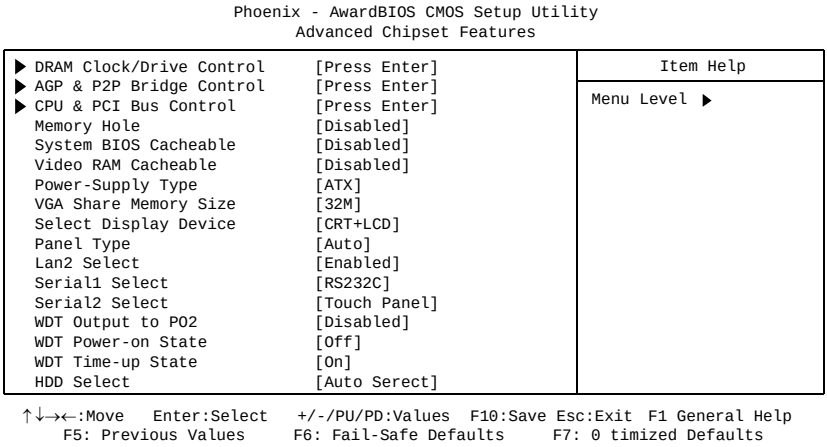


Figure 4.5. Advanced Chipset Features Window (factory setting)

DRAM Clock / Drive Control

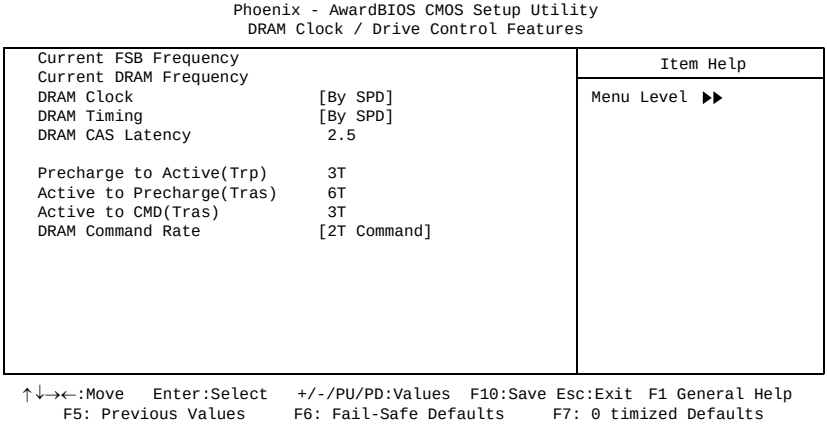


Figure 4.6. DRAM Clock / Drive Control Window (factory setting)

Description	Choice
DRAM Clock The default is "By SPD"; you usually do not have to change this setting.	100Mhz 133Mhz By SPD
DRAM Timing The default is "By SPD"; you usually do not have to change this setting.	Manual By SPD
DRAM CAS Latency This item is disabled with "DRAM Timing" set to "BySPD." You usually do not have to change this setting.	2.5 2
Precharge to Active (Trp) This item is disabled with "DRAM Timing" set to " By SPD." You usually do not have to change this setting.	2T 3T
Active to Precharge (Tras) This item is disabled with "DRAM Timing" set to " By SPD." You usually do not have to change this setting.	5T 6T
Active to CMD (Trcd) This item is disabled with "DRAM Timing" set to " By SPD." You usually do not have to change this setting.	2T 3T
DRAM Command Rate The default is "2T Command"; you usually do not have to change this setting.	2T Command 1T Command

AGP & P2P Bridge Control

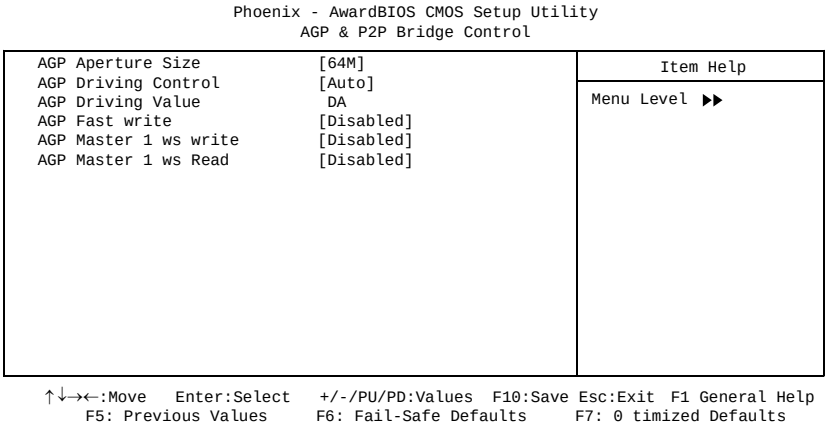


Figure 4.7. AGP & P2P Bridge Control Window (factory setting)

Description	Choice
AGP Aperture Size (MB) The default is "64M"; you usually do not have to change this setting.	256M 16M 128M 8M 64M 4M 32M
AGP Driving Control The default is "Auto"; you usually do not have to change this setting.	Auto Manual
AGP Driving Value This item is disabled with "AGP Driving Control" set to "Auto." You usually do not have to change this setting.	Min = 0000(h) Max = 00FF(h)
AGP Fast Write The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
AGP Master 1 WS Write The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
AGP Master 1 WS Read The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled

CPU & PCI Bus Control

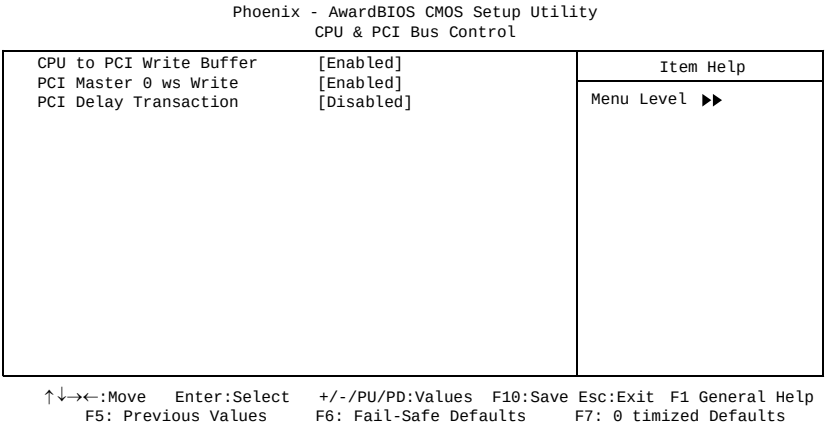


Figure 4.8. CPU & PCI Bus Control Window (factory setting)

Description	Choice
CPU to PCI Write Buffer The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled
PCI Master 0 WS Write The default is "Enabled"; you usually do not have to change this setting.	Enabled Disabled
PCI Delay Transaction The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
Memory Hole The default is "Disabled"; you usually do not have to change this setting.	Disabled 15M – 16M
System BIOS Cacheable The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled

Description	Choice
Video RAM Cacheable The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
Power-Supply Type The default is "ATX"; you usually do not have to change this setting.	AT ATX
Video Share Memory Size Specify the size of video memory. The specified size of main memory is allocated as video memory.	16M 32M 64M
Select Display Device Specify the display device. Set this item to "LCD" when the monitor to be used is a DVI/panel-link type (see "DVI Connector in Chapter 6.	CRT LCD CRT+LCD
Panel Type Specify the panel type. In Auto mode, the type (SVGA or XGA) of the FPD is automatically identified with the serial signal (COM) of the FPD at startup. If no FPD is connected (or the FPD connected is left off), the module enters the CRT mode (providing no display on the FPD). *1 *2 *3 *4	Auto 640x480 800x600 1024x768 1280x1024
Lan2 Select Enable or disable the left LAN port.	Enabled Disabled
Serial1 Select Switches between the RS232C (Serial1 connector) and RS485 (in the RAS connector).	RS232C RS485
Serial2 Select Switches between the RS232C (Serial2 connector) and touch panel port (in the DVI connector).	RS232C Touch Panel

*1 In the "Auto" mode, only a CONTEC flat panel display(FPD) can be identified when connected. If any other monitor is connected, the module enters the CRT mode.

*2 For use of "Auto," be sure to set "Serial2 Select" to "Touch Panel."

*3 FPD: Flat Panel Display LCD device

*4 If a CONTEC FPD is connected to use the "Auto" mode, the host computer may not be able to read the information on the display, and as a result, no screen image may come up (e.g. when the host computer is turned on before the FPD, when a cable is connected later on).
In this case, set the Panel Type to the size of the FPD used.

Description	Choice
WDT Output to PO2 Set watchdog timer output to PO2. Selecting "Enabled" connects the output of the watchdog timer to the PIO2 pin in the RAS connector. The output value changes depending on the "WDT Power-on State" and "WDT Time-up State" settings. (See P74)	Disabled Enabled
WDT Power-on State This item is enabled with "WDT Output to PO2" set to " Enabled." Set the state of output from the watchdog timer when the power is turned on. (See P74)	Off On
WDT Time-up State This item is enabled with "WDT Output to PO2" set to " Enabled." Set the state of output from the watchdog timer when the time-up. (See P74)	On Off
HDD Select Set the transfer mode of the HDD (SDD) connected. The default is "Auto Select"; you usually do not have to change this setting.	UDMA33 Auto Select

Integrated Peripherals

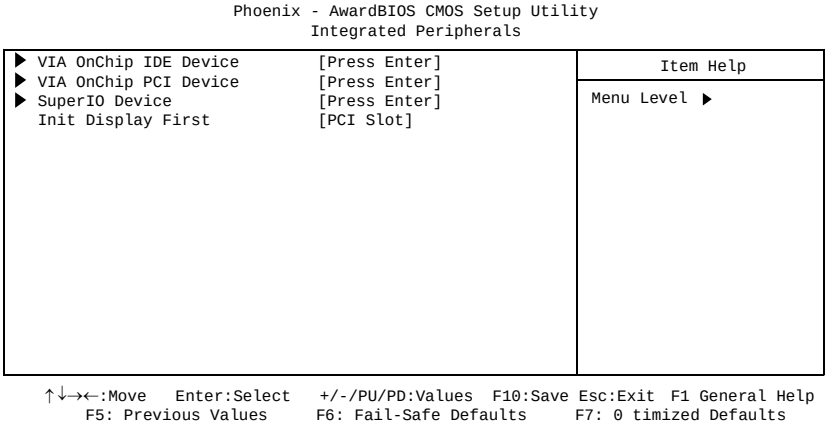


Figure 4.9. Integrated Peripherals Window (factory setting)

For details on each item, see the corresponding menu given below.

VIA OnChip IDE Device

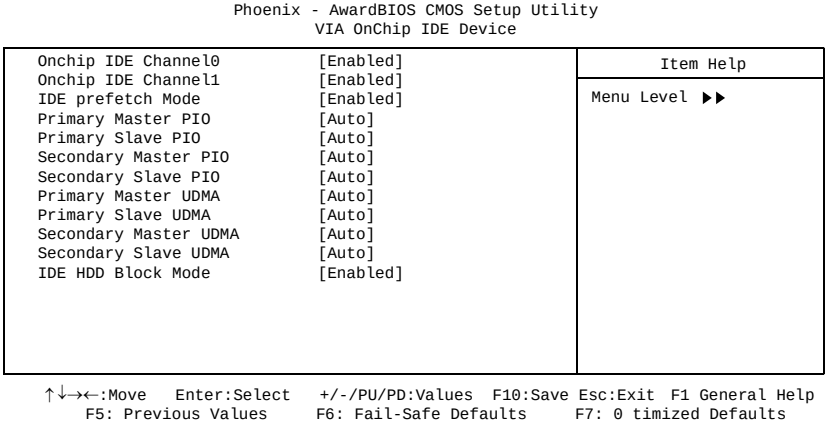


Figure 4.10. VIA Onchip IDE Device Window (factory setting)

Description	Choice
On-Chip IDE Channel 0 The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled
On-Chip IDE Channel 1 The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled
IDE Prefetch Mode The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled
Primary Master/Slave PIO The default is "Auto"; you usually do not have to change this setting.	Auto Mode 0 Mode 1 Mode 2 Mode 3 Mode 4
Secondary Master/Slave PIO The default is "Auto"; you usually do not have to change this setting.	Auto Mode 0 Mode 1 Mode 2 Mode 3 Mode 4
Primary Master/Slave UDMA The default is "Auto"; you usually do not have to change this setting.	Disabled Auto
Secondary Master/Slave UDMA The default is "Auto"; you usually do not have to change this setting.	Disabled Auto
IDE HDD Block mode The default is "Enabled"; you usually do not have to change this setting.	Disabled Enabled

VIA OnChip PCI Device

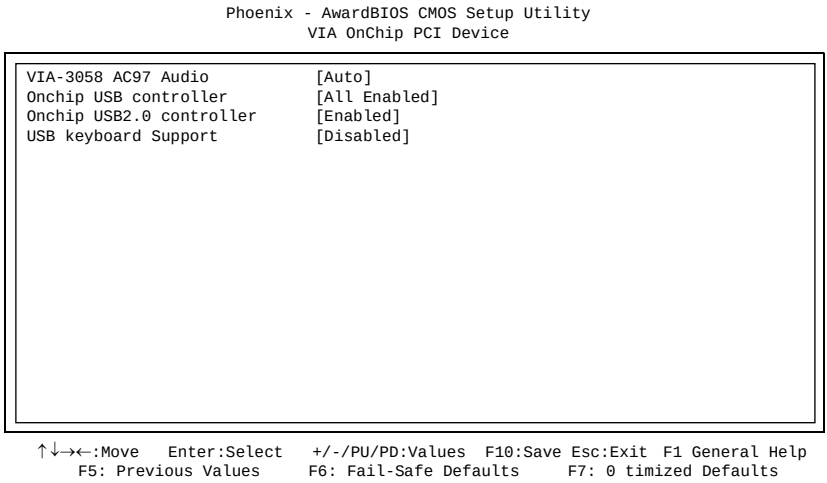


Figure 4.11. OnChip USB Controller Window (factory setting)

Description	Choice
VIA-3058 AC97 Audio Enable or disable the audio feature.	Auto Disabled
OnChip USB Controller Enable or disable the USB port.	All Disabled 1&3 USB Port All Enabled 1 USB Port 1&2 USB Port
OnChip 2.0 controller Enable or disable the use of the USB ports for USB2.0. When "Disabled" is selected, the USB port works as a USB1.1 port.	Enabled Disabled
USB Keyboard Support Select whether to emulate a USB keyboard as a PS/2 keyboard. Set this item to "Enabled" to install an OS with a USB keyboard. You do not have to set this to "Enabled" to place the keyboard under control of the OS's driver after starting the OS. The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled

Super IO Device

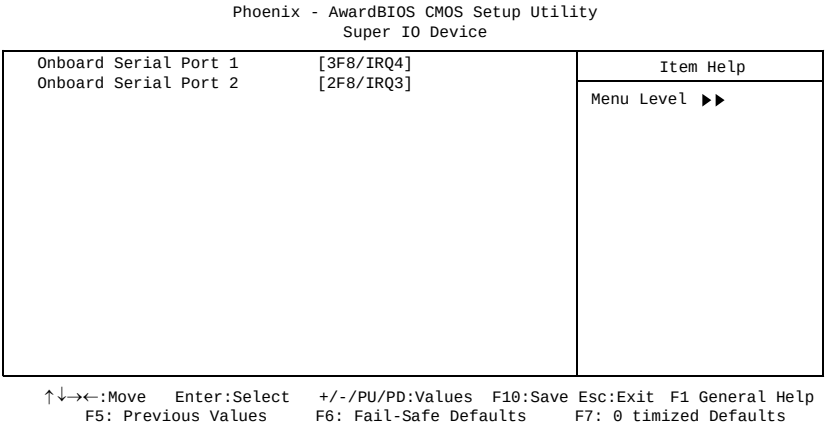


Figure 4.12. SuperIO Device Window (factory setting)

Description	Choice
Onboard Serial Port 1 Select the base I/O address and IRQ for serial port 1. - Selecting "3F8/IRQ4" assigns the port to COM1 - Selecting "2F8/IRQ3" assigns the port to COM2 - Selecting "3E8/IRQ4" assigns the port to COM3 - Selecting "2E8/IRQ3" assigns the port to COM4 in Windows.	Disabled 3F8 / IRQ4 2F8 / IRQ3 3E8 / IRQ4 2E8 / IRQ3 Auto
Onboard Serial Port 2 Select the base I/O address and IRQ for serial port 2. - Selecting "3F8/IRQ4" assigns the port to COM1 - Selecting "2F8/IRQ3" assigns the port to COM2 - Selecting "3E8/IRQ4" assigns the port to COM3 - Selecting "2E8/IRQ3" assigns the port to COM4 in Windows.	Disabled 3F8 / IRQ4 2F8 / IRQ3 3E8 / IRQ4 2E8 / IRQ3 Auto
Init Display First The default is "PCI Slot"; you usually do not have to change this setting.	PCI Slot AGP

Power Management Setup

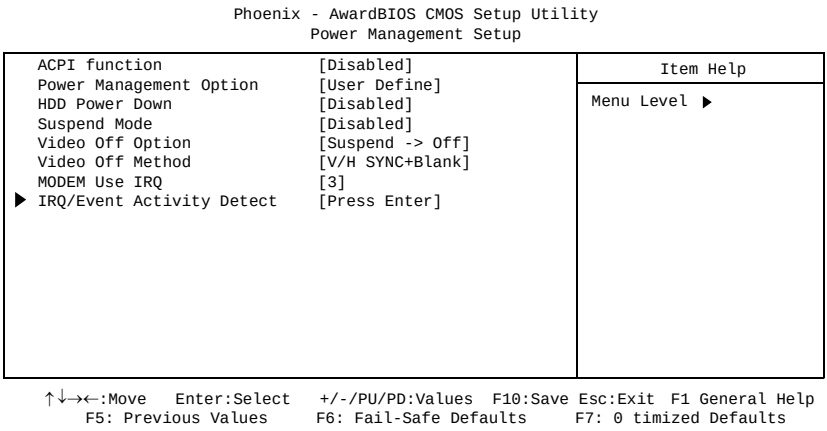


Figure 4.13. Power Management Setup Window (factory setting)

Description	Choice
ACPI function The default is "Disabled"; you usually do not have to change this setting.	Enabled Disabled
Power management Option Set the power save mode.	User Define Min saving Max saving
HDD Power Down This item is enabled with "Power management Option" set to "User Define." When the module is used under Windows, the relevant setting in Windows overrides the setting of this item.	Disabled 1 Min 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

Description	Choice
Suspend Mode This item is enabled with "Power management Option" set to "User Define." When the module is used under Windows, the relevant setting in Windows overrides the setting of this item.	Disabled 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 hour
Video Off Option - Always On : The monitor remains on even in suspend mode. - Suspend --> Off : The monitor is turned off in suspend mode. When the module is used under Windows, this setting is not adapted.	Always On Suspend -> Off
Video Off Method Select how to turn the monitor off. The default is "V/H SYNC+Blank"; you usually do not have to change this setting.	Blank Screen V/H SYNC+Blank DPMS Support
Modem Use IRQ The default is "3"; you usually do not have to change this setting.	NA 3 4 5 7 9 10 11

IRQ/Event Activity Detect

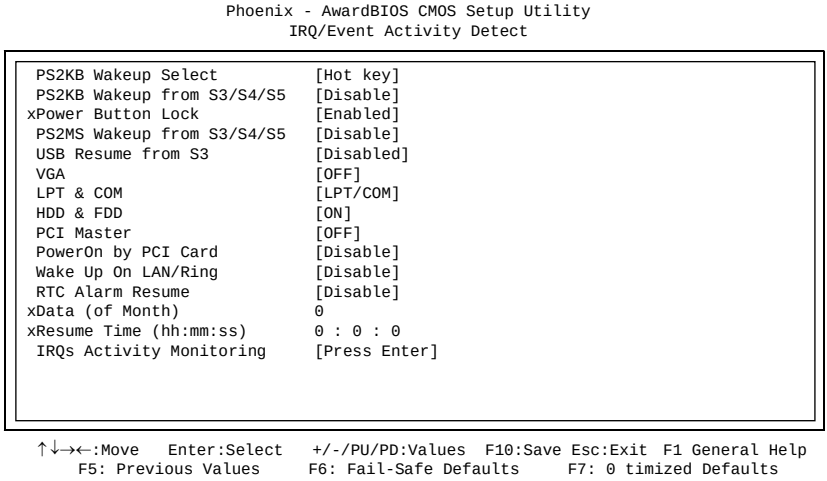
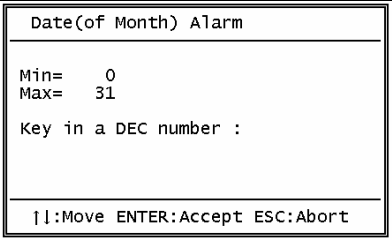
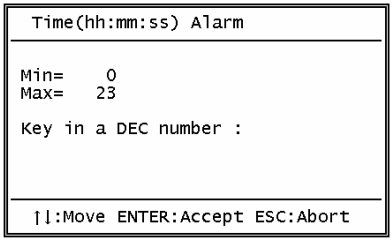


Figure 4.14. IRQ/Event Activity Detect Window (factory setting)

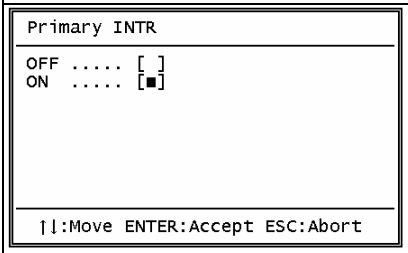
Description	Choice
PS2KB Wakeup Select This item is not used for the module. Use the module with this item set to "Hot key" by default.	Hot key Password
PS2KB Wakeup from S3/S4/S5 This item is not used for the module. Use the module with this item set to "Disabled" by default.	Disable Ctrl+F1 to Ctrl+F12 Power Wake Any key
Power Button Lock This item is not used for the module. Use the module with this item set to "Enabled" by default.	Disable Enable
PS2MS Wakeup from S3/S4/S5 Enable or disable the PS/2 mouse to turn the power on with Windows in the sleep/hibernate/shutdown state. (Dedicated to ATX mode. See P56)	Disable Enable
USB Resume from S3 This item is not used for the module. Use the module with this item set to " Disabled" by default.	Disable Enable
VGA This item is not used for the module. Use the module with this item set to "OFF" by default.	OFF ON

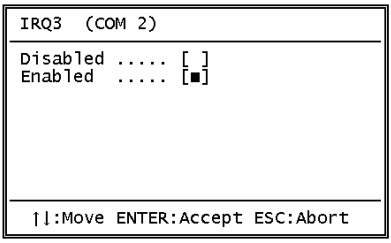
Description	Choice
LPT & COM This item is not used for the module. Use the module with this item set to "LPT/COM" by default.	NONE LPT COM LPT/COM
HDD & FDD The default is "ON"; you usually do not have to change this setting.	OFF ON
PCI Master The default is "OFF"; you usually do not have to change this setting.	OFF ON
Power-On by PCI card The default is "Disabled"; you usually do not have to change this setting.	Disabled Enabled
Wake Up On LAN/Ring Enable or disable the LAN to turn the power on with Windows in the sleep/hibernate/shutdown state. (Dedicated to ATX mode. See P56) *1	Disabled Enabled
RTC Alarm Resume If this item is set to "Enabled," the RTC (realtime clock) alarm can be used to specify the date and time at which to resume from suspend mode or restart the system.	Disabled Enabled
	

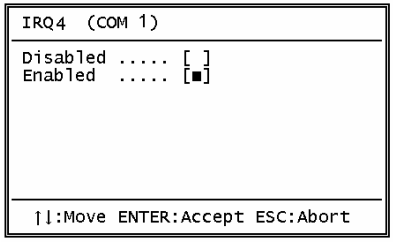
*1 To use the Wake Up On LAN feature, this machine must receive a magic packet to awaken itself. The magic packet contains six bytes of FF followed by 16 contiguous copies of the MAC address (irrespective of the protocol used).

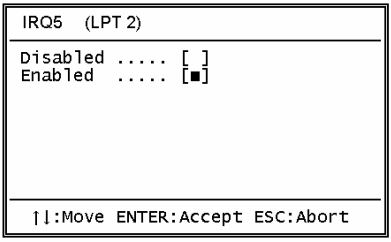
IRQs Activity Monitoring

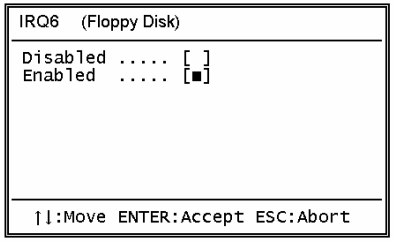
Description	Choice
Selecting "On" (default) causes the system to resume from suspend mode whenever an event occurs. The following table lists IRQs (Interrupt ReQuests). You usually do not have to change the setting from the default. When an I/O devices requires servicing by the operating system, the I/O device generates an IRQ to send the signal. When the operating system is ready for response, it generates an interrupt to execute the requested service. Accordingly, the options available are On (default) and Off. When "Off" is selected, the system won't enter suspend mode or return to normal mode in response to IRQs.	

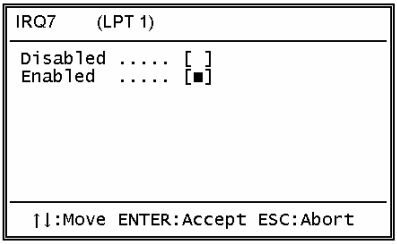


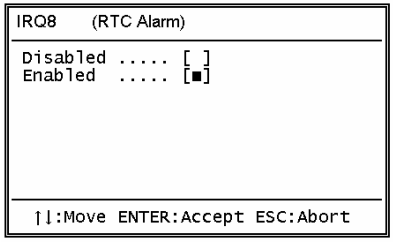


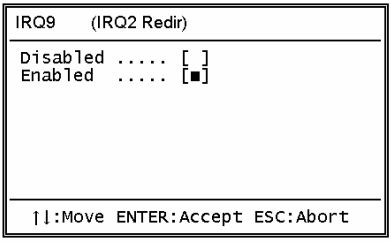












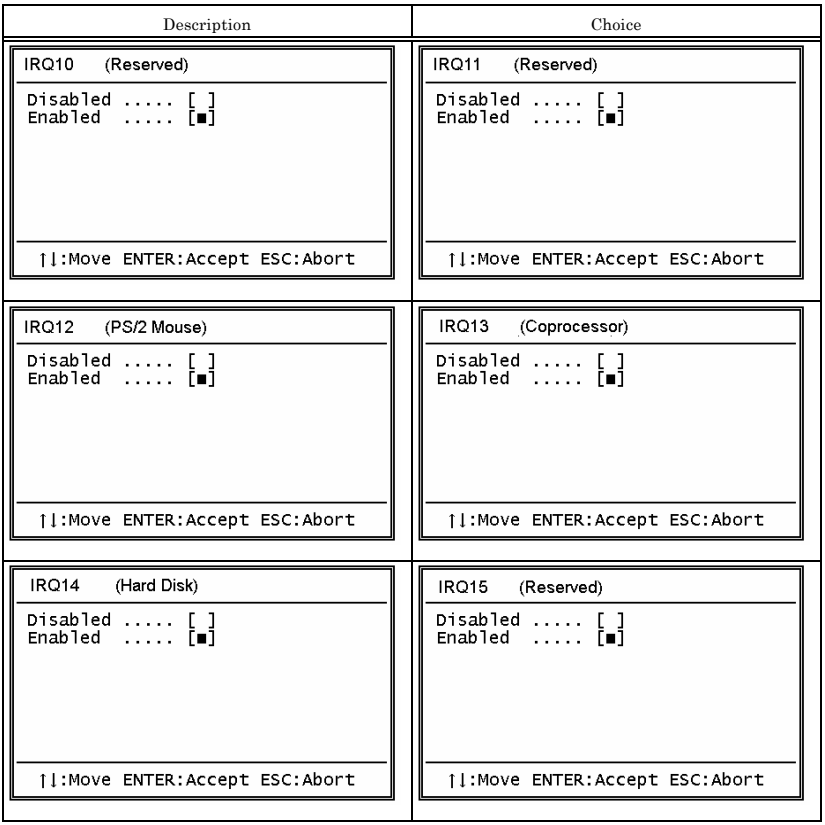


Figure 4.15. IRQs Activity Monitoring Window (factory setting)

PnP/PCI Configuration Setup

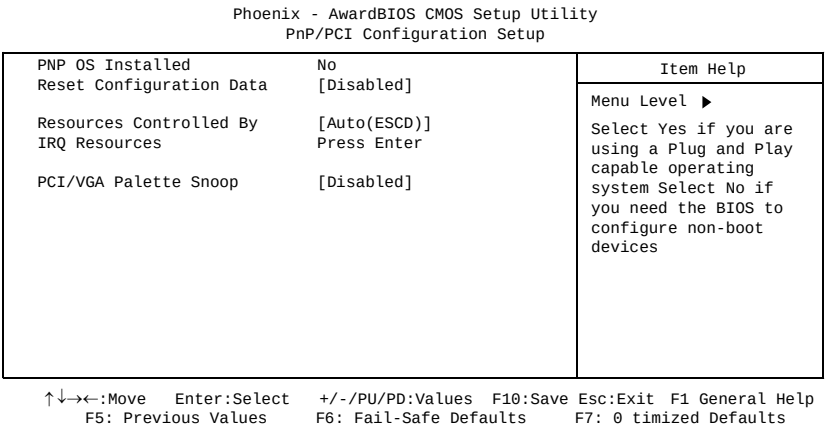


Figure 4.16. PnP/PCI Configuration Setup Window (factory setting)

Description	Choice
PNP OS Installed The default is "No"; you usually do not have to change this setting.	No Yes
Reset Configuration Data The default is "Disabled"; you usually do not have to change this setting. After upgrading the BIOS, start it up with "Enabled" selected, then select "Disabled" again.	Disabled Enabled
Resource Controlled by The default is "Auto(ESCD)"; you usually do not have to change this setting.	Auto(ESCD) Manual

IRQ Resources

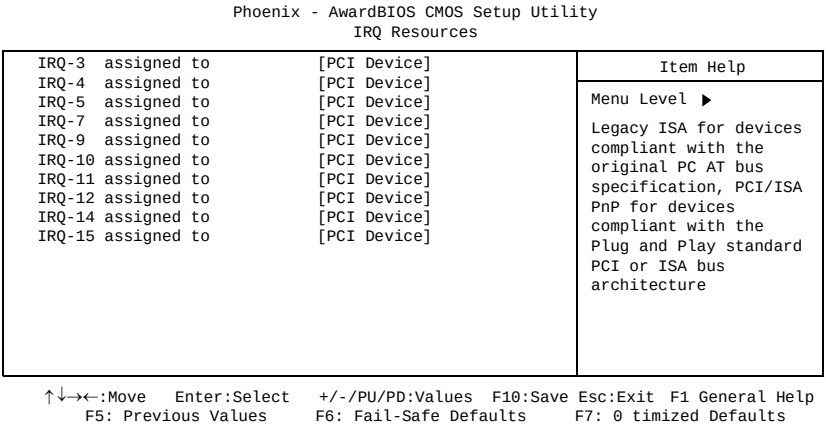


Figure 4.17. IRQ Resources Window (factory setting)

To set resources manually, use them as "PCI Device" because this machine cannot accept ISA devices.

Description	Choice
PCI/VGA Palette Snoop This item is not used for the module. Use the module with this item set to "Disabled" by default.	Disabled Enabled

PC Health Status

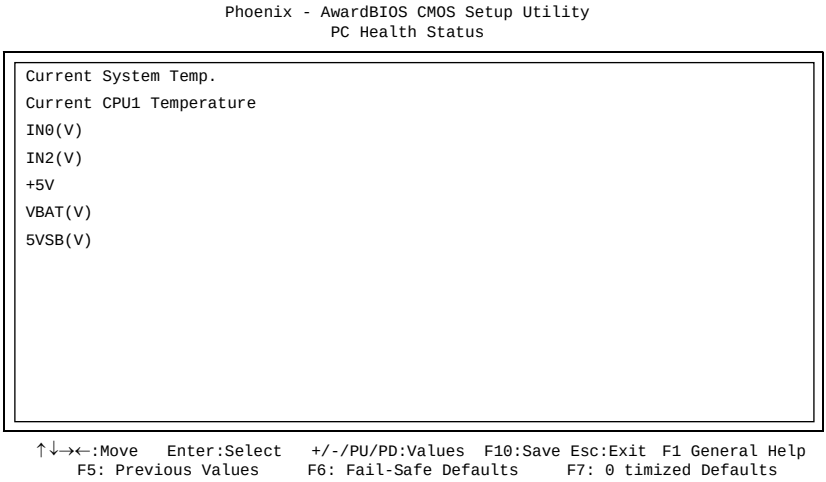


Figure 4.18. PC Health Status Window

Description	Choice
Current CPU Temp.	Displays the temperature detected by the CPU temperature sensor.
Current System Temp.	Displays the temperature detected by the CPU board temperature sensor.
IN0 / IN2 / +5V / VBAT / 5VSB	Displays the CPU core, +3.3V, +5V, battery, and 5VSB voltages.

Frequency/Voltage Control

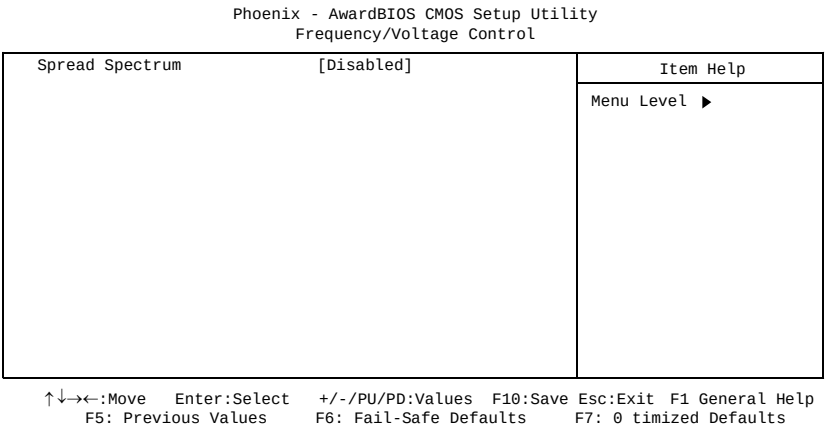


Figure 4.19. Frequency/Voltage Control Window (factory setting)

Description	Choice
Spread Spectrum This item is not used for the module. Use the module with this item set to "Disabled" by default.	Disable Enable

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) ? N

Press the <Y> key loads the most safe settings.

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) ? N

Pressing the <Y> key loads the values optimized by the BIOS. The BIOS optimized settings are factory defaults.

Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

SUPERVISOR PASSWORD: can enter and change the options of the setup menus.

USER PASSWORD: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Enter a password within eight characters and press the <Enter> key, and you will be prompted to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

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.

You can also set up the password so that you are prompted to enter it whenever the 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. If the Security option is set to “System”, the password will be required both at boot and at entry to BIOS Setup. If set to “Setup”, prompting only occurs when trying to enter BIOS Setup.

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

Pressing the <Y> key saves the changes made on the Setup screen to CMOS (EEPROM).
Pressing “Y” stores the selections made in the menus in CMOS(EEPROM) – a special section of memory that stays on after you turn your system off. The next time you start up your computer, the BIOS configures your system according to the value stored in CMOS(EEPROM). 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

Pressing the <Y> key quits Setup without saving the changes made on the Setup screen to CMOS (EEPROM). Quitting Setup without saving leaves the last saved settings in effect, with which the system is rebooted after that.

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.

POST Beep

The BIOS reports errors using two types of beeps when they cannot be reported with on-screen messages.
One is a long beep followed by two short beeps. This indicates an error in the video system.
The other is a repetition of a long beep, indicating a DRAM error.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST.

CMOS checksum error

CMOS memory recording BIOS Setup information contains an invalid checksum. This indicates that invalid data has been written to CMOS memory. The error occurs, for example, when the BIOS is upgraded or when the power is turned off while BIOS Setup is saving data.

You can recover from the error by writing valid Setup data unless the error is caused by a fault in CMOS memory.

DISK BOOT failure
[INSERT SYSTEM DISK AND PRESS ENTER]

No boot device was found.

This message appears, for example, when the BIOS cannot find any drive from which to boot the system. Check whether a bootable device has been connected and whether the connectors and cables have been plugged correctly.

Error encountered initializing hard drive
Error initializing hard disk controller
Hard disk(s) fail (80)
Hard disk(s) fail (40)
Hard disk(s) fail (20)
Hard disk(s) fail (10)
Hard disk(s) fail (08)

The HDD (SDD) is abnormal.

These messages appear when the HDD (SDD) connected is detected to be abnormal in some way. If any of the messages is displayed, check the connection of the drive and its settings.

Primary IDE Channel no 80 conductor cable installed

Secondary IDE Channel no 80 conductor cable installed

These messages appear when the system unit cannot recognize a connected ATA100 IDE device as an ATA100 device. If either of the messages is displayed, check that "HDD Select" in the "Advanced Chipset Features" menu has been set to "Auto Select."

Keyboard error or no keyboard present

This message appears with no keyboard connected.

The message may also appear if a key remains held down during a boot-up.

If this message is displayed, check the connection of the keyboard and its situation during startup.

If you use the module with no keyboard connected, use BIOS Setup to set "Halt On" in the "Standard CMOS Feature" menu to "All, But Keyboard."

Keyboard is locked out – Unlock the key

A key remains held down during a system boot. Check that the keyboard is connected correctly and that no key is pressed during a system boot.

Memory address error at…
Memory parity error at…
Memory verify error at…
Memory test fail

These error messages appear when system memory is abnormal.

They may appear when a BIOS Setup value is abnormal.

Run BIOS Setup again if possible.

Press F1 to disable NMI, F2 to REBOOT

This message appears when the system detects a nonmaskable interrupt (NMI).

You can select whether to continue processing with the NMI disable or to reboot the system with the NMI enabled after the message is cleared.

Press a key to REBOOT

This message appears along with another message for an error, indicating that the error requires a reboot.

Press any key and the system will reboot.

System halted, (CTRL-ALT-DEL) to REBOOT…

This message appears along with another message as well, but indicating that the system has been hung. Press and hold down the <CTRL> and <ALT> keys and press <DEL> to re-start the system.

BIOS ROM checksum error – System halted

BIOS ROM data is invalid. This message appears, for example, when an attempt to upgrade the BIOS has failed. BIOS ROM must be removed for repair.

5. Each Component Function

Component Identification

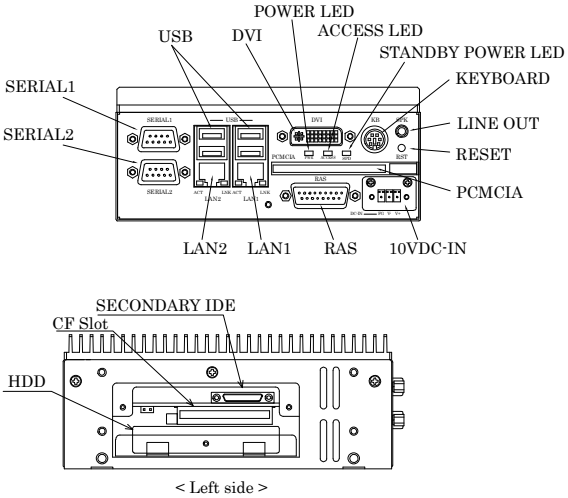


Figure 5.1. Component Identification

Table 5.1. Component Identification

Name	Function
LINE OUT	Line out (ϕ3.5 PHONE JACK)
KEYBOARD	Keyboard connector (MINI-DIN, 6pin)
SERIAL1	Serial port 1 connector (9pin, male D-SUB)
SERIAL2	Serial port 2 connector (9pin, male D-SUB)
USB	USB port connector
LAN1, LAN2	Ethernet connector (RJ-45)
PCMCIA	PCMCIA card slot
DVI	DVI connector (29pin, DVI-I)
RAS	RAS function (9pin, female D-SUB)
RESET	Hard reset push button
POWER LED	Power ON indicator
ACCESS LED	Internal hard disk access lamp
STANDBY POWER LED	Stand by Power LED (Dedicated to ATX mode, coming on at shutdown) *1
SECONDARY IDE	Secondary IDE connector (dedicated 36pin half-pitch connector)
CF Slot	CF Card Slot(Secondary IDE connection)

*1 See the list of the next page for differences between ATX and AT modes.

Mode	Setting method	At shutdown (standby/power-off state)
ATX mode	- In case of Windows XP Open the Control Panel, select "Turn off Computer" from "Performance and Maintenance," then check "Enable Advanced Power Management support." under the APM tab, then reboot the system - In case of Windows 2000 Check "Enable Advanced Power Management support." under the APM tab from the Control Panel – Power Option, then reboot the system	- SPD (standby power indicator LED) comes on. - Recycle the DC power supply, press any key on the PS/2 keyboard, click the PS/2 mouse button (see P41), or use WakeupOnLan (see P42) to return to the power-on state.
AT mode	Uncheck the above option, then reboot the system.	Recycle the DC power supply to return to the power-on state.

Line out Interface

A line output connector is provided, named SPK (3.5ϕ stereo mini jack). You can plug a headphone or amplifier-integrated speakers into this connector.

Audio driver

The audio driver is required to use the line output interface.

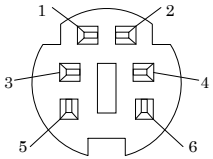
Visit the CONTEC web site to download the audio driver (IPC-SLIB-01) for the OS running on your BOX-PC.
For the download, see Chapter 6 “List of Options".

Keyboard / Mouse Interface

The BOX-PC is equipped with a keyboard connector named KB (MINI-DIN 6P).

A PS/2 mouse can also be used with the bundled keyboard/mouse branch cable.

Table 5.2. Keyboard / Mouse Interface

Connector type	Equivalent to the MD-DS12300-14S-14(JST)		
			
Pin No.	Signal name	Pin No.	Signal name
1	+KBD DATA	5	+KBD CLK
2	+MOUSE DATA	6	+MOUSE CLK
3	GND	SHELD	GND
4	+5.0V DC	---	

Serial Port Interface

Serial port 1, 2(RS-232C port)

The BOX-PC is equipped with two RS-232C-compliant serial port connectors (SERIAL1: Serial port 1 and SERIAL2: Serial port 2). You can use BIOS Setup (described in Chapter 4) to configure an I/O address, interrupt and unused state for each of the ports independently. (The same I/O address and IRQ cannot be shared with any other device.)

Note that Serial Ports 1 and 2 are shared ports also available as the RS-422/485 and touch panel interfaces, respectively. The interfaces sharing each serial port are mutually exclusive. *1

To use the serial port for the interface other than RS-232C, see the relevant page.

*1 The serial ports are set as follows by default: SERIAL1: RS232C / SERIAL2: Touch Panel. To use Serial Port 2, run BIOS Setup to set "Serial2 Select" in the "Advanced Chipset Features" menu to "RS232C". (See P33)

Table 5.3. Serial port 1, 2 I/O address and Interrupts

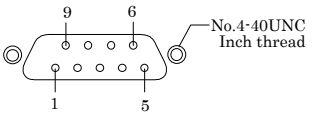
COM	I/O address	Interrupt
1	3F8h-3FFh	IRQ 3 IRQ 4
2	2F8h-2FFh	
3	3E8h-3EFh	
4	2E8h-2EFh	

The BIOS defaults to the following factory settings:

```
Serial port 1: COM1(3F8h-3FFh),IRQ4
Serial port 2: COM2(2F8h-2FFh),IRQ3
```

Table 5.4. Serial Port Connector

Connector used on the unit	9-socket D-SUB (MALE)



Pin No.	Signal name	Meaning	Direction
1	CD	Carrier detect	Input
2	RD	Received data	Input
3	TD	Transmitted data	Output
4	DTR	Data terminal ready	Output
5	GND	Signal ground	-----
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Ring indicator	Input

I/O Addresses and Instructions

The I/O addresses and instructions of COM1 are shown next.

Table 5.5. I/O Addresses

I/O address	DLAB	Read/Write	Register	
03F8H	0	W	Transmitter holding register	THR
		R	Receive buffer register	RBR
	1	W	Divisor latch register (LSB)	DLL
03F9H	1	W	Divisor latch register (MSB)	DLM
	0	W	Interrupt enable register	IER
03FAH	X	R	Interrupt ID register	IIR
03FBH	X	W	Line control register	LCR
03FCH	X	W	Modem control register	MCR
03FDH	X	R	Line status register	LSR
03FEH	X	R	Modem status register	MSR
03FFH	X	R/W	Scratch register	SCR

DLAB (Divisor Latch Access Bit) : The value in bit 7 of the line control register

Table 5.6. Function of Each Register ***< 1 / 4 >***

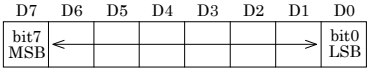
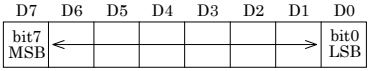
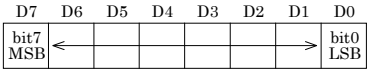
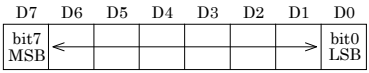
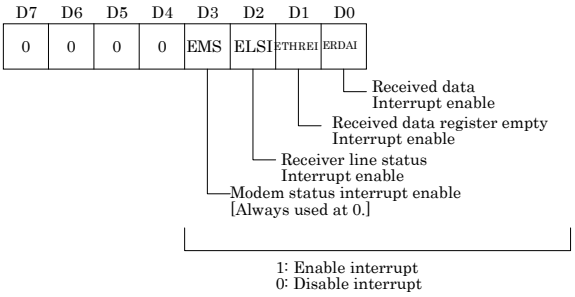
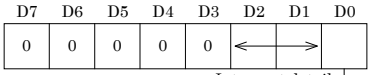
I/O address	Description
03F8H	THR: Transmitter Holding Register [DLAB=0]  Register dedicated to write transmitted data to
03F8H	RBR: Reciever Buffer Register [DLAB=O]  Register dedicated to read received data from
03F8H	DLL: Divisor Latch (LSB) [DLAB=1]  Baud rate setting register (LSB)
03F9H	DLH: Divisor Latch (MSB) [DLAB=1]  Baud rate setting register (MSB)
03F9H	IER: Interrupt Enable Register [DLAB=0] 

Table 5.6. Function of Each Register ***< 2 / 4 >***

<table>
<tr><th>I/O address</th><th>Description</th></tr>
<tr><td>03FAH</td><td>IIR : Interrupt Identification Register
 

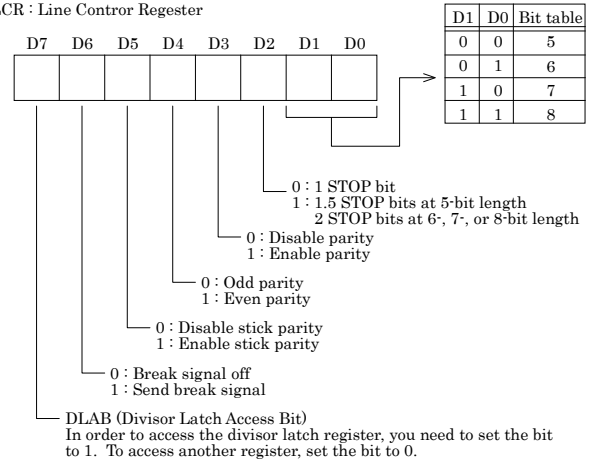
<table>
<tr><th>bit2</th><th>bit1</th><th>bit0</th><th>Priority</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>1</td><td>——</td><td>Interrupts are not generated.</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1 (high)</td><td>Generated by overrun, parity, framing error or break interrupt.
Cleared when the line status register is read.</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>2</td><td>Generated when the receive buffer register is ready.
Cleared when the receiving buffer is read.</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>3</td><td>Generated when the transmitter holding register is empty. Cleared when the IIR is read or when transmitted data is written to THR.</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>4 (low)</td><td>Modem status interrupt is generated.
(CTS, DSR, RI, CD)
Cleared when the modem status register is read.</td></tr>
</table></td></tr>
<tr><td>03FBH</td><td>LCR : Line Contror Regester
 
</td></tr>
</table>

Table 5.6. Function of Each Register ***< 3 / 4 >***

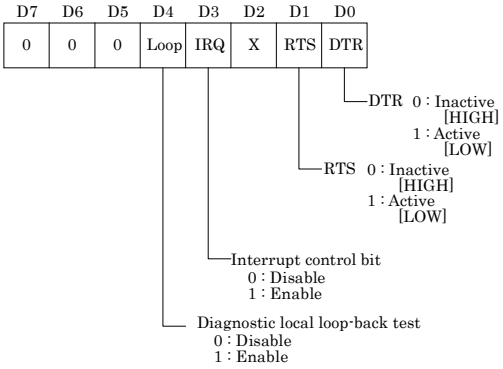
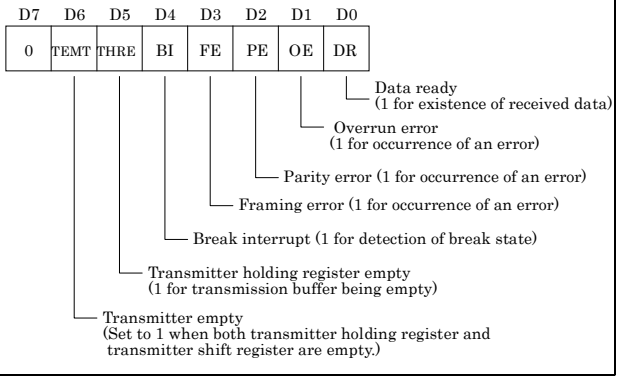
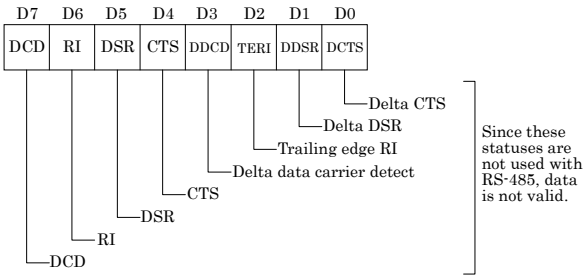
I/O address	Description
03FCH	MCR: Modem Control Register 
03FDH	LSR: Line Status Regester 

Table 5.6. Function of Each Register ***< 4 / 4 >***

I/O address	Description
03FEH	MSR : Modem Status Register 
03FFH	SCR : Scratchpad Register This is an 8-bit, readable/writable register which is available to the user to allow data to be saved temporarily.

Baud Rate Settings

A baud rate is set by software by dividing the clock input (1.8432MHz). The baud rate in terms of hardware can be set to a maximum of 115,200 bps. The baud rates available in practice depend on the operating environment (cable, software, etc.). The table below lists typical baud rates and their respective values to be written to the divisor latch register (LSB, MSB).

Table 5.7. Baud Rate Settings

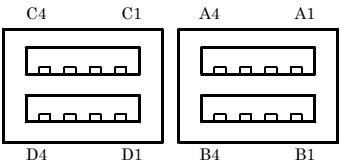
Baud rate to be set	Value to be set in the divisor register	Setting error (%)
50	2304	---
75	1536	---
110	1047	0.026
134.5	857	0.058
150	768	---
300	384	---
600	192	---
1200	96	---
1800	64	---
2000	58	0.69
2400	48	---
3600	32	---
4800	24	---
7200	16	---
9600	12	---
19200	6	---

Example: To set 9,600 bps, write "00" to the (MSB) divisor latch register and "12 (decimal)" to the (LSB) divisor latch register.

USB Ports

The BOX-PC is equipped with four USB interface channels.

Table 5.8. USB Connector



Pin No.	Signal name	Pin No.	Signal name
A1	USB0 Vcc	B1	USB1 Vcc
A2	USB0 -Data	B2	USB1 -Data
A3	USB0 +Data	B3	USB1 +Data
A4	USB0 GND	B4	USB1 GND
C1	USB2 Vcc	D1	USB3 Vcc
C2	USB2 -Data	D2	USB3 -Data
C3	USB2 +Data	D3	USB3 +Data
C4	USB2 GND	D4	USB3 GND

⚠ CAUTION

- When installing the Windows2000/XP package versions from USB-CDROM, there are no note.*1*2 In recovering pre-installation OS, please recover with reference to an appending recovery procedure document.
- USB-HDD boot is checking only starting of MS-DOS.*2
- The total current capacity of four channels of USB connectors is 1 A or less.
  Although the maximum current capacity per channel is 500 mA, configure the devices such that the total current consumption by the four channels does not exceed 1 A.
- There is apparatus by which current flows backwards from a connection cable to BOXPC at the time of power supply off of BOXPC among USB apparatus. Since you may be unable to start BOXPC when such apparatus is connected, please remove USB apparatus and connect again after a power supply injection. However, please connect again before performing apparatus detection, when using USB apparatus as a boot device.

*1 Only SP4(or later) is about Windows 2000.

*2 Basic functional operation of a screen display etc is checked. However, no operation of the functions of OS is guaranteed.

Ethernet

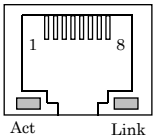
The module is equipped with two channels of Fast Ethernet.

- Network type : 100BASE-TX/10BASE-T
- Transmission speed * : 100M/10M bps
- Max. network path length : 100m/segment
- Controller : RTL8139DL(Realtek)

* Operation at 100Mbps requires a category 5 cable.

Table 5.9. Ethernet Connector

Connector type	RJ-45



Pin No.	Signal name	Meamimg
1	TD+	Transmitted data (+)
2	TD-	Transmitted data (-)
3	RD+	Received data (+)
4	N.C.	Not connected
5	N.C.	Not connected
6	RD-	Received data (+)
7	N.C.	Not connected
8	N.C.	Not connected

LEDs for the display of network status

LINK : Normal connection display

ACT : Transmission/reception indicator

LAN drivers

Visit the CONTEC web site to download the LAN driver (IPC-SLIB-01) for the OS running on your BOX-PC. For the download, see Chapter 6 “List of Options"

PC Card Slots

PCMCIA compliant, CardBus compatible card slots are provided [TYPE II x 1 size]

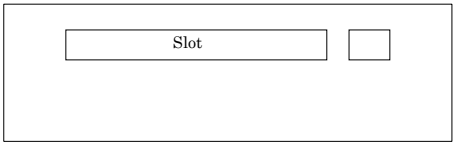


Figure 5.2. Slot Numbers and Locations

Attaching the Metal Brace to Keep the Card in Place

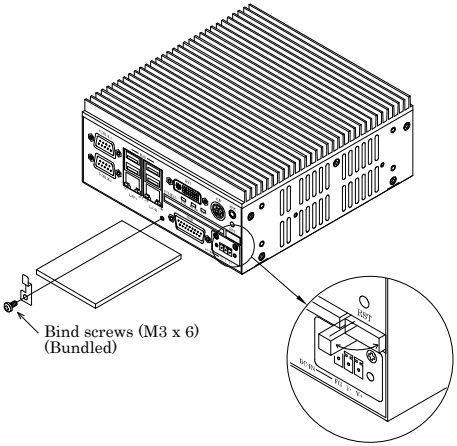


Figure 5.3. Attaching the Metal Brace to Keep the Card in Place

Power Supply to the Card

The voltage that can be used and the current capacity are as shown below:

Table 5.10. Power Supply to the Card

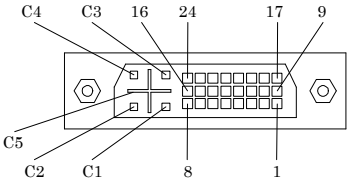
Voltage	Current capacity (Max.)
+5V	250mA/Slot
+3.3V	250mA/Slot
+12V	Not supplied.

DVI Connector

This is the DVI connector for the CRT/LCD. You can use it to connect a display (even a D-SUB-15pin connector is acceptable by using the bundled DVI-analog RGB adapter) or a CONTEC Panel Link display *1. The pin assignments are as follows.

Table 5.11. DVI Connector

Connector type	DVI-I 29pin



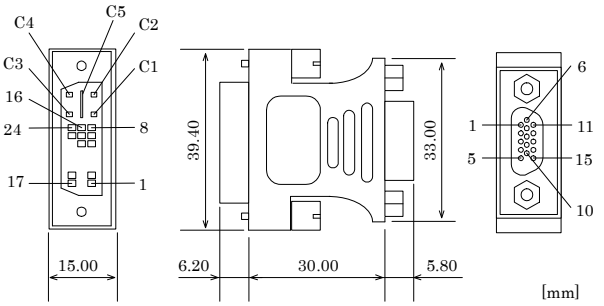
Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name
1	DATA2-	13	N.C.	C1	RED
2	DATA2+	14	+5V	C2	GREEN
3	DATA2 SHIELD	15	GND	C3	BLUE
4	N.C.	16	HPD	C4	HSYNC
5	N.C.	17	DATA0-	C5	GND
6	DDC CLK	18	DATA0+		
7	DDC DATA	19	DATA0 SHIELD		
8	VSYNC	20	TXD		
9	DATA1-	21	RXD		
10	DATA1+	22	DATA0 SHIELD		
11	DATA1 SHIELD	23	CLK+		
12	N.C.	24	CLK-		

*1 To use a CONTEC panel display, select "Touch Panel" to the "Serial2 Select" in the "Advanced Chipset Features" menu or the display mode of the connected display with the "Panel Type." (See P33)

⚠ CAUTION

- Installation of the display driver for windows sets resolution as 1024 x 7684. When you use it in different resolution, please re-setup in the display mode before re-starting.
  When it re-starts without setting up, it becomes impossible to express a screen as the monitor which cannot display 1024 x 768.
- The display is not guaranteed about resolution except 720 x 400, 640 x 480, 800 x 600, 1024 x 768. There is a case where it cannot be displayed that the display mode more than the recommendation resolution of a display is set up.

Table 5.12. DVI-Analog RGB conversion adapter

Connector type	DVI-I 29pin		
			
Analog RGB signals			
Pin No.	Signal name	Pin No.	Signal name
1	RED	9	HPD
2	GREEN	10	GND
3	BLUE	11	N.C.
4	N.C.	12	DDC DATA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDC CLK
8	GND		

The table below lists the LCDs that can be connected.

Note that in order to connect an LCD, you need a connecting cable.

Table 5.13. LCD Displays Acceptable

Display	Model	Signal name	Display
6.5 inch TFT with a panel-mounting touch panel	IPC-DT/S61VT-DC1	Analog RGB DVI	VGA (640 x 480)
6.5 inch TFT with built-in touch panel	IPC-DT/S65VT-DC1	Analog RGB DVI	VGA (640x x480)
10.4 inch TFT with a panel-mounting touch panel	IPC-DT/M61VT-DC1 IPC-DT/M61VT-AC0	Analog RGB DVI	VGA (640 x 480)
10.4 inch TFT with built-in touch panel	IPC-DT/M65VT-DC1	Analog RGB DVI	VGA (640 x 480)
12 inch TFT with a panel-mounting touch panel	IPC-DT/L61SVT-DC1 IPC-DT/L61SVT-AC0	Analog RGB DVI	SVGA (800 x 600)
	IPC-DT/L40S(PC)T	Panel link	SVGA (800 x 600)
12 inch TFT with built-in touch panel	IPC-DT/L65SVT-DC1	Analog RGB DVI	SVGA (800 x 600)
15 inch TFT with a panel-mounting touch panel	IPC-DT/H61XT-DC1 IPC-DT/H61XT-AC0	Analog RGB DVI	XGA (1024 x 768)
	IPC-DT/H40X(PC)T	Panel link	XGA (1024 x 768)
15 inch TFT with built-in touch panel	IPC-DT/H65XT-DC1	Analog RGB DVI	XGA (1024 x 768)
12 inch TFT with a desktop/wall-mounted touch panel	IPC-DT/L440(PC)TA IPC-DT/L440(PC)TB	Panel link	SVGA (800 x 600)

⚠ CAUTION

When using IPC-DT/x6x series, even if it uses "Auto detect", when the display has shifted in the direction of length, please adjust by "V positionSP" of IPC-DT/x6x series.

Display Driver

Visit the CONTEC web site to download the Display driver (IPC-SLIB-01) for the OS running on your BOX-PC.

For the download, see Chapter 6 “List of Options".

Serial Interface for Touch Panel (Inside the DVI connector)

The BOX-PC is equipped with a serial port (Serial port 2) to communicate with a touch panel when an LCD equipped with a touch panel is used. *1

Visit the CONTEC web site to download the Touch Panel driver (IPC-SLIB-01) for the OS running on your BOX-PC.
For the download, see Chapter 6 “List of Options".

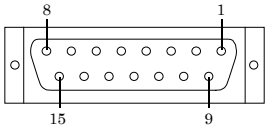
*1 The SERIAL2 connector (RS-232C) and touch panel function are mutually exclusive.
(In the default settings, the touch panel function is used.) (See P33)

RAS Functions

A RAS port is provided. This port offers watchdog timer, remote reset, and general-purpose I/O RAS functions.

Table 5.14. RAS Connector

Connector type	15pin D-SUB(FEMALE) (DALC-J15SAF-20L9) JAE



Pin No.	Signal name	Function
1	SPK	External speaker signal
9	GND	External speaker ground
2	TX +	RS-485 transmitting line
10	TX -	
3	RX +	RS-485 receiving line
11	RX -	
4	NCOM	Minus common dedicated to PO2
12	PO2/WDT	General-purpose output or watchdog timer alarm output
5	PO0	General-purpose output
13	PO1	
6	NCOM	General-purpose output minus common
7	PI1	General-purpose input
14	PI2/IRQ	General-purpose input or interrupt input
8	PCOM	General-purpose input plus common
15	PI0	General-purpose input

*Fastening screw: No. 4-40UNC inch thread

RAS Port address: 4000h to 4006h

⚠ CAUTION

Pin 4 NCOM (minus common dedicated to PO2) and pin 6 NCOM (minus common shared by PO0 and PO1) are electrically separated from each other.

Watchdog Timer

The watchdog timer is started by output of A5 to I/O port address 4002h. A second output of A5 to the same port within the specified expiration time once again triggers the watchdog timer. If a time-out occurs, a reset or an interrupt is generated according to the 4004h port setting or an alarm is output according to the 4004h port setting.

The time-out period can be set between 1 and 255 seconds depending on the timer value setting for the WDT counter port (4003h).

The watchdog timer stops by reading port 4002h. The alarm-out output is cancelled at the same time.

The alarm out is output from the RAS connector's PO2/WDT (12-pin) and cancelled when reset.

The alarm-out output can be set to BIOS startup by BIOS setup (see Chapter 4), watchdog timer startup, or watchdog timer time-up.

Specifications

- Time to be set : 1sec to 255sec
- Interrupt or reset : Resets or generates an interrupt at time-up (Port setting).
- External alarm output : Optocoupler isolated open-collector output (the output status is set by software). For more information, see the general-purpose I/O specifications.
- I/O addresses : 4001h to 4005h (RAS port)

How to Use the Watchdog Timer

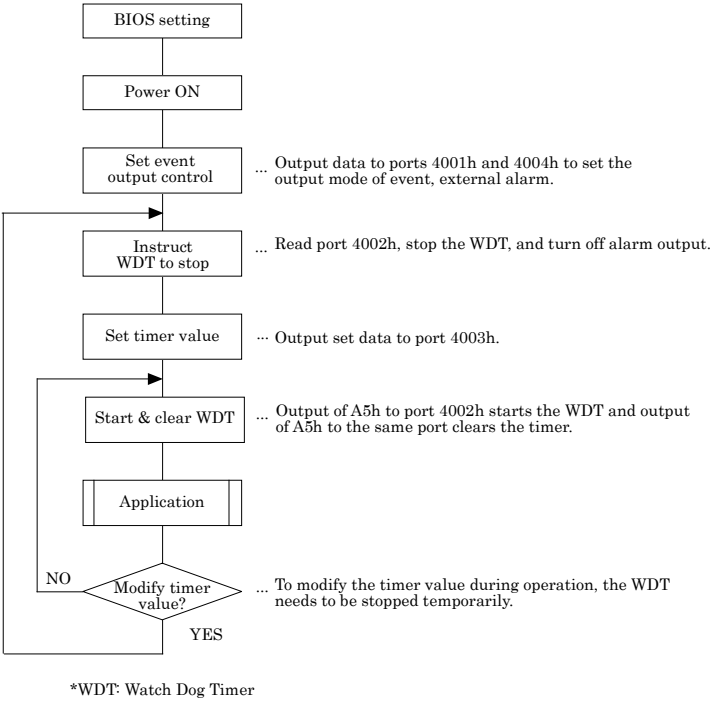


Figure 5.4. How to Use the Watchdog Timer

Example use: To assign IRQ5 to the event whose time-up value is 15sec:

Out 4004h 02h	:	Set the event at the time of WDT expiration to IRQ5.
In 4002h	:	Stop the WDT timer and cancel the alarm.
Out 4003h 0Fh	:	Set the WDT expiration time to 15sec.
Out 4002h A5h	:	Start the WDT.
In 4002h	:	Stop the WDT and cancel the alarm.

*** 4001h (bit4-6): Alarm out output control (See P77 for bits 0 to 3.)**

D7	D6	D5	D4	D3	D2	D1	D0	
---	WD_S1	WD_S0	PO2_M	RESET	PIM2	PIM1	PIM0	R/W (default: XXXX0000b)

Figure 5.5. Alarm Out Output Control Port (4001h)

PO2_M : PO PO2/WDT pin output setting

0 : Set the RAS connector's PO2/WDT(12) signal to PO2 (general-purpose output).

1 : Set the RAS connector's PO2/WDT(12) signal to alarm out.

*1 When "WDT Output to PO2" in the "Advanced Chipset Features Setup" menu in BIOS Setup is set to:

"Disabled" (default): The PO2_M bit is set to 0.

"Enabled": The PO2_M bit is set to 1.

Table 5.15. WD_S1, WD_S0: Alarm-out Output Status Settings

WD_S1 *2	WD_S0 *3	External alarm output status			
		When power is turned off	When BIOS starts	When WDT starts	When time expires on WDT
0	0	OFF	OFF	OFF	ON
1	0	OFF	OFF	ON	OFF
1	1	OFF	ON	ON	OFF
0	1	OFF	ON	OFF	ON

*2 When "WDT Power-on State" in the "Advanced Chipset Features Setup" menu in BIOS Setup is set to:

"Off" (default): The WD_S0 bit is set to 0.

"On": The WD_S0 bit is set to 1.

*3 When "WDT Time-up State" in the "Advanced Chipset Features Setup" menu in BIOS Setup is set to:

"Off": The WD_S1 bit is set to 1.

"On (default)": The WD_S2 bit is set to 0.

*** 4002h WDT control**

D7	D6	D5	D4	D3	D2	D1	D0	
—	—	—	—	—	—	—	—	R/W

Figure 5.6. WDT Control Port (4002h)

R : Cancels WDT stop/alarm.
Read data is undefined.

W : Start and clear the WDT.
Write A5h to start and clear the WDT.

*** 4003h: WDT counter**

D7	D6	D5	D4	D3	D2	D1	D0	
T7	T6	T5	T4	T3	T2	T1	T0	W

Figure 5.7. WDT Counter Port (4003h)

W : Writes watchdog timer count data.
Write watchdog timer counter expiration time data.

1sec → 01h
8sec → 08h
15sec → 0Fh
30sec → 1Eh

*** 4004h : Event output control**

D7	D6	D5	D4	D3	D2	D1	D0	
---	---	---	---	RESET	WM2	WM1	WM0	R/W (Default: XXXX0000b)

Figure 5.8. Event Output Control Port (4004h)

Table 5.16. WM2-WM0: Interrupt Output Modes

WM2	WM1	WM0	Interrupt output at occurrence of WDT errors
0	0	0	Disable an interrupt when the watchdog timer causes a time-out
0	0	1	Output to NMI when the watchdog timer causes a time-out.
0	1	0	Output to IRQ5 when time expires on the WDT.
0	1	1	Output to IRQ7 when time expires on the WDT.
1	0	0	Output to IRQ9 when time expires on the WDT.
1	0	1	Output to IRQ10 when time expires on the WDT.
1	1	0	Output to IRQ11 when time expires on the WDT.

Table 5.17. RESET: Reset Output Modes

RESET	RESET output at occurrence of WDT errors
0	Inhibits RESET output when time expires on the WDT.
1	Allows RESET output when time expires on the WDT.

Note! When time expires on WDT, the alarm-out is output irrelevant to the settings of the port for controlling event output.

*** 4005h : RAS status port**

D7	D6	D5	D4	D3	D2	D1	D0		
—	—	—	—	—	—	—	WDT	R	(Default: XXXXXXX0b)

Figure 5.9. RAS Status Port (4005h)

R : RAS status port

WDT : WDT status
This is the WDT status bit. This bit is cleared when the WDT stops (read port 4002h).

0 : The WDT is either stopped or counting.

1 : The time set on the WDT expired.

General-purpose I/O

The BOX-PC is equipped with three general-purpose isolated signals each for input and output in the RAS connector. The input signals can also be used for interrupt input or remote reset input.

Specifications

[Input]

- Input specifications : Current-driven input by Optocoupler isolation.
- Input resistance : 4.7kΩ
- Input signal count : 3 [One of them can be used for remote reset and interrupt input. (bit2<fixed>)]
- Input protection circuit : Equipped with a reverse-connection protection diode
- Input response time : Less than 100μsec
- External circuit power supply : 12 to 24VDC (±10%)

[Output]

- Output specifications : Open-collector output by Optocoupler isolation.
- Output rating : Max. 30VDC, 100mA
- Output signal count : 3 [One of them can be used for WDT alarm output. (bit2<fixed>)]
- Output response time : Less than 300μsec

[Common]

- I/O addresses 4000h and 4001h

How to Use General-purpose I/O and Remote Reset

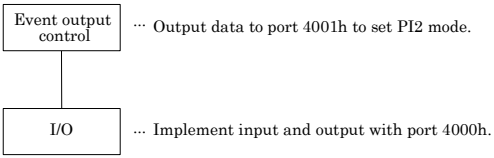


Figure 5.10. How to Use General-purpose I/O and Remote Reset

I/O Addresses and Instructions

*** 4000h : General-purpose I/O**

D7	D6	D5	D4	D3	D2	D1	D0	
—	—	—	—	—	PIO2	PIO1	PIO0	R/W

Figure 5.11. General-purpose I/O Port (4000h)

R : Read data from PI0, PI1 and PI2.

W : Set data to be output to PO0, PO1 and PO2.

*** 4001h (bit0-3): PI2/IRQ(14) event input control (See P74 for bits 4 to 6.)**

D7	D6	D5	D4	D3	D2	D1	D0
—	WD_S1	WD_S0	PO2_M	RESET	PIM2	PIM1	PIM0

Figure 5.12. Event Input Control Port (4001h)

Table 5.18. PIM2-PIM0

PIM2	PIM1	PIM0	PI2/IRQ (14) interrupt input
0	0	0	Inhibit the RAS connector's PI2/IRQ (14) signal interrupt to be set.
0	0	1	Input the RAS connector's PI2/IRQ (14) signal to NMI.
0	1	0	Input the RAS connector's PI2/IRQ (14) signal to IRQ5.
0	1	1	Input the RAS connector's PI2/IRQ (14) signal to IRQ7.
1	0	0	Input the RAS connector's PI2/IRQ (14) signal to IRQ9.
1	0	1	Input the RAS connector's PI2/IRQ (14) signal to IRQ10.
1	1	0	Input the RAS connector's PI2/IRQ (14) signal to IRQ11.

Table 5.19. RESET: Reset Input Modes

RESET	PI2/IRQ (14)'s RESET input
0	Inhibit the remote reset input function of the RAS connector's PI2/IRQ (14) signal.
1	Use as the remote reset input function of the RAS connector's PI2/IRQ (14) signal.

RS-422/485

RS-422/485 signal is provided in the RAS connector *1.

*1 The SERIAL1 connector (RS-232C) and RS-422/485 are mutually exclusive.
(The default is the use for RS232C. To use the RS-422/485, use BIOS Setup to set "Serial1 Select" in the "Advanced Chipset Features" menu to " RS485." (See P33)

For use in half-duplex mode, the transmission buffer must be controlled to prevent transmit data from causing collisions.

To control the transmission buffer, set RTS or port address 4006h register.

* 4006h : Control of RS-485 transmission and reception

D4	D3	D2	D1	D0	
RE_GATE	TE_GATE	TE_SEL	rsv*	rsv*	R/W (Default: xxx00000b)

Figure 5.13. RS-485 Transmission and Reception Control Port (4006h)

TE_SEL : Select the RS-485 transmission enable signal.
- 0 : Sets the RTS signal to the RS-485 transmission enable signal. (factory setting)
- 1 : Sets the TE_GATE value to the RS-485 transmission enable signal.

TE_GATE : RS-485 transmission enable signal. Valid only when the TE_SEL value is "1."
- 0 : RS-485 transmission Enable (factory setting)
- 1 : RS-485 transmission Disable

RE_GATE : RS-485 reception enable signal.
- 0 : RS-485 reception Enable (factory setting)
- 1 : RS-485 reception Disable

⚠ CAUTION

A bit indicated with "rsv" is used by the system. Do not modify the bit.

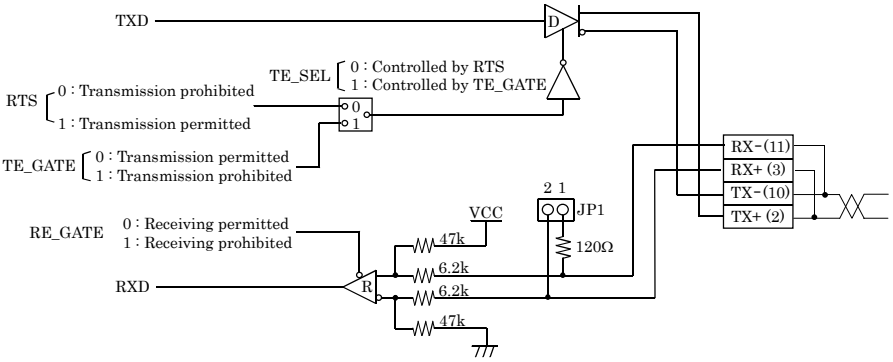


Figure 5.14. Half-Duplex Connection Method

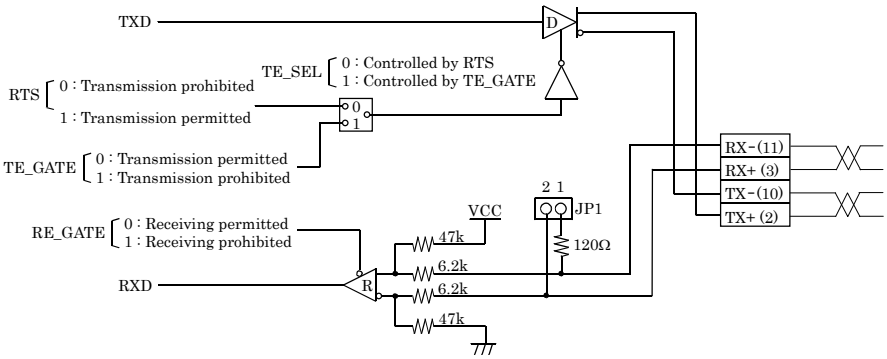


Figure 5.15. Full-Duplex Connection Method

External I/O Circuit

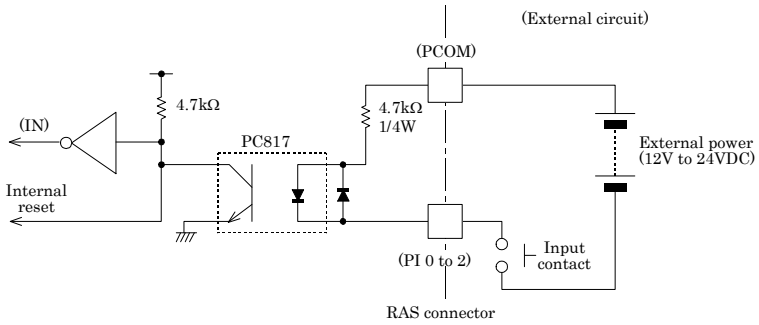


Figure 5.16. Input Circuit

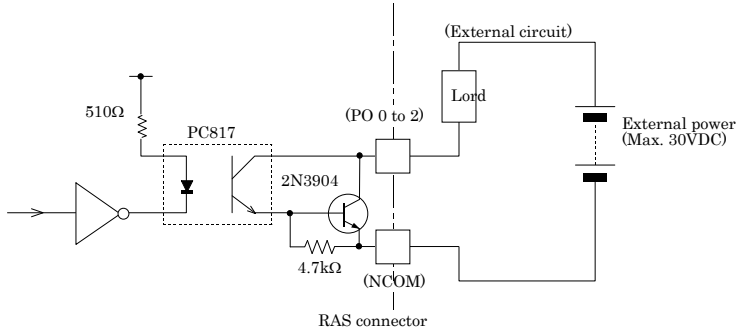


Figure 5.17. Output Circuit

Reset Switch

The BOX-PC is equipped with a hardware reset switch. To prevent it from being pressed by mistake, the switch is designed to be difficult to press. Use a pointed object to push the switch with.

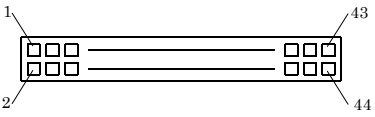
IDE Interface

Connector for the Internal Drive (Primary IDE Connector)

The module is equipped with an E-IDE controller, allowing a 2.5-inch IDE hard disk drive to the on-board connector using the bundled hard disk bracket.

Table 5.20. Primary IDE Connector

Connector in use	44-socket header type (2mm pitch)



Pin No.	Signal	Direction	Pin No.	Signal	Direction
1	RESET-	Output	2	GND	-------
3	DD7	I/O	4	DD8	I/O
5	DD6	I/O	6	DD9	I/O
7	DD5	I/O	8	DD10	I/O
9	DD4	I/O	10	DD11	I/O
11	DD3	I/O	12	DD12	I/O
13	DD2	I/O	14	DD13	I/O
15	DD1	I/O	16	DD14	I/O
17	DD0	I/O	18	DD15	I/O
19	GND	-------	20	N.C.	-------
21	DDRQ	Input	22	GND	-------
23	DIOW-	Output	24	GND	-------
25	DIOR-	Output	26	GND	-------
27	IOCHRDY	Input	28	DALE	Output
29	DDACK-	Output	30	GND	-------
31	INTRQ	Input	32	N.C.	-------
33	DA1	Output	34	N.C.	Output
35	DA0	Output	36	DA2	Output
37	CSI-	Output	38	CS3-	-------
39	DACT-	Output	40	GND	-------
41	+5V	-------	42	+5V	-------
43	GND	-------	44	N.C.	

Secondary IDE Connector-CN1

Use the dedicated option cable (IPC-CDC-04) to connect the option CD-ROM/DVD-ROM drive (IPC-CDD-03).

Table 5.21. Secondary IDE Connector (CN1)

Connector in use	36pin, half-pitch type (0.8mm pitch)

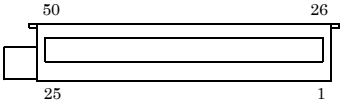
Pin No.	Signal name	Direction	Pin No.	Signal name	Direction
1	RESET-	Output	19	DDRQ	Input
2	GND		20	GND	
3	DD7	I/O	21	DIOW-	Output
4	DD8	I/O	22	GND	
5	DD6	I/O	23	DIOR-	Output
6	DD9	I/O	24	GND	
7	DD5	I/O	25	IOCHRDY	Input
8	DD10	I/O	26	DDACK-	Output
9	DD4	I/O	27	GND	
10	DD11	I/O	28	INTRQ	Input
11	DD3	I/O	29	+5V	
12	DD12	I/O	30	DA1	Output
13	DD2	I/O	31	DALE	Output
14	DD13	I/O	32	DA0	Output
15	DD1	I/O	33	DA2	Output
16	DD14	I/O	34	CS1-	Output
17	DD0	I/O	35	CS3-	Output
18	DD15	I/O	36	DACT-	Output

CF Card Connector(CN5)

A CF card (Type I/II x 1 dedicated to use as a memory card) can be connected.

Table 5.22. CF Card Connector (CN5)

Connector in use	50 socket header-type (1.27mm pitch)



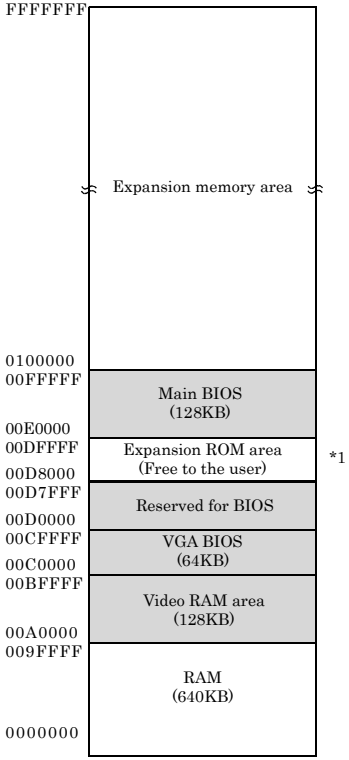
Pin No.	Signal name	Direction	Pin No.	Signal name	Direction
1	GND		26	N.C	
2	DD3	I/O	27	DD11	I/O
3	DD4	I/O	28	DD12	I/O
4	DD5	I/O	29	DD13	I/O
5	DD6	I/O	30	DD14	I/O
6	DD7	I/O	31	DD15	I/O
7	CS0-	Output	32	CD3-	Output
8	GND		33	N.C	
9	GND		34	DIOR-	Output
10	GND		35	DIOW-	Output
11	GND		36	+5V	
12	GND		37	INTRQ	Input
13	+5V		38	+5V	
14	GND		39	CSEL-	Output
15	GND		40	N.C	
16	GND		41	RESET-	Output
17	GND		42	IOCHRDY	Input
18	DA2	Output	43	DDRQ	Input
19	DA1	Output	44	DDACK-	Output
20	DA0	Output	45	DACT-	Output
21	DD0	I/O	46	DALE	Output
22	DD1	I/O	47	DD8	I/O
23	DD2	I/O	48	DD9	I/O
24	N.C		49	DD10	I/O
25	N.C		50	GND	

⚠ CAUTION

- Insert the CF card with facing up the bottom side.
- When starting Windows from CF card, CF card different from a general marketing article is required. Our company option CF card can start Windows.(However, the capacity of CF card should choose the thing in which Windows installation is possible.)
- Operation of all the cards of general marketing is not secured.

6. Appendix

Memory Map



*1 When "First/Second/Third/Boot Device" in the "Advanced BIOS Features Setup" menu in BIOS Setup is set to "LAN," 00D8000 - 00DFFFF are used as a BIOS reserved area.

Figure 6.1. Memory Map

I/O Port Addresses

Table 6.1. I/O Port Addresses ***< 1 / 2 >***

ADDRESS(HEX)	Description	Remark
000 to 01F	DMA controller 1 (slave)	
020 to 03F	Interrupt controller 1 (master)	
040 to 05F	Timer / counter	
060 to 06F	Keyboard controller	
070 to 077	RTC / CMOS / NMI mask	
078 to 07F	Available to user	
080	Reserved for system	
081 to 08F	DMA page register	
090 to 091	Available to user	
092	System control	
093 to 09F	Available to user	
0A0 to 0BF	Interrupt controller 2 (slave)	
0C0 to 0DF	DMA controller 2 (master)	
0E0 to 0FF	Reserved for system	
100 to 16F	Available to user	
170 to 17F	IDE hard disk controller	Secondary
180 to 18F	Reserved for system	
190 to 1DF	Available to user	
1E8 to 1EF	Reserved for system	
1F0 to 1FF	IDE hard disk controller	Primary
200 to 277	Available to user	
278 to 27F	Reserved for system	
280 to 2E7	Available to user	
2E8 to 2EF	Reserved for system	
2F0 to 2F7	Available to user	
2F8 to 2EF	Serial port	COM2
300 to 35F	Available to user	
370 to 375	Reserved for system	
376 to 377	IDE hard disk controller	Secondary
378 to 3DF	Reserved for system	
3E0 to 3E7	PCMCIA	
3E8 to 3F7	Reserved for system	
3F8 to 3FF	Serial port	COM1
4D0 to 4DF	Reserved for system	

Table 6.1. I/O Port Addresses *< 2 / 2 >*

ADDRESS(HEX)	Description	Remark
CF0 to CFF	Reserved for system	
4000 to 4007	RAS functions	
4008 to 400F	Reserved for system	
46E8	Reserved for system	
83D0 to B3D3	Reserved for system	

Interrupt Level List

Table 6.2. Hardware Interrupt Levels (Factory Settings)

Type	8259	Priority	Description	Vector	Remarks
NMI		High	-I/O CHECK	02H	
IRQ0	MASTER	↑	Timer 0	08H	
IRQ1	"	|	Keyboard	09H	
IRQ2	"	|	Interrupt controller 2 (slave)	0AH	
IRQ8	SLAVE	|	Real-time clock	70H	
IRQ9	"	|	ACPI	71H	
IRQ10	"	|	Reserved for PCI device	72H	LAN2, USB
IRQ11	"	|	Reserved for PCI device	73H	LAN1, USB
IRQ12	"	|	Not in use	74H	
IRQ13	"	|	Reserved for coprocessor	75H	
IRQ14	"	|	Reserved for hard disk	76H	Primary
IRQ15	"	|	Reserved for optional CD-ROM	77H	Secondary
IRQ3	MASTER	|	Serial port B (COM2)	0BH	
IRQ4	"	|	Serial port A (COM1)	0CH	
IRQ5	"	|	Reserved for PCI device	0DH	USB, VIDEO, PCMCIA
IRQ6	"	↓	Not in use	0EH	
IRQ7	"	Low	Reserved for PCI device	0FH	USB

List of Options

Silicon disk drive for extension (IDE 2.5inch)

[PC-ESD Series]

- PC-ESD500 512MB silicon disk drive
- PC-ESD1000 1GB silicon disk drive
- PC-ESD2000 2GB silicon disk drive
- PC-ESD4000 4GB silicon disk drive
- PC-ESD8000 8GB silicon disk drive

[PC-SDD V Series]

- PC-SDD64V 64MB silicon disk drive
- PC-SDD128V 128MB silicon disk drive
- PC-SDD192V 192MB silicon disk drive
- PC-SDD320V 320MB silicon disk drive
- PC-SDD500V 512MB silicon disk drive
- PC-SDD1000V 1GB silicon disk drive
- PC-SDD2000V 2GB silicon disk drive

⚠ CAUTION

Only one HDD (SDD) can be installed on this model. HDD (SDD) installed models can accept an additional HDD (SDD).

CF Card

- CF-1GB-A 1GB CompactFlash for Fix Disk
- CF-512MB 512MB CompactFlash for Fix Disk
- CF-1GB-R 1GB CompactFlash for Fix Disk
- CF-2GB-R 2GB CompactFlash for Fix Disk
- CF-4GB-R 4GB CompactFlash for Fix Disk
- CF-8GB-R 8GB CompactFlash for Fix Disk

Terminal block for connecting the RAS connector

- IPC-PSD-20 Terminal block for general-purpose I/O (with cable)

TFT color liquid-crystal display

< Analog RGB types>

- FPD-H21XT-AC (15inch 1024 x 768 dots, Panel mounted type)
- FPD-L21ST-AC (12.1inch 800 x 600 dots, Panel mounted type)
- FPD-M21VT-AC (10.4inch 640 x 480 dots, Panel mounted type)

TFT color liquid-crystal display
< Panel Link types >

- IPC-DT/H40X(PC)T (15inch 1024 x 768 dots, Panel mounted type)
- IPC-DT/L40S(PC)T (12.1inch 800 x 600 dots, Panel mounted type)
- IPC-DT/L440(PC)TA (12.1inch 800 x 600 dots, Desktop/wall-mounted)
- IPC-DT/L440(PC)TB (12.1inch type) 800 x 600 dots, Desktop/wall-mounted, anti-glare

<Analog RGB types>

- IPC-DT/M20V(PC)T (10.4inch 640 x 480 dots) *1
- IPC-DT/L20S(PC)T (12.1inch 800 x 600 dots) *1
- IPC-DT/H20X(PC)T (15inch 1024 x 768 dots) *1

DVI-D cable

- IPC-DVI/D-020 DVI-D cable (2m)
- IPC-DVI/D -050 DVI-D cable (5m)

Panel link DVI-D conversion cable

- IPC-DVIPL-020 DVI-Panel Link conversion display cable (2m)
- IPC-DVIPL-050 DVI-Panel Link conversion display cable (5m)

Touch-panel cable for an analog RGB display

- IPC-CBL3-2 Touch panel, COM cable (2m)
- IPC-CBL3-5 Touch panel, COM cable (5m)

Power unit

- IPC-POAW/10-01 10VDC Power Unit for IPC Series(100 to 240VAC Input)

CD-ROM drive or connection cable

- IPC-CDD-03 CD-ROM/DVD-ROM Drive Unit (with cable) *2
- IPC-CDC-04 Drive connection cable for the IPC-BX/M360(PCI)C CD-ROM drive (400mm)

Driver

- IPC-SLIB-01 *1*2 Driver & Utility Soft Set (CD-ROM version) *3 *4

*1 To connect a touch panel to a USB port, set "OnChip 2.0 controller" to "Disable" to use it as a USB1.1 device.

*2 The bundled cable cannot be used. Purchase a dedicated cable (IPC-CDC-04) separately. (Supported OS: Windows XP/2000)

*3 If your BOX-PC is an OS preinstalled model, the driver is supplied with the OS or already installed on the PC.

*4 You can download the driver from the Download Library (http://www.contec.com/download) on the CONTEC web site. If you need IPC-SLIB-01 (CD-ROM version), it is available as a separately priced option.

IPC-BX/M360(PCI)C

User's Manual

IPC-BX/M360(PCI)-HMU

CONTEC CO.,LTD.

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