MELSEC-Q Series

CONTECWinCPU modulet

User's manual

(Hardware Design and Function Explanation)

CONTEC CO.,LTD.

Safety Precautions

(Read followings carefully before the use of this product)

For the use of this product, read this manual and relative manuals introduced in this document carefully. Then take enough care of the safety and keep the right procedures.
These safety precautions are limited to this product. For programmable controller CPU systems, refer to the manual of the corresponding CPU module.

This "Safety Precausions" classify the level of precautions into "⚠Warning" and "⚠Caution".

⚠Warning	"Warning" indicates that dangerous situations will lead to death or serious injury if the right procedures are not kept.
⚠Caution	"Caution" indicates that dangerous situations will lead to light injury or the loss of property if the right procedures are not kept.

The items mentioned in "⚠Caution" also can cause the serious accidents according to situations.

The mentioned items are all important. You must keep them.

Reserve this manual carefully in order to read at any time and deliver it to the end user.

Handling precautions

⚠ WARNING

- Never use this product under the atmosphere with flammable gas and corrosive gas. It may lead to explosion, fire, electric shock and breakdown.
- Operating product may get high temperature. Never touch its surface. It may lead to burns.
- Never touch this product with wet hands. It may lead to electric shock.

⚠ CAUTION

- As this product contains precision electronic components, do not use or store it in a place subject to shock or vibration. Doing so may cause malfunction, heat generation, fault, or damage.
- Do not modify the product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying the product.
- Do not use or store the product in a hot or cold place, or in a place that is subject to severe temperature changes. Doing so may cause malfunction, heat generation, fault, or damage.
- Do not use or store the product in a place subject to direct sunlight or near a heating device, such as a stove. And do not use or store the product near equipment generating a strong magnetic field or radio waves. Doing so may cause malfunction, heat generation, fault, or damage.
- Some products have to be set up before they can be used normally. Be sure to check whether the product is one before use. Set the switches and jumpers only as specified, or the product may develop trouble.
- When power is ON, don't change any DIP switches except for SW-2 of DIP switch 1. If not, the product may become abnormal conditions such as the hangup of OS, system down and irregular operations.
- You can set SW-1 of DIP switch 1 to ON only when power is OFF. If SW-1 is ON when power is ON, it does not work in order. You should check that SW-1 is OFF before turning power ON.
- You should wait for 5 seconds after power OFF till the next power ON.
- The monitor connected to this product may not be able to show screen in order if power of the monitor was turned ON in bad timing. Turn ON power of a monitor before turning ON power of this product.
- When using some USB devices, the current may flow to this product reversely via a conneted cable when power of this product is OFF. In this case, you may not be able to boot up this product because +5V power is kept to ON. When this problem happens, remove the USB device, turn ON power of this product and then, connect the USB device again. (If you want to use the USB device as a boot device, connect it by the time that device detenction starts.)
- Keep the inside of a module away from foreign objects such as cut powder and cabling rest. It may lead to fire, breakdown and irregular operations.
- Do not use or store this product where any chemical atmosphere and objects can touch the product.
- Do not use or store this product where excessive moisture or a lot of dust exist. It is very dangerous if you use the product including water, liquid objects or conductive dust. When you have to use the product under such conditions, set the product in the protected structure against dust such as the control panel with the protection of dust.

- If you notice abnormal odor or overheating, please disconnect the power cable immediately.
- After you become aware of breakdown or abnormal conditions such as an abnormal smell or excessive heading, first turn power OFF. Then make contact with the store which provided the product.
- Do not open the product casing. CONTEC will disclaim any responsibility for products whose casing has been opened.
- Do not modify the product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying the product.
- To clean this product, gently wipe it with a soft cloth soaked with water or a neutral detergent. Do not use benzene, paint thinner or other volatile solvents as they can cause the coating to discolor or peel off.
- The specifications of this product are subject to change without notice because of function addition and quality improvement. Even when using the product continuously, read the user's manual and check the contents.
- If you move or transfer the product, make sure provide this manual with the product.
- Regardless of the foregoing statements, CONTEC is not liable for any damages whatsoever (including damages for loss of business profits) arising out of the use or inability to use this CONTEC product or the information contained herein.
- When disposing of a used battery, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.

Design Precautions

⚠ WARNING

- Provide this product with external safety circuits so that the entire system is protected even if the external power supply goes wrong or this product gets breakdown. If not, incorrect output or incorrect operations may lead to accidents.
  (1) Configure those circuits outside this product that include an emergency stop circuit, a protection circuit, an interlock circuit with contrary operations such as normal / reverse rotations, and an interlock circuit for preventing a machine from breaking beyond the upper or lower positioning limit.
  (2) This product stops arithmetic operations and turns all outputs off upon detection of the following states.
  - The overcurrent or overvoltage protector of the power supply module has been actuated.
  - The self-diagnostic feature of this product has detected an error such as a watchdog timer error.
  If I/O control transparent to this product causes an error, all of the outputs may be turned on. Provide this product with an external fail-safe circuit or mechanism so that the machine operates on the safe side in that case.
  (3) Depending on the fault of a relay or transistor in an output module, the output may remain on or off. For the output signals which can result in serious accidents, provide external monitor circuits.
- If an overcurrent continues to flow to the output for an extended period of time due to a rating error or short-circuited load, the output module may smoke or burn. Provide an external safety circuit such as a fuse.

- Configure the circuit containing this product so that the external power supply is turned on after this product is turned on. Turning on the external power supply before this product may result in an output error or malfunction, possibly causing an accident
- When you want to know the operating condition of each station when network has been unable to communitcate in order, refer to manuals about the network. In this case, wrong output or wrong operation may cause accidents.

⚠ CAUTION

- Any control line or communication cable should be neither bundled with nor routed adjacent to the main circuit or power line. The control line and communication cable should be at least 100mm away from the main circuit and power line. Poor wiring conditions result in malfunctions caused by noise.
- When the output module controls components such as the lamp load, heater, and solenoid valve, a large current (about 10 times the normal value) may flow at the OFF-to-ON transition of the output. Take appropriate measures, for example, by replacing it with a module of a higher rated current.
- The period after a programmable controller CPU module turned on or got reset till a programmable controller CPU module attains the "RUN" condition is not fixed. This period will change according to the system structure, parameter settings, the size of programs and so on. Design the entire system to be protected even if the period till a programmable controller CPU module attains "RUN" would change.

Installation precautions

⚠ WARNING

- Use this product in the environment specified in this manual. Using this product in the environment not satisfying all the specifications can cause an electric shock, fire, malfunction, product damage, and/or product degradation.
- Mount this product on the base unit with the module fixing hook at the bottom of this product fit in the fixing slot in the base unit. Failure to mount this product correctly can let this product malfunction or fall. Before attempting to use this product in a place subject to considerable vibration or shock, use module fixing screw to fasten this product securely to the base unit. Module fixing screw must be tightened within the specified tightening torque range. Tightening the screw loosely can let this product fall, cause a short circuit, or malfunction. Tightening the screw excessively can break the screw or module, let this product fall, a short circuit, or malfunction.
- When connecting an extension cable, plug it securely into the relevant connector on the base unit or the module. Check the connection after plugging it to prevent an imperfect contact which can cause input and output errors.
- Before attaching or detaching this product, be sure to turn the external power supply off for all phases, or this product may be damaged.
- Never directly touch any conductive part or electronic component of this product. Doing so may cause the module to malfunction or fail.

⚠ CAUTION

- Before mounting or unmounting this product or any other product, be sure to turn the external power supply off for all phases. Failure to turn it off for all phases may cause product damage. The exchange of modules under online (power-on) conditions is possible only when the system is built with the programmable controller CPU module supporting the online module exchange or the target module is MELSECNET/H remote I/O station. But the modules supporting the exchange under online (power-on) conditions have limitation and each module respectively has the right procedure of its exchange. For details, refer to the pages of online module exchange described on “QCPU user's manual (Hardware Design and Maintenance)” and the manuals of the modules supporting online module exchange.
- Do not touch directly conductive area and electric components of the module. It may lead to irregular operations and breakdown of the module.
- When you use motion CPU modules or motion modules, make sure that the combination of modules is correct after turning power on. If the combination is irregular, the product may get damaged. For details, refer to user's manual of motion CPU modules.

Wiring precautions

⚠ WARNING

- Before mounting or wiring this product or any other product, be sure to turn the external power supply off for all phases. Failure to turn it off for all phases may cause an electric shock, product damage, or malfunction.
- After wiring, you should install the terminal cover packed with the product before you turn power on and start operations. If not, you may get electric shock.

⚠ CAUTION

- Be sure to ground the FG and LG terminals by at least Class D Grounding (former Class3 Grounding) exclusive for programmable controller CPU. Failure to do so may cause an electric shock or malfunction.
- Be careful not to let foreign matters such as chips and wire tailings in this product. Foreign matters caught in this product may cause a fire, fault, or malfunction.
- Wire each product to the module correctly after checking the rated voltage and pin assignments of the product. Connecting a power supply not matching the rating or miswiring may cause a fire or fault.
- Tighten each terminal screw within the specified tightening torque range. Tightening the terminal screw loosely may result in a short circuit or malfunction. Tightening the terminal screw excessively can break the screw or the module, also resulting in a short circuit or malfunction.
- When you connect external components to this product, connect them after the installation.
- The cables connected to this product must be either enclosed in ducts or fixed with clamps. Doing neither allows the cables to hang loose, move, or be pulled inadvertently, resulting in this product and/or cables damaged or this product malfunctioning due to an imperfect contact in cable connection.
- When disconnecting each cable from this product, do not hold the line to pull. Unplug the cable after loosening the screws fastening the cable end to the connector in this product. Pulling the cable connected to this product may break this product and/or cable or cause this product to malfunction due to an imperfect contact in the cable connection.
- Do not connect the outputs of two or more power modules in parallel. Doing so heats up the power modules, possibly causing a fire or fault.
- The connectors for external connection must be crimped, welded with pressure, or soldered correctly with the relevant tool. For the crimping and pressure welding tools, refer to the input/output module user's manual. An imperfect connection can cause a short circuit, fire, or malfunction.
- For the cables connected to this product, wire them so that they do not interfere the switches and the LEDs of the product.

Power Supply and Maintenance Precautions

⚠ WARNING

- Never touch any terminal with the module powered, or it may malfunction.
- Before cleaning this product or tightening up terminal screws, be sure to turn the external power supply off for all phases. Failure to turn it off for all phases may either result in an electric shock or cause this product to fail or malfunction. Tightening the screw loosely can let this product fall, cause a short circuit, or malfunction. Tightening the screw excessively can break the screw or this product, letting this product fall, cause a short circuit, or malfunction. Do not touch any terminal with this product powered, or it may malfunction.

⚠ CAUTION

- Read the manual thoroughly and check the entire system sufficiently for safety before performing online operations during a machine run (in particular, for a program change, forced output, and operation status change). An operation error can break the machine or cause an accident.
- Do not disassemble or modify any module. Doing so may result in a fault, malfunction, injury, or fire.
- Before attaching or detaching the module, be sure to turn the external power supply off for all phases. Failure to turn it off for all phases may cause the module to fail or malfunction.

Disposal Precautions

⚠ CAUTION

- When disposing of the product, treat it as industrial waste.
- When disposing of a used battery, trash it separately under the relevant laws.
  (For details of battery regulations of EU, refer to “Appendix 3 Disposal of Battery”)

Transport Precautions

⚠ CAUTION

- When you transport batteries with litium, you should treat them according to transport regulations.
  (For details of transport regulations, refer to “Appendix 2 Battery”)

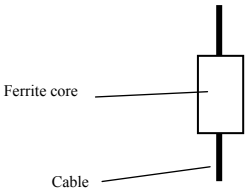
EMC Precautions

- Regarding “VCCI Class A Notice”, “FCC PART 15 Class A Notice” and “EMC Instruction Class A Notice”

  1. The ferrite core must be installed in the following each cable so that this product may suit the above-mentioned standard. Refer to the following for the model of ferrite core. (Equivalent goods are also availabele.)

Port	Name	Maker	Turn
USB A,B,C,D,E	E04SR200935A	SEIWA	1
SERIAL	E04SR200935A	SEIWA	1
I/O	E04SR200935A	SEIWA	1
A-RGB	E04SR241331A	SEIWA	1

  Image diagram



Bmp\IO

  2. The shield of cables connected to USB and I/O port should be connected to FG nearby the main body.

EMC directive and low voltage derective

If you want to apply EMC directive and low voltage directive to the system with this product or other MELSEC-Q Series programmable controller CPU, refer to “EMC directive and low voltage directive” written in following MELSEC-Q Series manuals and construct the system according to the content.

- QCPU (Q-mode) type CPU module user’s manual (hardware)
  Type name : QCPU(Q)-U(H/W)
- QCPU (Q-mode) type CPU module user’s manual (hardware design and maintenance)
  Type name : QCPU(Q)-U(HH)

You should use shielded cables and ferrite cores for all the cables going out of the control panel. You should use cramps on the shield of peeled area of cables and ground it with the control panel nearby the product. You should use ferrite cores nearby the product.

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.

CONDITIONS OF USE FOR THE PRODUCT

(1) CONTEC programmable controller ("the PRODUCT") shall be used in conditions;
   i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
   ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
   CONTEC shall have no responsibility or liability (inculuding, but not limited to any and all responsibility or liability based on contract , warranty, tort, product liability) for an injury or death to persons or loss or damage to property caused by the prouct that are operated or used in application not intend or excluded by instructions, persons, or warning containd in CONTEC's user, instruction and / or safty manuals, technical bulletins and cuidelines for the product.
   ("Prohibited Application")
   Prohibited Applications include, but not limited to, the use of the PRODUCT in;
   - Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
   - Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
   - Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Check Your Package

Thank you for purchasing the CONTEC product.
The product consists of the items listed below.
Check, with the following list, that your package is complete. If you discover damaged or missing items, contact your retailer.

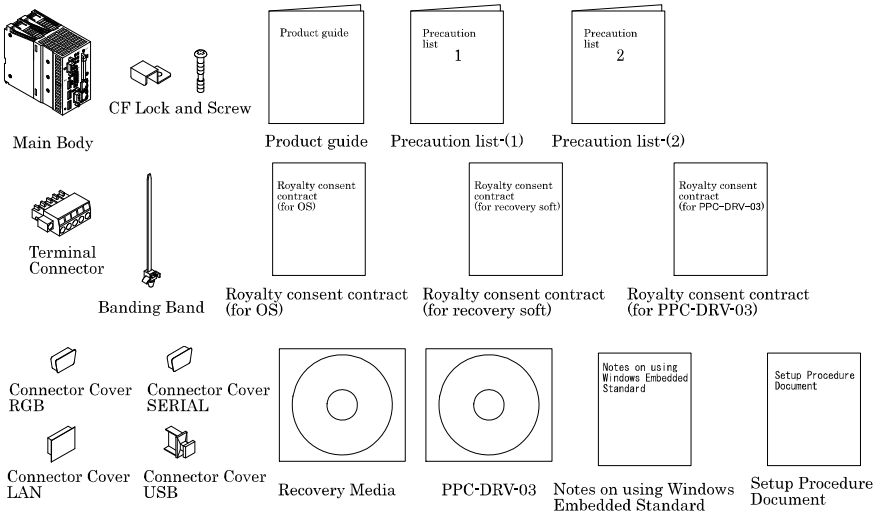
Product Configuration List

Name	PPC-100-DC5511 PPC-100-DC551A Pcs.	PPC-100-DC5311 PPC-100-DC531A Pcs.
The main body	1	1
CF card	0	1 *2
Fittings and screws to fix a CF card	1set	1set *2
Coonector cover for RGB	1	1
Connector cover for SERIAL	1	1
Connector cover for LAN	2	2
Connector cover for USB	5	5
Connector for terminal block	1	1
Product guide	1	1
Precaution List (1)(2)	2	2
Royalty consent contract (OS)	1	1
Royalty consent contract (Recovery soft)	1	1
Royalty consent contract (Driver)	1	1
Setup Procedure Document	1	1
Notes on Windows Embedded Standard	1	1
Recovery Media *1	1	1
PPC-DRV-03	1	1
Fixing bandage	2	2

*1: User's manual is included in recovery media but refer to CONTEC web site for the latest information.. Adobe® Reader® is necessary to read user's manual (which is inclued in : \Manual)

*2: It is attached to the main body.

■Configuration



⚠ CAUTION

(1) When turning off the power of the standard base plane or the additional base plane, finish the shutdown of OS before turning power off. If turning off the power of the module with working OS, OS may be out of order at the next and later boot.
In order to keep the modules from the unexpected power down, we recommend UPS to your system.

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Table of Contents

1. Introduction

About the Product

This product is the controller which can be installed with Mitsubishi General programmable controller CPU, MELSEC-Q Series and supports Windows OS.

This product can work as the multiple CPU configuration with programmable controller CPU and it realizes the seam less processing of both controlling and computing. It can boot from a built-in SSD and a CF card in a CF card slot (Type I).

This product has two LAN ports. They realize the open systems for Web, Internet and Intranet.

Embedded-type CPU and chipset have been adopted. The use of readily available parts ensures the ease of the use of the product. In addition, the use of self-customized BIOS allows support to be provided at the BIOS level.

Features

- MELSEC-Q Series programmable controller CPU modules cover sequence controlling. This CONTECWinCPU module covers computing. The combination of them realizes the seam-less processing of information and control data.
- Very small Windows OS system (2-slot size of a MELSEC-Q series programmable controller CPU)
- Adopt Intel® Atom™ processor N450, belonging to energy saving platform. It manages both enough performance and energy saving.
- Various interfaces are installed as the standard. 1000BASE-T LAN, USB2.0, CF card slot and so on.
- The use of a Contec-customized BIOS (mfd. By Phoenix-Award) allows the support provided at the BIOS level.
- A CF card can be installed as an external recording media. The use of it is preferable if it works where shock and vibration are exist and works for a continuous long time.
- Built-in SSD has double write protect functions (an EWF function of OS and write procect function of DIP switch). It realizes more reliable protection for important data.

Installed OS

- Windows Embedded Standard 2009

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.

2. System Reference Specification

Table 2.1 Functional Specification(1/2)

Item		Content
CPU		Intel® Atom™ Processor N450 1.66GHz
Chipset		Intel® ICH8M
Memory	L1 Cache	Instruction 32KB + Data 24KB
	L2 Cache	512KB
	Main memory	1GB (3.3V 200-pin DDR2 SO-DIMM DDR667Socket × 1)
Video	Controller	N450 built-in
	Video RAM	main memory shared
	CRT I/F	Analog-RGB 15-pin HD-SUB connector
	Resolution	1,400×1,050@60Hz (1,677 colors)
Serial I/F		RS-232C-compliant: 1ch(9-pin D-SUB connector) baudrate: 50 - 115200bps
LAN	I/F	1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector x 2
	Controller	Intel 82574L
CFcard slot		CF CARD Type I (Only for the memory card of IDE connection) *1 Indication: access LED (green) × 1 *2、-CFJ, -CFE models have a CFcard 4GB.
Built-in SSD *3		Built-in flash drive 4GB
USB I/F		USB2.0-complicant 5ch (front 3ch, bottom 2ch) Transfer rate: 480Mbps Supply power:+5V each channel 0.5A max. *4
Watch dog timer		2ch Time-up period: system WDT 20msec - 2sec, user WDT 10msec - 10sec
General I/O *5*6		Terminal block [1, 2] Input for shutdown (current drive input) Terminal block [3] Output to notify shutdown completion (open collector output) Terminal block [4] Output to nofity the start of watch dog timer (open collector output)
RTC/CMOS		Lithium battery backup life : 10 years or more (when no power input, at 25℃) The real-time clock is accurate within ±3 minutes (at 25℃) per month
Indication		RDY(green), B.RUN(green), ERR. (red), USER(red), BAT.(orange), EXIT(green), CF/SSD(green)
Control		Reset PUSH switch, DIP switch 4-pole, DIP switch 6-pole, 3-position toggle switch
Supported OS		Windows® Embedded Standard 2009

*1: When power is on, you can not push in / pull out a CF card.
Memory card is supported but other purposes are not supported.

*2: Access LED shows the access of both a CF card and built-in SSD.

*3: Bulit-in SSD is used as OS space. SSD has rewritable life (1 million times).
For details, refer to "Built-in SSD" of "Chapter 5 Each Component Function"

*4: Current capacity shows the maximum value the connector supports.
But the actual value is limited because the total current can not exceed the capacity of the power supply module.
Therefore the actual value may differ from this maximum value.

*5: General I/O is not evaluated by UL.

*6 Use noise filters when using under the condition with much noise.

Name	Type	Maker
Noise filter for general I/O	NAC-06-472	Mfd. By COSEL

Table 2.1 Functional Specification (2/2)

Item		Content
The number of base unit slots this module occupies		2 slots
physical dimensions [mm]		55.2(W) x 115.0(D) x 98.0(H) (Excluding protrusions)
DC5V internal current consumption		3.0A (Max.) *7
Acceptable momentary power failure time		Depending on the power supply module
Weight	PPC-100-DC5511 PPC-100-DC551A	440g
	PPC-100-DC5311 PPC-100-DC531A	450g (Including CF card, Fittings and screws to fix a CF card)

*7: This does not include the current consumption by any peripheral device (such as the CF Card and USB device)

Table 2.2 Installation Environment Conditions

Item	Condition
Surrounding air temperature	0 - 55℃
Surrounding storage temperature	-25 - 75℃
Surrouding operating humidity	5 - 95%RH (No condensation)
Surrouding storage humidity	5 - 95%RH (No condensation)
Vibration resistance	Conforming to JIS B 3502 IEC61131-2 With intermittent vibration: Frequency / Acceleration / Amplitude 5≦f<8.4Hz — 3.5mm 8.4≦f<150Hz 9.8m/s² — Tested 10 times (for 80 minutes) in each of the X, Y, and Z directions With continuous vibration: Frequency / Acceleration / Amplitude 5≦f<8.4Hz — 1.75mm 8.4≦f<150Hz 4.9m/s² — —
Shock resistance	Conforming to JIS B 3502、IEC61131-2 (147m/s², 3 times in each of 3 direction)
Operating ambiance	No corrosive gas
Operating altitude	2000m or less *3
Installation location	Inside the control panel
Overvoltage category *1	II or less
Pollution degree *2	2 or less
Equipment category	Class I

*1 The overvoltage category of a device indicates which distributor in the range from public distribution network to. machinery the device is assumed to be connected to. Category II applies to devices to which power is supplied from fixed facilities. The surge voltage of those devices is 2500V whose rated voltage is 300V.

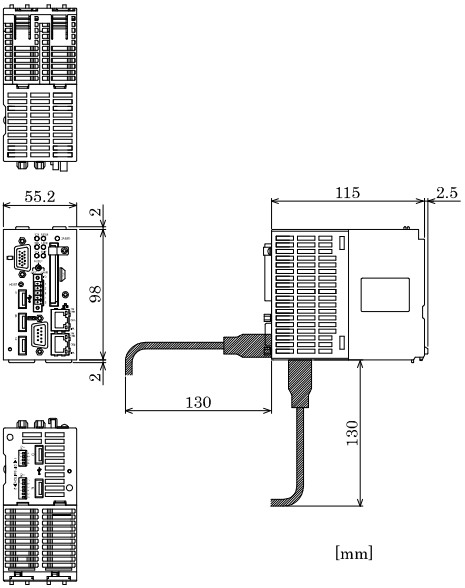
*2 The index indicating the degree to which conductive substances are generated in the operating environment. Pollution level 2 indicates the environment that generates only nonconductive pollutants while allowing accidental condensation to cause temporary conduction.

*3 The module may fail and cannot be used in an environment in which the air is compressed to over the atmospheric pressure generated at an altitude of around 0m.

⚠ CAUTION

When a commercial peripheral device (such as a CF Card and USB device) is installed, satisfy the installation environment conditions specified for that device or those for the module, whichever are harder.

Physical Dimensions



Fiture 2.1 Physical Dimensions

3. Hardware Setup

Before Using the Product for the First Time

Follow the next steps to set up this product:

This product works attached to the MELSEC-Q series base unit. MELSEC-Q series power supply module is also necessary in addition to the base unit.
For their specifications and the ways how to install and wire them, refer to manuals of each module

(When using MELSEC products and MELSOFT products and you refer to their manuals and HELP, replace the description “PC CPU” with the description “CONTECWinCPU”.).

STEP1 By referring to the information in this chapter, install, connect and set this product.

STEP2 Connect cables.
Connect the cables of necessary external devices, such as a keyboard and a display, to this product 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 find any abnormality after turning on the power, turn it off and check to see if the setup has been performed properly.

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

* Before using this product, be sure to execute "LOAD SETUP DEFAULTS" to initialize the BIOS settings to their default values.
(See Chapter 4, "Main Menu.")

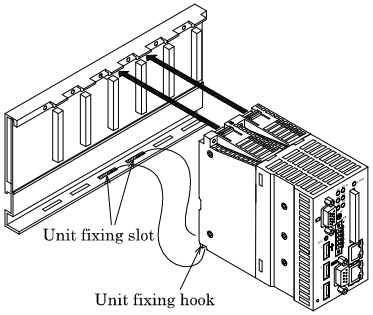
Note that this product occupies two slots in the base unit.

⚠ CAUTION

- Before installing or uninstalling this product, be sure to turn the power off.
- Installing or uninstalling this product left powered can cause a fault or malfunction.
- Be sure to connect a keyboard and a mouse to it before turning the power on for the first time.

Installing the Module

- For the environment and the position to install this product, refer to QCPU user's manual (Hardware design and Maintenance).
- Before installing this product, remove the transparent protective sheet from the rear panel (which comes into contact with the base unit).
- Fit the module fixing hook in the module fixing slot in the base unit, then push the module in the direction of the arrow to mount the module on the base unit.



Fiture 3.1 Installing the Module1

⚠ CAUTION

Be sure to turn off the power to this product before installing it.

- To use this product in a place subject to much vibration or shock, use two screws to fasten it to the base unit as illustrated below.

  Module fixing screws : M3 x 12 (Prepared by the user)

  Tighten the screws within the following torque range :

Tightening torque range	36 - 48N cm

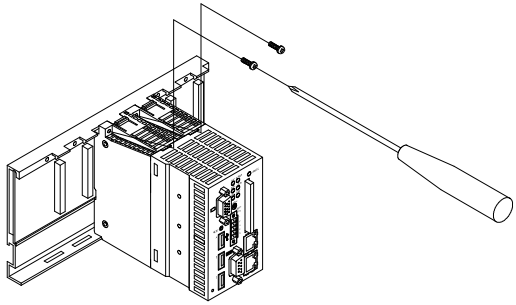


Figure3.2 Installing the Module2

Uninstalling the Module

- If this product has been fastened with module fixing screws, remove them first (1).
  While pressing the protrusions (2) on top of this product, pull this product toward you by the upper side (3). Lift this product to remove the module fixing hook from the module fixing slot (4).

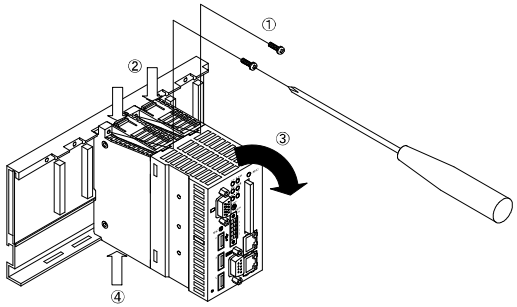


Figure 3.3 Uninstalling the Module

⚠ CAUTION

Be sure to turn off the power to this product before uninstalling it. If the OS is still up and running when you attempt to turn the power off, shut down the OS before turning the power off.

Installing the fitting to fix a CF card

After the insertion of a CF card, install the fitting to fix a CF card as follows.

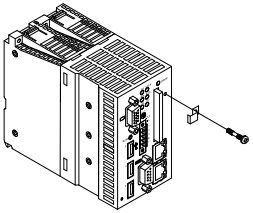


Figure 3.4 Installing the fitting to fix a CF card

The hole to attach the binding tie

The binding tie can be installed as follows in order to keep USB cables from falling out
[A recommended binding tie : RSG-100 V0 (Kitagawa Industries)]

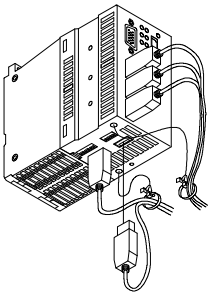


Figure 3.5 The hole to attach the binding tie

4. BIOS Setup

BIOS Setup

BIOS Setup allows you to make various settings upon startup. When you use the module for the first time, be sure to execute this program. Once you have executed the program, the settings you made are backed up to be retained.

Introduction

This chapter discusses Award's Setup program built into the FLASH ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1 By pressing <Del> immediately after switching the system on, or

2 By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>+ <Alt>+<Del> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to continue, DEL to enter SETUP

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. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Table 4.1. Using Setup

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)
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 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
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS 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.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

A Final Note About Setup

The information in this chapter is subject to change without notice.

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.

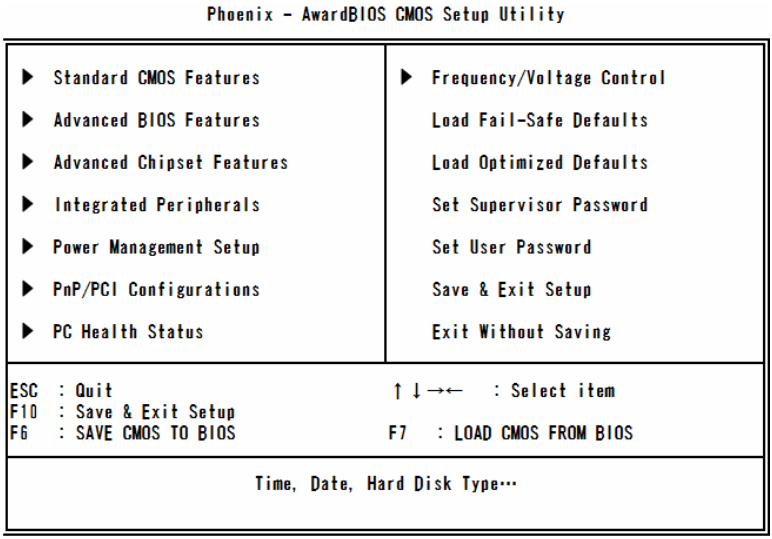


Figure 4.1 Main Menu

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

Use this menu for basic system configuration.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI.

PC Health Status

Use this menu to show the environmental status of your system

Frequency/Voltage Control

Use this menu to set the frequency and the voltage of system.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Supervisor Password

Use this menu to set Supervisor Passwords.

User Password

Use this menu to set User Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

Standard CMOS Features

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.

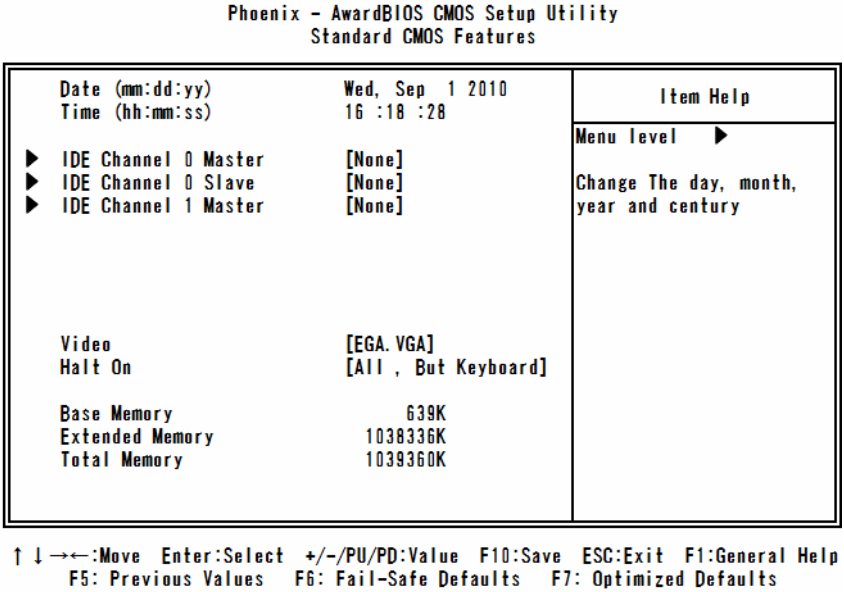


Figure 4.2 Standard CMOS Features

Main Menu Selections

This table shows the selections that you can make on the Main Menu.

Table 4.2 Main Menu Selections

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Channel 0 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 1 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, But Keyboard	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

IDE Adapters

The IDE adapters control the hard disk. Use a separate sub menu to configure each hard disk.

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 4.3 to configure the hard disk.

Table 4.3 IDE Adapters configurations

Item	Options	Description
IDE HDD Auto-Detection	Press Enter	Press Enter to auto-detect the hard disk on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0/1 Master/Slave	None Auto Manual	Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Selecting 'Manual' lets you set the re-maining fields on this screen. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk.
Capacity	Automatically shows the capaticy of HDD.	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Channel 0/2 Master/Slave' item is set to 'Manual' and "Acces Mode" item is set to "CHS".		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of heads for this hard disk.
Precomp	Min = 0 Max = 65535	**** **Warning** : Setting a value of 65535 means no hard disk.
Landing Zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Advanced BIOS Features Setup

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

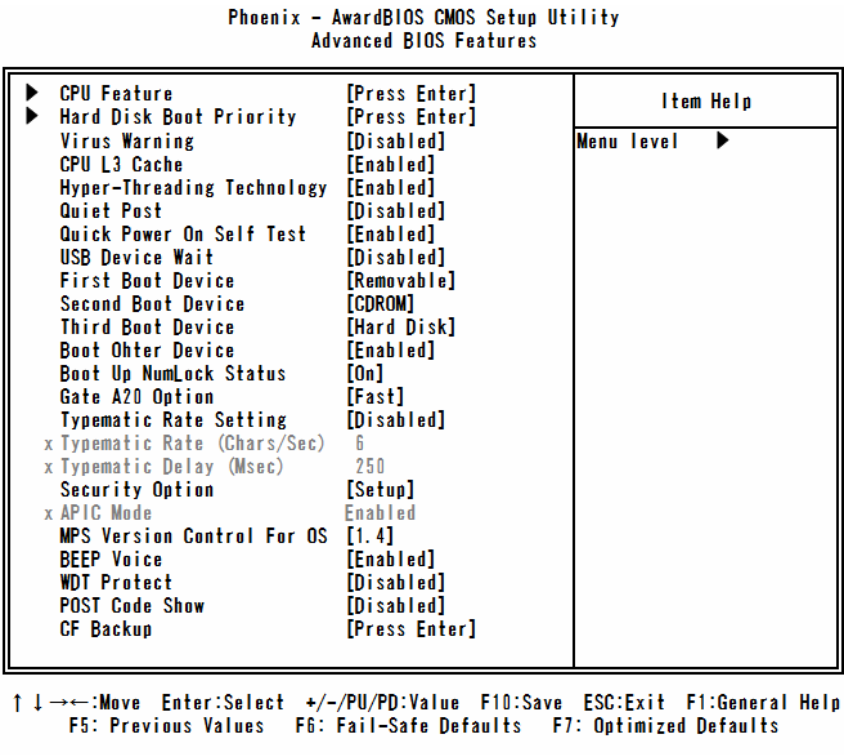


Figure 4.3 Advanced BIOS Features Setup

CPU Feature

Press <Enter> to configure the settings relevant to CPU Feature.

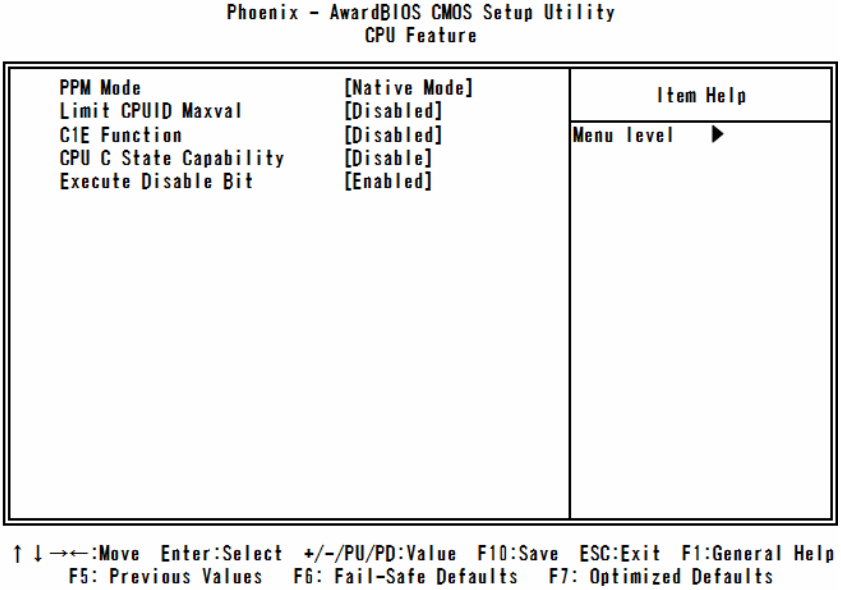
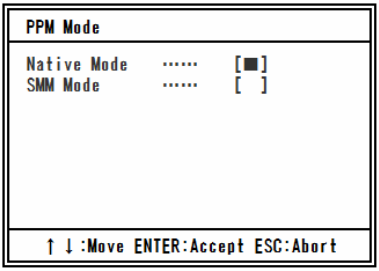
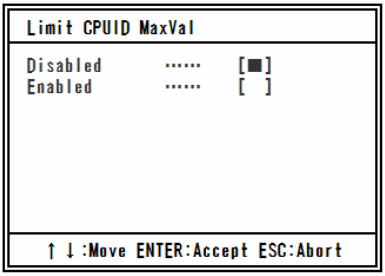
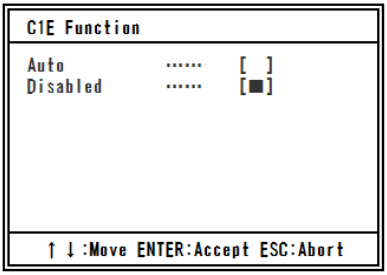
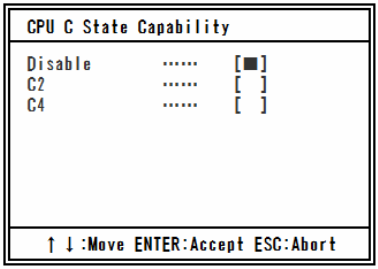
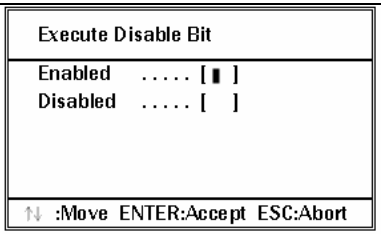


Figure 4.4 CPU Feature

Table 4.4 CPU Features select

Description	Choice
PPM Mode Select PPM Mode. When using OS which supports ACPI, select “Native Mode”. When using elder OS such as Windows 98 and Me, select “SMM Mode”.	

Description	Choice
Limit CPUID MaxVal Select Disabled / Enabled of Limit CPUID Maxval. For elder OS such as Windows 98 and Me, select “Enabled”. If not, the maximum value of CPUID can not be hundled.	
C1E Function Select C1E Function.	
CPU C State Capability Select CPU C State Capability. Selecting any values other than “Disabled” can reduce the power consumption when CPU idles.	
Execute Disable Bit Select Enabled / Disabled of Execute Disable Bit. Selecting “Disabled” makes XD function flag to be 0 by force.	

Hard Disk Boot Priority

With the field, there is the option to choose, aside from the hard disks connected, “Bootable add-in Cards” which refers to other external device.

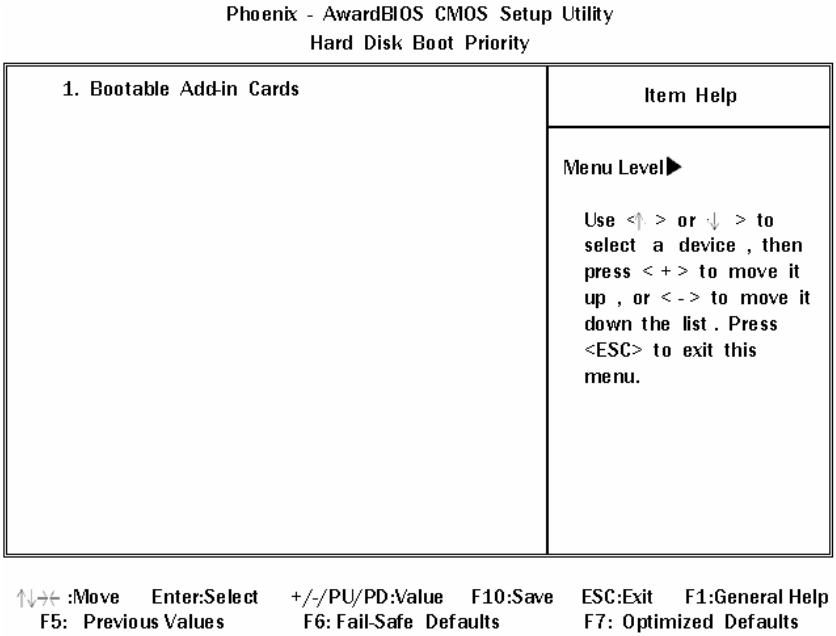


Figure 4.5 Hard Disk Boot Priority

Virus Warning

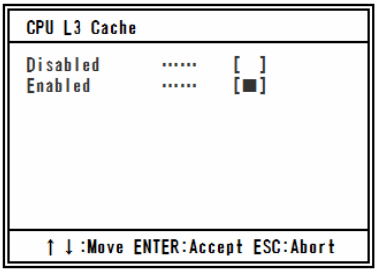
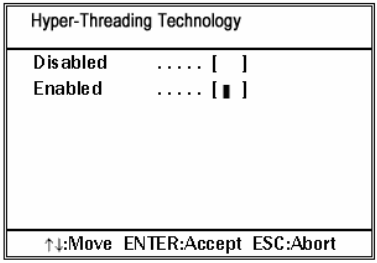
When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

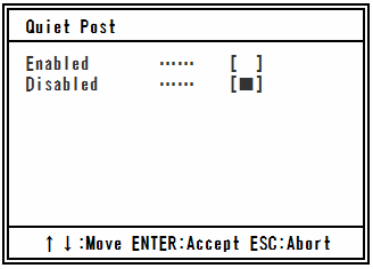
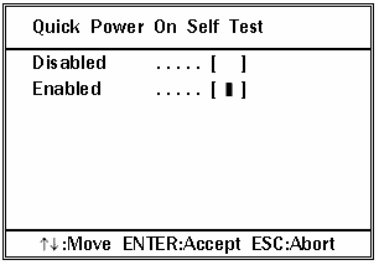
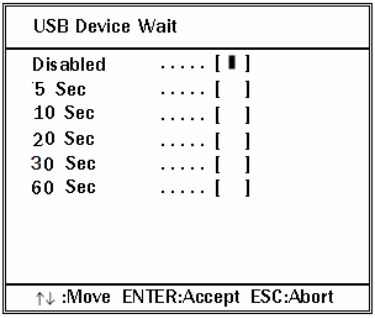
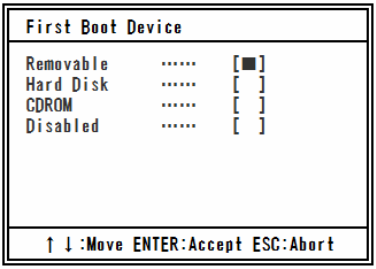
⚠ CAUTION

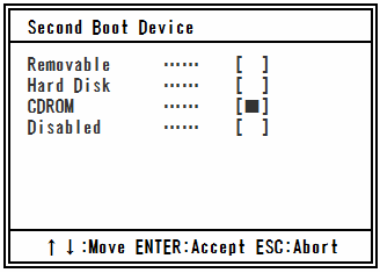
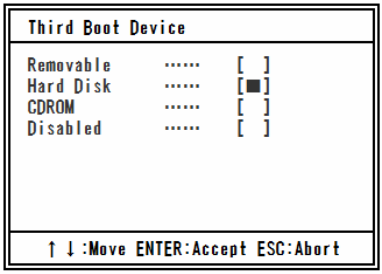
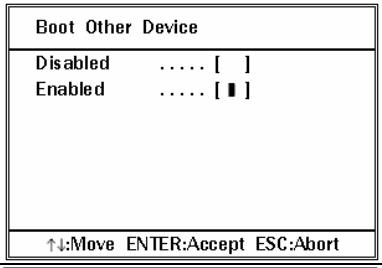
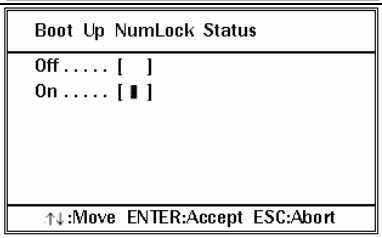
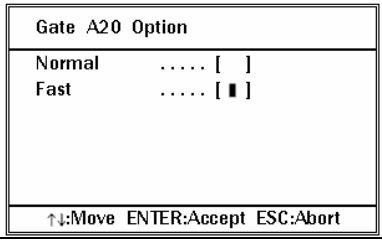
Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

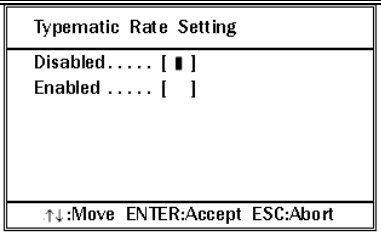
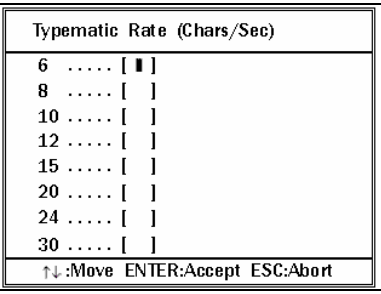
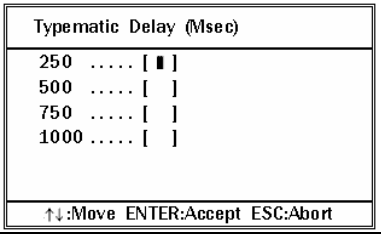
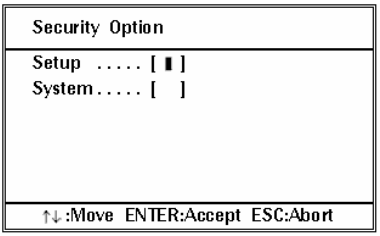
Enabled	Activates automatically when the system boots up causing a warning message to appear when any-thing attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Table 4.5 Advance BIOS Feature select

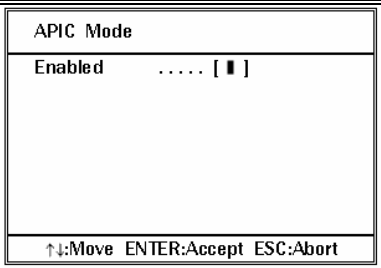
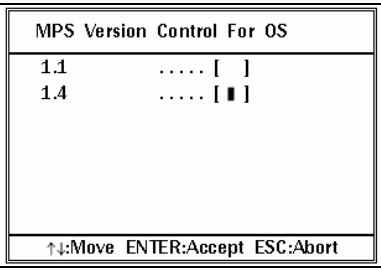
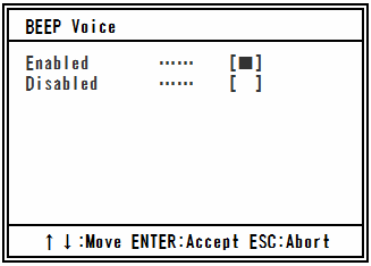
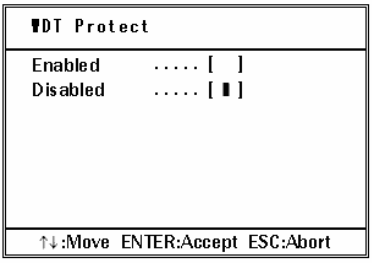
Description	Choice
CPU L3 Cache Select Disabled / Enabled of CPU L3 Cache. Selecting "Enabled" makes the speed of memory access higher.	
Hyper-Threading Technology Select Disabled / Enabled of Hyper-Threading Technology.	

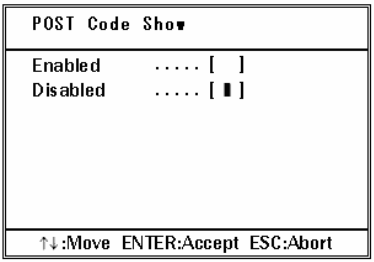
Description	Choice
Quiet Post Select Disabled / Enabled of Quiet Post. Selecting "Enabled" makes the self-test of a memory and some devices simpler. Therefore the wake-up time becomes shorter. If selecting "Disabled", the self-test will not be simplified.	
Quick Power On Self Test Select Disabled / Enabled of Quick Power On SelfTest. Selecting "Enabled" makes POST (the self-test when turning power on) simpler. Therefore the wake-up time becomes shorter. But we recommend selecting "Disabled". Because POST will not be processed for all the system if not. If some troubles happen on POST, specify them in order to avoid the loss of data in working.	
USB Device Wait Select USB Device Wait. This menu sets the BIOS waiting time till the access for USB devices starts. If you can not boot the system in order because of the USB devices which need the long time to start, use this function. (The boot-time of system will be as long as the time you set)	
First Boot Device Select First Boot Device. BIOS try to load operating system from devices according to the order specified by this item.	

Description	Choice
Second Boot Device Select Second Boot Device. BIOS try to load operating system from devices according to the order specified by this item.	
Third Boot Device Select Third Boot Device. BIOS try to load operating system from devices according to the order specified by this item.	
Boot Other Device Select Disabled / Enabled of Boot Other Device. If selecting “Enabled”, BIOS try to load operating system from other devices.	
Boot Up NumLock Status Select Boot Up NumLock Status. It controls the condition of <NumLock> key on the start of the system.	
Gate A20 Option Select Gate A20 Option. It selects how to specify address for the memory which is larger then 1MB (extended memory). Sellecting “Normal”, the gate A20 is controlled by the pin of keyboard controller. Sellecting “Fast”, the gate A20 is controlled by the system chipset. For OS/2 and Windows, selecting “Fast” can make the speed of the system higher.	

Description	Choice
Typematic Rate Setting Select Typematic Rate Setting. Selecting "Disabled", the speed of typing is decided by the keyboard controller of the system. Selecting "Enabled", you become able to select following 2 items ("Typematic Rate" and "Typematic Delay")	
Typematic Rate (Chars/Sec) Select Typematic Rate. You can select the input speed of characters when you keep one key pushed. If the item "Typematic Rate Setting" is set to "Enabled", you become able to set this item.	
Typematic Delay (Msec) Select Typematic Delay. You can select the waiting time for continuous typing. If the item "Typematic Rate Setting" is set to "Enabled", you become able to set this item.	
Security Option Select Security Option when the security setting is enabled. Selecting "Setup", system will boot up but the access to the setup will be denied unless you input the correct password to its prompt. Selecting "System", system will not boot up and the access to the setup will be denied unless you input the correct password to its prompt.	

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

Description	Choice
APIC Mode You can not change this item. Advanced Programmable Interrupt Controller is fixed to "Enabled".	
MPS Version Control For OS Select MPS Version Control For OS. Select the version of multi-processor platform. Selecting "1.4", the system get the support for multi-PCI-bus configuration and the extended configuration table for the future extensibility	
BEEP Voice Select whether or not BEEP sounds when the system boots up.	
WDT Protect Select Enabled / Disabled of WDT Protect. Selecting "Enabled", WDT watches the system if the connected devices would lose its control or the boot of BIOS would stop because of unexpected factors such as accidental noise. When the boot of BIOS stops, the reset will be processed and the system reboots.	

Description	Choice
Post Code Show Select Enabled / Disabled of Post Code Show Selecting “Enabled”, the top-right area of the screen shows Post Code when BIOS is booting. But the display of Post Code will start after Graphic Device is initialized and the system get able to show images.	
CF Backup Selecting this option allows you to launch a tool for creating the backup of CF card and restoring it. This can be used to backup your current environment as it is. For details, please refer to the explanation below (*1).	---

*1 About the CF Backup Feature

To use the CF Backup feature, a separately-available CF card for backup is required. The CF card for backup must be larger capacity than built-in SSD. Using the CF card that is not our optional parts can be the cause of unidentified problems and it must be ensured that the CF card works with your system without problem before using this feature.

Also, before performing backup, read the licensing terms of your operating system carefully so that the backup is carried out within the scope of given license.

For the detailed procecure of CF Backup Feature, refer to “Appendix 5 Backup of built-in SSD”.

Advanced Chipset Features Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

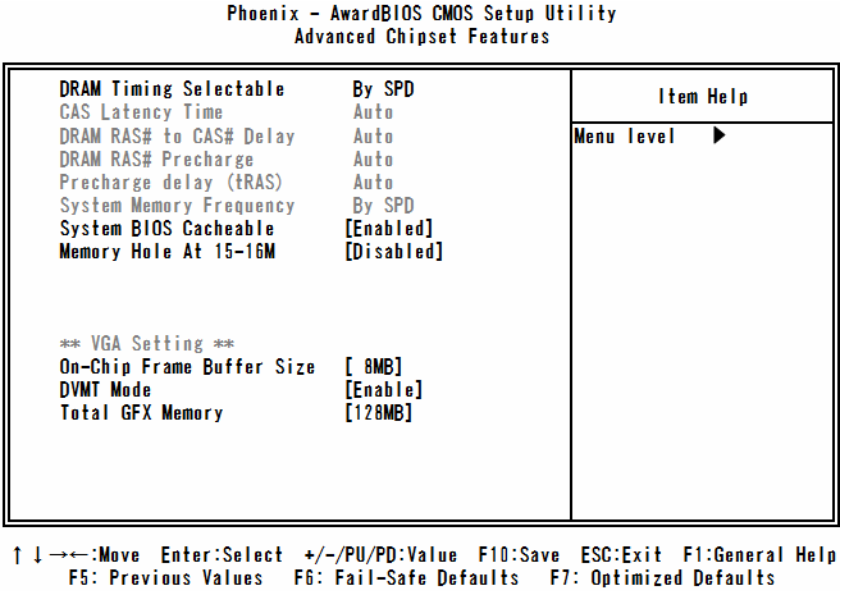
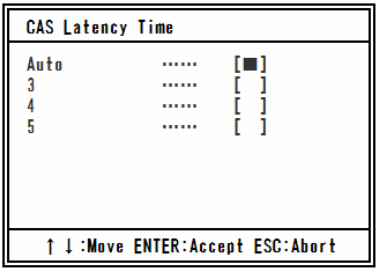
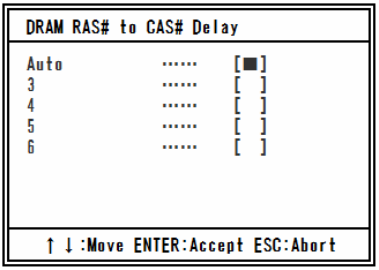
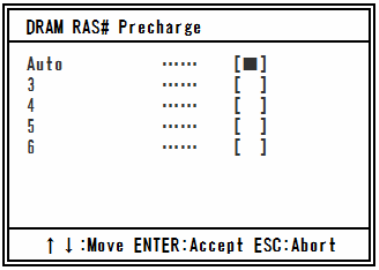
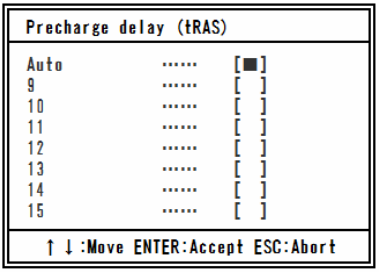
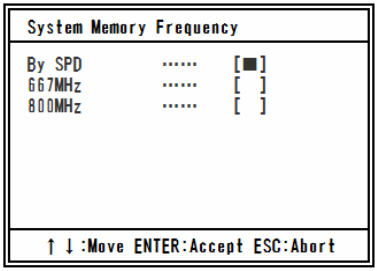
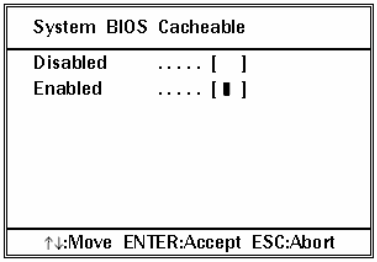
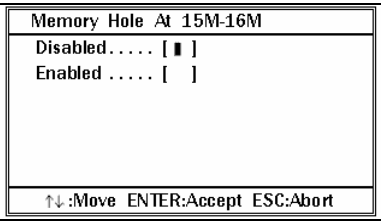


Figure 4.6 Advanced Chipset Features Setup

Table 4.6 Advance Chipset Feature select

Description	Choice
DRAM Timing Selectable Select DRAM Timing Selectable. This item should be different values according to the parameter of the installed memory chip (DRAM). Do not change the value of factory settings unless you have installed new memory whose speed is different from the original DRAM.	DRAM Timing Selectable Manual ..... [ ] By SPD ..... [▮] ↑↓:Move ENTER:Accept ESC:Abort

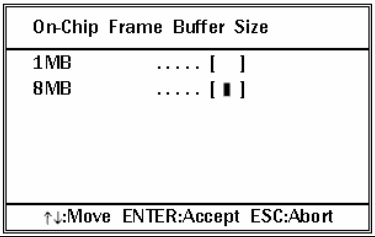
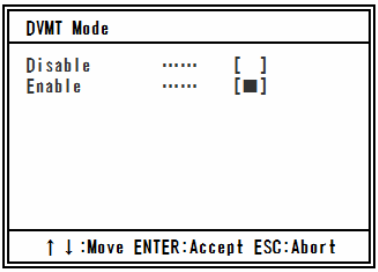
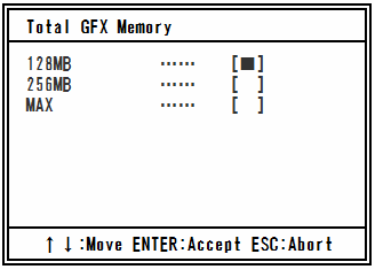
Description	Choice
CAS Latency Time Select CAS Latency Time. Select the number of clock in CAS waiting time. When Synchronous DRAM is installed, the number of clock in CAS waiting time is different according to DRAM timing. Do not change the default value of factory settings.	
DRAM RAS# to CAS# Delay Select DRAM RAS# to CAS# Delay. Select the timing delay between CAS and RAS strobe signal which are used when DRAM is read, writed or updated. When setting it to high speed, the performance gets higher. When setting it to low speed, the performance gets more reliable. It is applied only when synchronous DRAM is installed to the system. Do not change the default value of factory settings.	
DRAM RAS# Precharge Select DRAM RAS# Precharge. Select the number of clock needed to charge RAS till DRAM is refreshed. If this value is not enough, the update may become incomplete. In this case, DRAM can not hold its data. Do not change the default value of factory settings.	
Precharge delay (tRAS) Select Precharge delay (tRAS). Select the number of DRAM clock for the precharge delay time. Do not change the default value of factory settings.	

Description	Choice
System Memory Frequency Select System Memory Frequency. Select the frequency of main memory. Do not change the default value of factory settings.	
System BIOS Cacheable Select Disabled / Enabled of System BIOS Cacheable. Selecting “Enabled” allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may happen. Do not change the default value of factory settings.	
Memory Hole At 15M-16M Select Disabled / Enabled of Memory Hole At 15M - 16M. Do not change the default value of factory settings.	

VGA Setting

The field under the On-Chip VGA Setting and their defaults settings are:

Table 4.7 VGA Setting select

Description	Choice
On-Chip Frame Buffer Size Select the size of writing buffer between CPU and PCI.	
DVMT Mode Select Disabled / Enabled of DVMT (Dynamic Video Memory Technology) Mode.	
Total GFX Memory Select Total GFX Memory. Select the total memory size of graphics.	

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows four main items for user to select. Once an item selected, a submenu appears. Details follow.

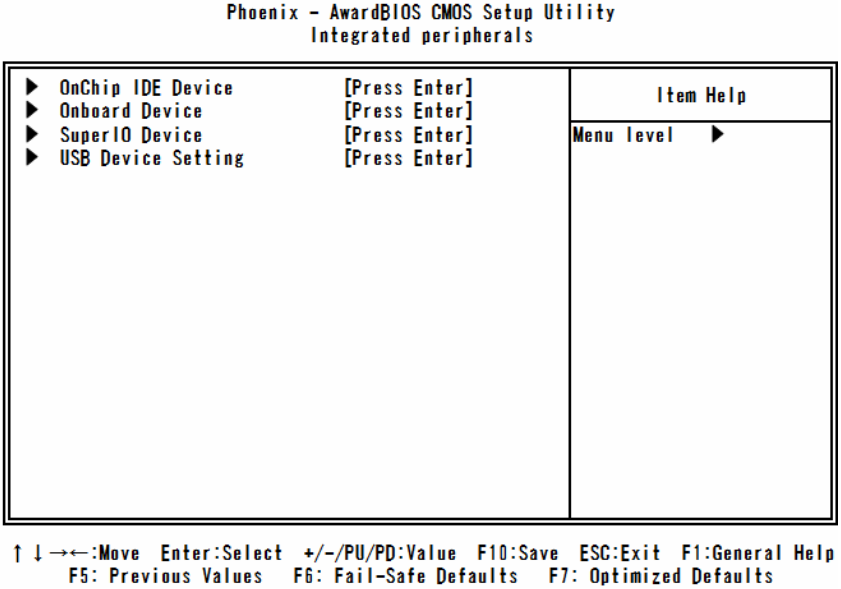


Figure 4.7 Integrated Peripherals

OnChip IDE Device

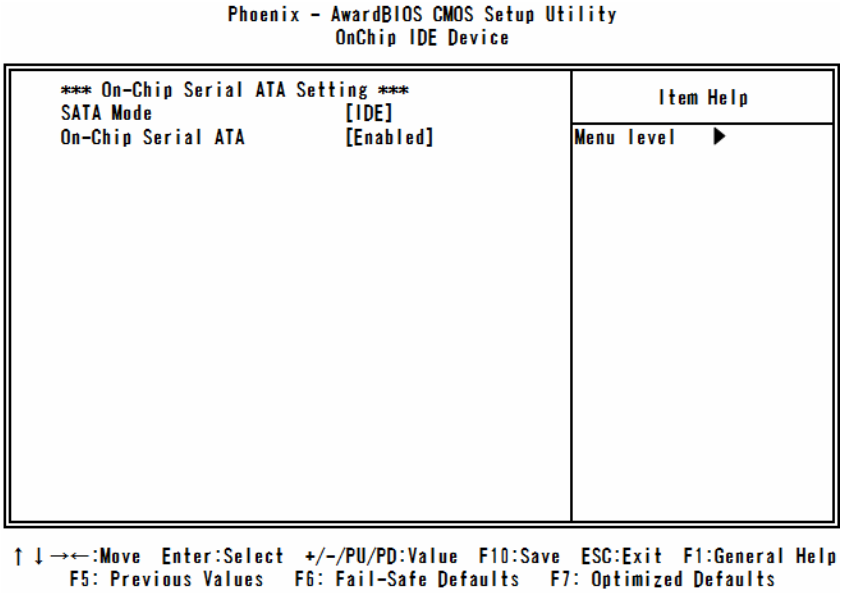
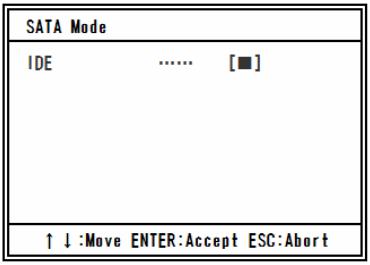
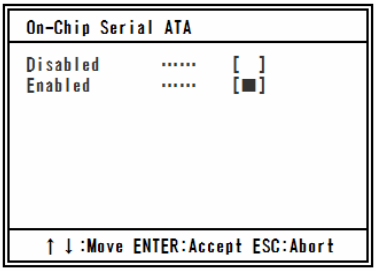


Figure 4.8 On Chip IDE Device

On Chip Serial ATA Setting

Table 4.8 On Chip Serial ATA Setting select

Description	Choice
SATA Mode Select SATA Mode. Only “IDE” is supported.	
On-Chip Serial ATA Select On-Chip Serial ATA. Selecting “Disabled”, SATA controller becomes disabled. Selecting “Enabled”, SATA works in the legacy mode.	

Onboard Device

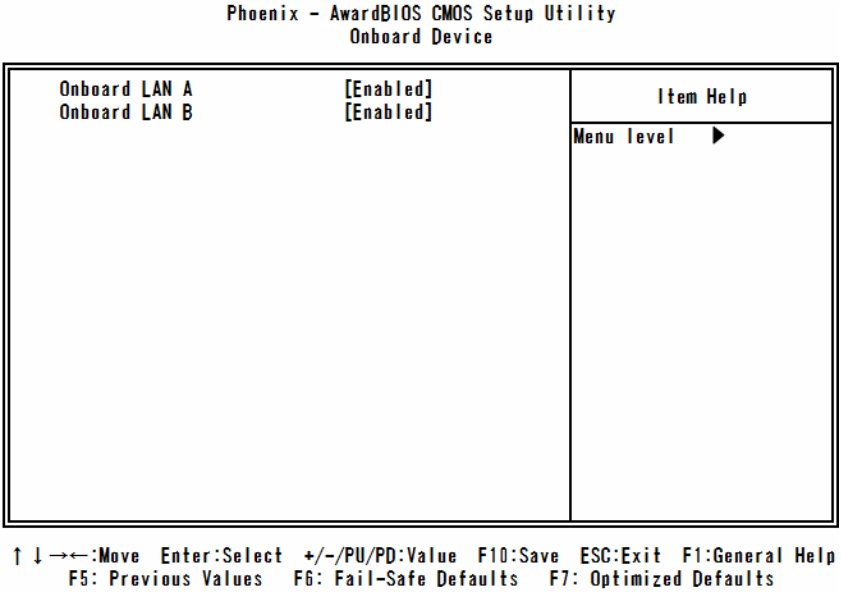
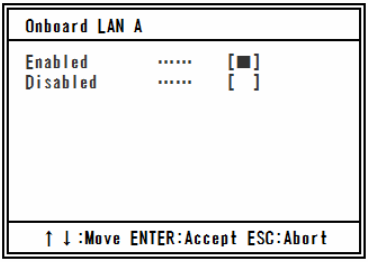
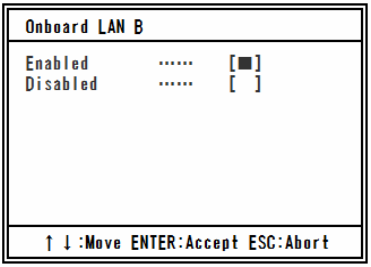


Figure 4.9 Onboard Device

Table 4.9 Onboard Device select

Description	Choice
Onboard LAN A Select Disabled / Enabled of Onboard LAN A.	
Onboard LAN B Select Disabled / Enabled of Onboard LAN B.	

Super IO Device

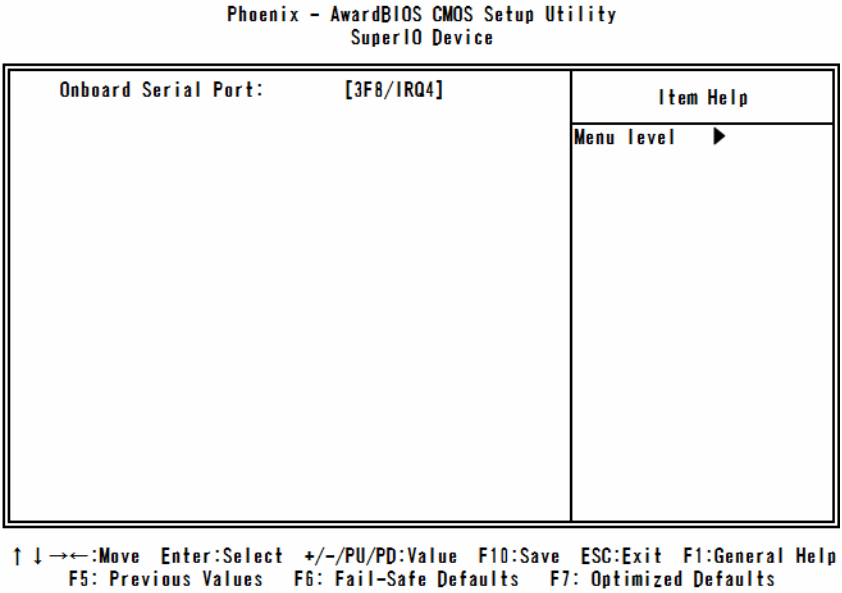


Figure 4.10 SuperIO Device

Table 4.10 Super I/O device select

Description	Choice
Onboard Serial Port Select Onboard Serial Port. Select the address and the IRQ to use of a serial port.	Onboard Serial Port Disabled ..... [ ] 3F8/IRQ4 ..... [■] 2F8/IRQ3 ..... [ ] 3E8/IRQ4 ..... [ ] 2E8/IRQ3 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort

USB Device Setting

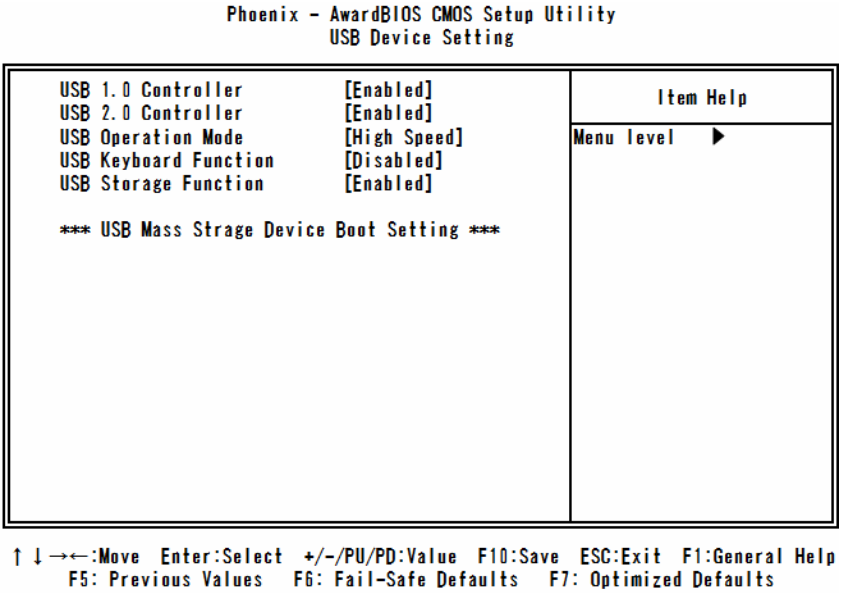
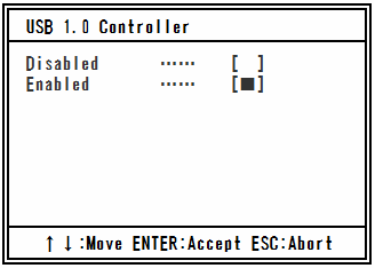
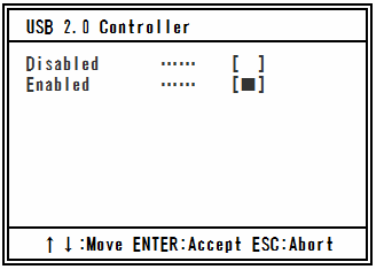
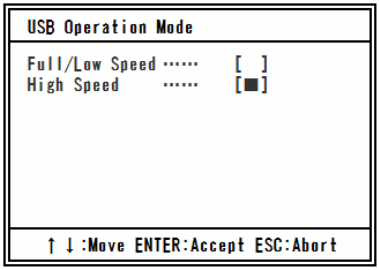
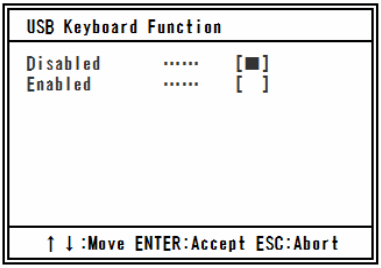
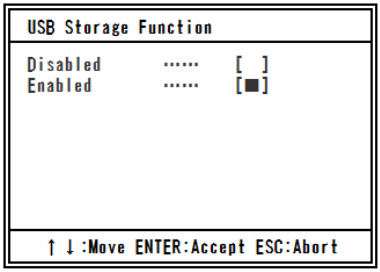


Figure 4.11 USB Device Setting

Table 4.11 USB Device Setting select

Description	Choice
USB 1.0 Controller Select Disabled / Enabled of USB 1.0 Controller. Normally select "Enable".	
USB 2.0 Controller Select Disabled / Enabled of USB 2.0 Controller. Normally select "Enable".	

Description	Choice
USB Operation Mode Select USB Operation Mode.	
USB Keyboard Function Select Disabled / Enabled of USB Keyboard Function. If you use a USB keyboard on the OS which does not support USB, select “Enabled”. For the OS which supports USB, select “Disabled”.	
USB Storage Function Select Disabled / Enabled of USB Storage Function. When using USB storages, select “Enabled”.	

Power Management Setup

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

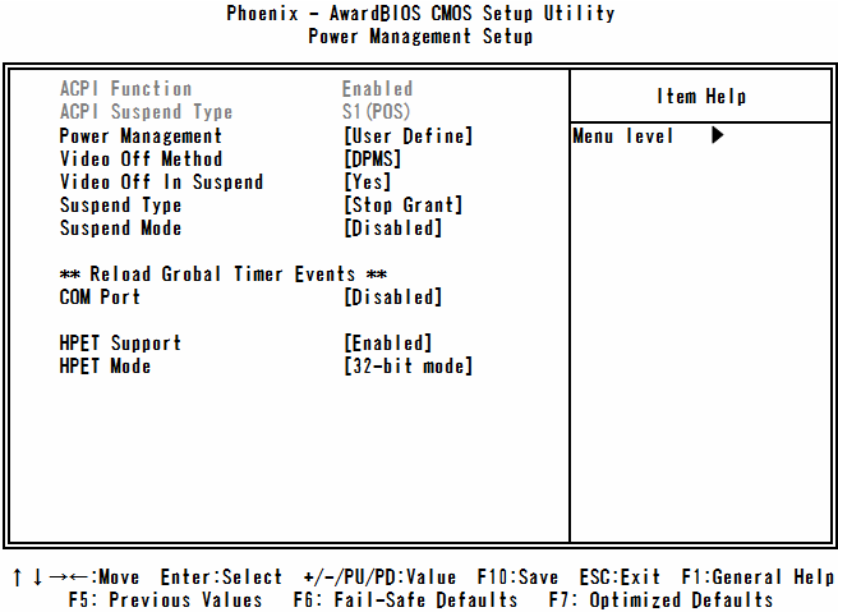
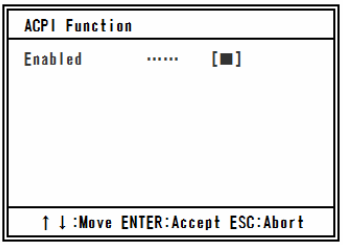
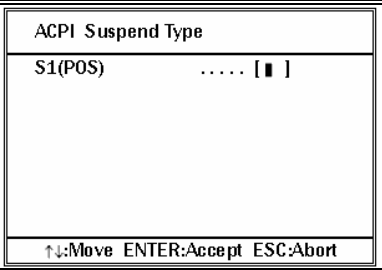
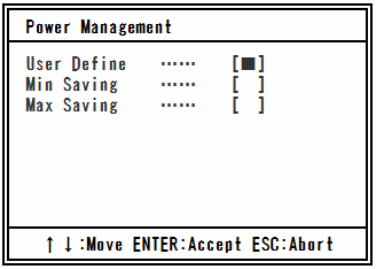
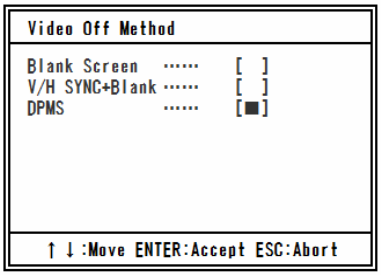
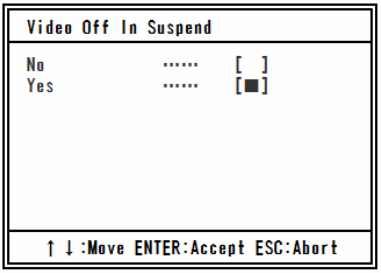
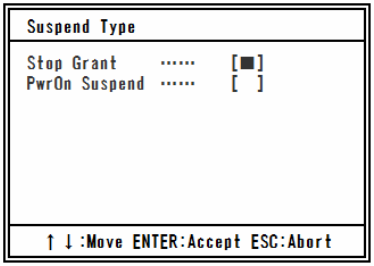
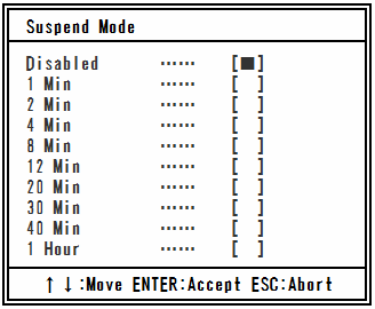
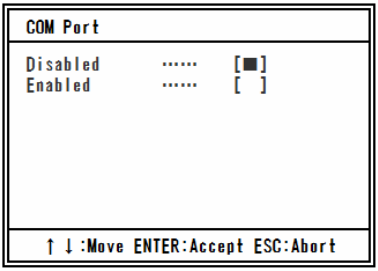
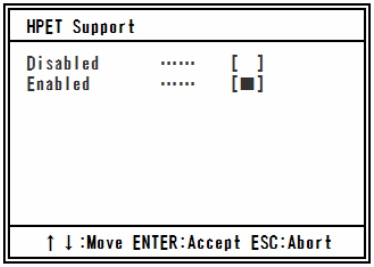


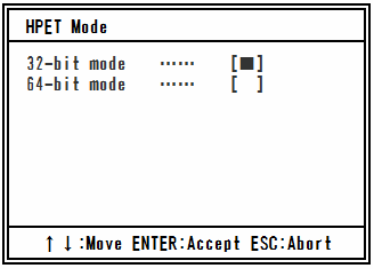
Figure 4.12 Power Management Setup

Table 4.12 Power Management setup select

Description	Choice
ACPI Function ACPI Function can not be changed. Only “Enabled” is supported.	
Note: ACPI (Advanced Configuration and Power Interface) is a power management specification that makes hardware status information available to the operating system. ACPI enables a computer to turn its peripherals on and off for improved power management. It also allows the computer to be turned on and off by external devices, so that mouse or keyboard activity wakes up the computer.	

Description	Choice
ACPI Suspend Type ACPI Suspend Type can not be changed. Only “S1(POS)” is supported.	
Power Management Select how to set the Power Management function. User Define : You can set values for each mode individually. The selectable range is between 1 minute and 1 hour when it is enabled. Min Saving : Minimum power management is processed. (Suspend mode = 1 hour) Max Saving : Maximum power management is processed. (Suspend mode = 1 minute)	
Video Off Method Select the power management method of video in the standby mode. Blank Screen : Turns the screen off. V/H SYNC+ Blank : Turns V/H SYNC and display signals off. DPMS : Controls it accorging to DPMS. The connected display should support DPMS.	
Video Off In Suspend Selecting “Yes”, a video becomes off in the standby mode.	

Description	Choice
Suspend Type Select Suspend type. The option is “Stop Grant” and “PwrOn Suspend”.	
Suspend Mode If no power management event happen between the specified period, CPU clock stops and a video signal becomes the suspended condition. When any power management events are detected, the system wakes up from the suspended condition.	
Reload of Global Timer Event Selecting “Enabled”, the global timer of the standby mode restarts following the respective event carried out by registered devices.	
Com Port Select Disable / Enabled of COM port.	
HPET Support Select Disable / Enabled of HPET (High Precision Event Timer) Support.	

Description	Choice
HPET Mode Select HPET (High Precision Event Timer) Mode. Normally select the proper value according to OS you use.	

PnP/PCI Configuration Setup

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

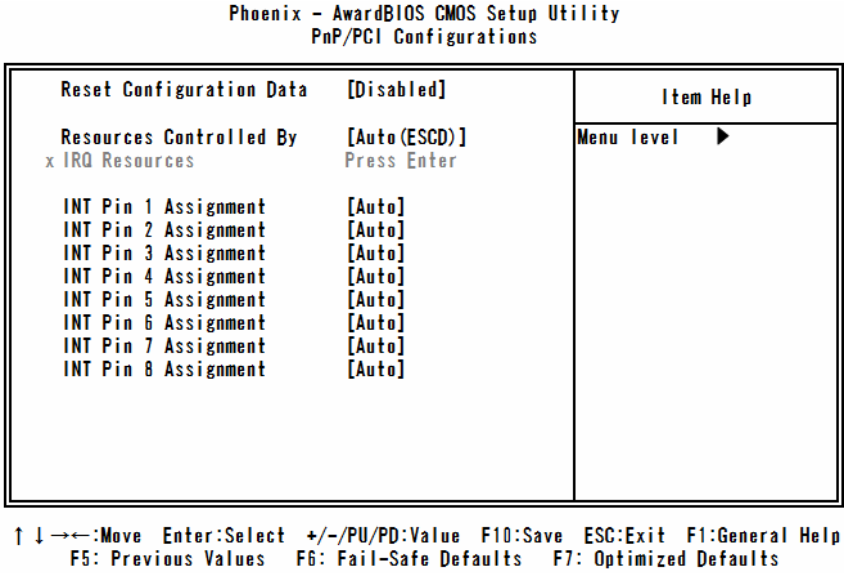
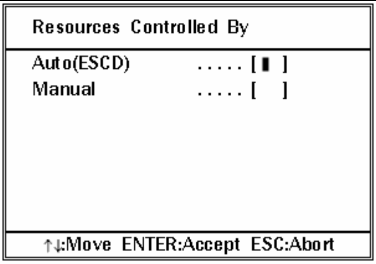


Figure 4.13 PnP/PCI Configuration Setup

Table 4.13 PCI PnP/PCI Configuration Setup select

Description	Choice
Reset Configuration Data Select Disabled / Enabled of Reset Configuration Data. Normally select “Disabled”. If fatal confliction happens and operating system can not boot after installing new addon and reconstructiong system, select “Enabled”. ESCD (Extended System Configuration Data) will be reset after the setup.	Reset Configuration Data Disabled . . . . . [▮] Enabled . . . . . [ ] ↑↓:Move ENTER:Accept ESC:Abort

Description	Choice
Resource Controlled By Select Resource Controlled By. The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play compatible devices. If you select "Auto(ESCD)", all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them	

IRQ n Resources

You can select "IRQ Resources" if you set "Resouces Controlled By" to "Manual" in "PnP/PCI Configuration Setup". Selecting "IRQ Resources", the sub-menu will be shown. For details, refer to followings.

If you want to control resources manually, assign each system interruption to one of following device types.

PCI Device: The device which is compliant with Plug-and-Play standard and designed to support PCI or ISA bus architecture.

Reserved: The device which is not compliant with Plug-and-Play standard and require the specific IRQ assignment.

Option: PCI Device, Reserved

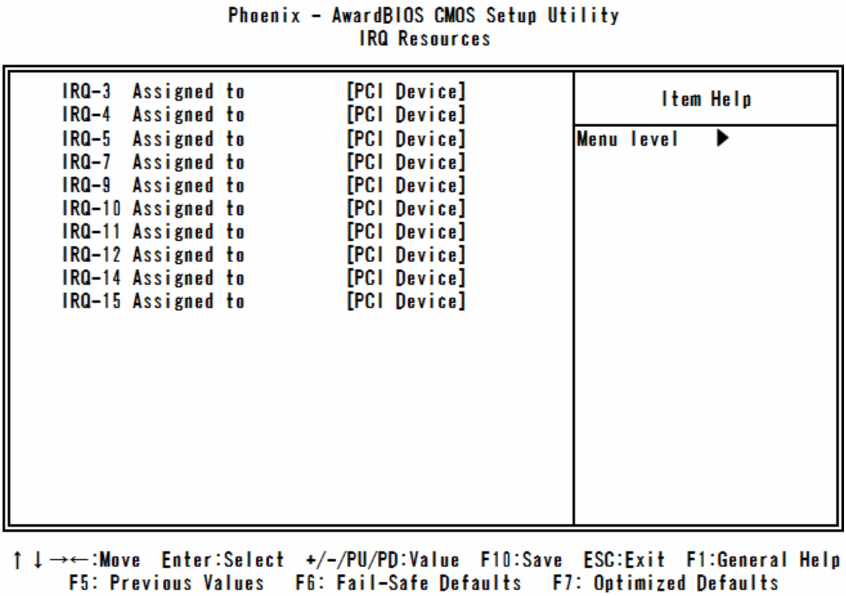
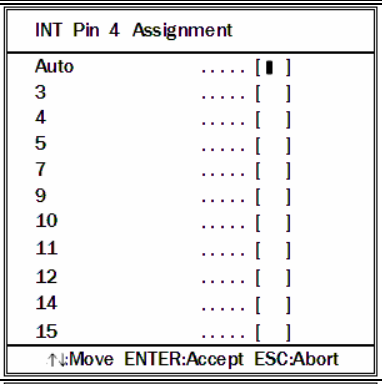
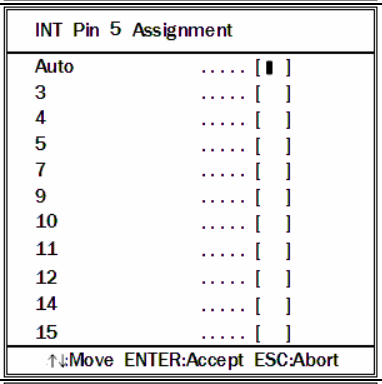
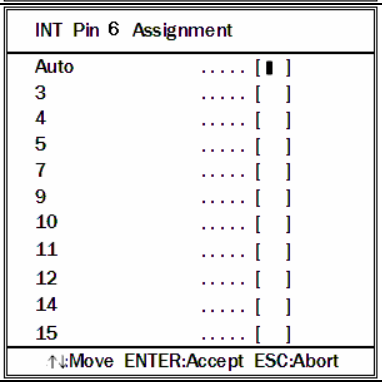


Figure 4.14 IRQ n Resources

Table 4.14 PCI PnP/PCI Configuration Setup select

Description	Choice
INT Pin 1 Assignment Select INT Pin 1 Assgnment Devices(s) using this INT : Network Controller - Bus 1 Dev 0 Func 0 Display Controller - Bus 0 Dev 2 Func 0 USB 1.0/1.1 UHCI Controller - Bus 0 Dev 26 Func 0	INT Pin 1 Assignment Auto ..... [▮] 3 ..... [ ] 4 ..... [ ] 5 ..... [ ] 7 ..... [ ] 9 ..... [ ] 10 ..... [ ] 11 ..... [ ] 12 ..... [ ] 14 ..... [ ] 15 ..... [ ] ↑↓Move ENTER:Accept ESC:Abort
INT Pin 2 Assignment Select INT Pin2 Assignment Devices(s) using this INT : Network Controller - Bus 2 Dev 0 Func 0	INT Pin 2 Assignment Auto ..... [▮] 3 ..... [ ] 4 ..... [ ] 5 ..... [ ] 7 ..... [ ] 9 ..... [ ] 10 ..... [ ] 11 ..... [ ] 12 ..... [ ] 14 ..... [ ] 15 ..... [ ] ↑↓Move ENTER:Accept ESC:Abort
INT Pin 3 Assignment Select INT Pin 3 Assignment Devices(s) using this INT : USB 1.0/1.1 UHCI Controller - Bus 0 Dev 29 Func 2 USB 2.0 EHCI Controller - Bus 0 Dev 26 Func 7	INT Pin 3 Assignment Auto ..... [▮] 3 ..... [ ] 4 ..... [ ] 5 ..... [ ] 7 ..... [ ] 9 ..... [ ] 10 ..... [ ] 11 ..... [ ] 12 ..... [ ] 14 ..... [ ] 15 ..... [ ] ↑↓Move ENTER:Accept ESC:Abort

Description	Choice
INT Pin 4 Assignment Select INT Pin 4 Assignment Devices(s) using this INT : IDE Controller - Bus 0 Dev 31 Func 2 USB 1.0/1.1 UHCI Controller - Bus 0 Dev 29 Func 1 SMBus Controller - Bus 0 Dev 31 Func 3	
INT Pin 5 Assignment Select INT Pin 5 Assignment Devices(s) using this INT : - Reserved	
INT Pin 6 Assignment Select INT Pin 6 Assingment Devices(s) using this INT : USB 1.0/1.1 UHCI Controller - Bus 0 Dev 26 Func 1	

Description	Choice
INT Pin 7 Assignment Select INT Pin 7 Assingment. Devices(s) using this INT : - Reserved	INT Pin 7 Assignment Auto ..... [▮] 3 ..... [ ] 4 ..... [ ] 5 ..... [ ] 7 ..... [ ] 9 ..... [ ] 10 ..... [ ] 11 ..... [ ] 12 ..... [ ] 14 ..... [ ] 15 ..... [ ] ↑↓Move ENTER:Accept ESC:Abort
INT Pin 8 Assignment Select INT Pin 8 Assignment. Devices(s) using this INT : USB 1.0/1.1 UHCI Controller - Bus 0 Dev 29 Func 0 USB 2.0 EHCI Controller - Bus 0 Dev 29 Func 7	INT Pin 8 Assignment Auto ..... [▮] 3 ..... [ ] 4 ..... [ ] 5 ..... [ ] 7 ..... [ ] 9 ..... [ ] 10 ..... [ ] 11 ..... [ ] 12 ..... [ ] 14 ..... [ ] 15 ..... [ ] ↑↓Move ENTER:Accept ESC:Abort

PC Health Status

The BIOS shows the PC health status in this window.

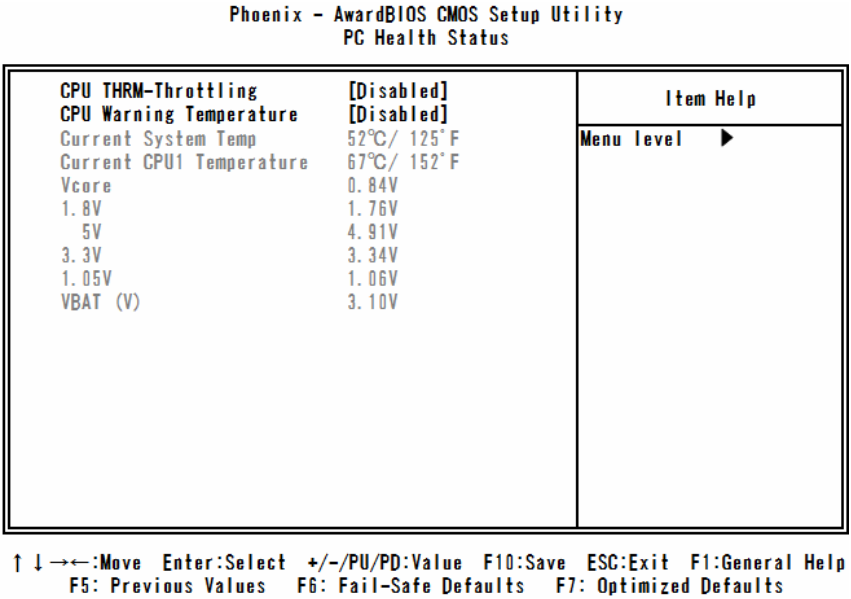
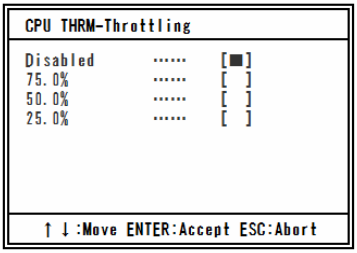
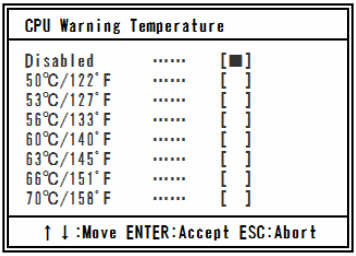


Figure 4.15 PC Health Status

Table4.15 PC Health Statusセレクト

Description	Choice
CPU THRM-Throttling When the temperature exceeds the value set in "CPU Waning Temperature" below, the throttling is activated in selected percentages to restrain the heat generation from CPU. Note that the operation in Windows is not supported.	
CPU Warning Temperature Select CPU Warning Temperature. You can select the threshold temperature of CPU temperature warning. If it exceeds the specified temperature, Beep will ring as warning.	

Frequency/Voltage Control

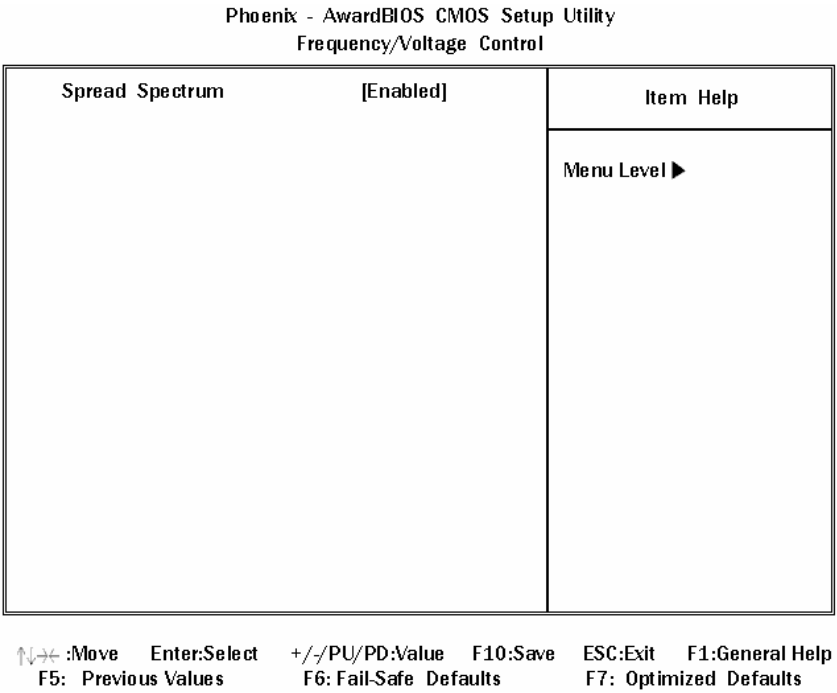


Figure 4.16 Frequency/Voltage Control

Table 4.16 Frequency/Voltage Control Selections

Description	Choice
Spread Spectrum Select Disabled / Enabled of Spread Spectrum. When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Selecting "Enabled" changes the extreme values from spikes to flat curves, thus reducing EMI. This benefit may in some cases be outweighed by problems with timing-critical devices.	Spread Spectrum Disabled . . . . . [ ] Enabled . . . . . [■] ↑↓:Move ENTER:Accept ESC:Abort

Defaults Menu

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

Load Fail-Safe Defaults

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

Load Fail-Safe Defaults (Y/N) ? N

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

Load Optimized Defaults

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

Load setup Defaults (Y/N) ? N

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

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 unction, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

To disable 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.

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

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

Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation :

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

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

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

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

POST Messages

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

If a message is displayed, it will be accompanied by:

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

POST Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Position and Setting of CMOS, ROM clear switch

If an unexpected activation failure occurs due to the BIOS setting, the CMOS/ROM clear jumper can be set in order to disable the BIOS setting and start up the system.
In the normal operation, leave the CMOS/ROM clear jumper to the factory setting (both: OFF).

(1) First turn power off of the main body. Then set CMOS clear switch (DIP switch 1 – SW1) to ON. After 10 seconds, set it to OFF again.

(2) Set ROM clear switch (DIP switch 1 – SW2) to ON.

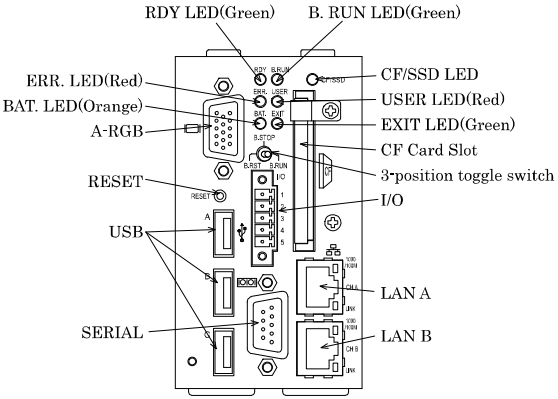
(3) Turn power on of the main body and start the system. After the system wakes up, start the BIOS setup and set proper values to it.

(4) After the settings, set ROM clear swich (DIP switch1 – SW2) to OFF again and save the settings. Then reboot the system.

5. Each Component Function

Component Name

Front



Bottom

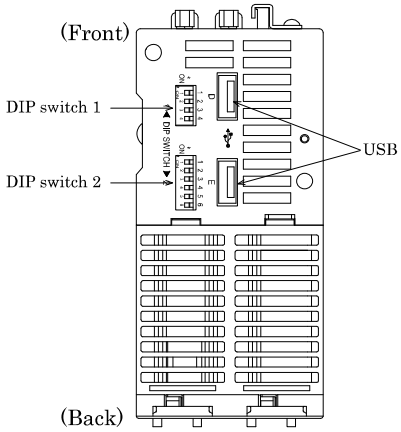


Figure 5.1 Component Name

Table 5.1 Each Component Function

Name	Function
CF-CARD	CF card slot (only for a CF card with IDE connection)
Built-in SSD	SSD for OS
LAN A	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
RDY LED	Indicates hardware ready
B.RUN LED	Indicates the running of bus interface driver
ERR. LED	Indicates system error
USER LED	Indicates user error
BAT. LED	Indicates battery alarm
EXIT LED	Indicates shutdown (power off) or hardware reset
I/O	I/O terminal for shutdown, WDT output terminal
SERIAL	Serial port connector (9-pin D-SUB, male)
A-RGB	CRT connector (15-pin HD-SUB, female)
USB	USB port connector x 5
RESET	Push switch for hardware reset
3-position toggle switch	Control switch for bus interface driver
DIP switch 1	Switch for CMOS clear, ROM clear, SSD Enable and SSD write protect
DIP switch 2	Switch to select the reset method
CF/SSD LED	Indicates the access of SSD or a CF card

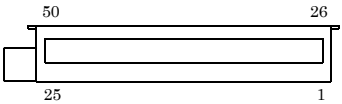
Each Component Function

CF card connector: CF-CARD

A CF card connector supports a CF card (Type I: memory card only).

Table 5.2 CF card connector

Connector used	50-pin 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

- The CF card connector does not support hot plug. The pulling out opening of the CF card cannot be done in the state of power supply ON. Please neither pulling out opening of CF card in the state of power supply ON of this product nor come in contact with CF card. This product may malfunction or cause a failure.
  Before you insert/remove the CF card, make sure that the power is switched off and the access LED is turned off.
- We have evaluated the operation of a CF card using the specific CF card listed on "Chapter 10 List of Options and Recommended Parts". The operation of other CF cards (such as commercial ones) should not be guaranteed.

Built-in SSD

The product contains SSD whose capacity is 4GB. The built-in SSD is used for OS. SSD has the rewritable life (1 million times). Therefore a CF card is recommended for the data which will be rewrited frequently to be stored.

Write protect function

This product has two types of write protect function.

- EWF function of Windows Embedded Standard 2009 : the function by software
- Write protect of DIP switch : the function by software

The write protect by EWF is enough effective. The combination of it and one by DIP switch realizes further reliable protect for writing. But one by DIP switch should be used with EWF. If you set the DIP switch for write protect to ON without setting EWF to Enabled, OS will not boot.

Refer to following procedures for the setting.

[How to set the DIP switch for write protect from OFF to ON]

(1) First start up Windows, then make sure the condition of EWF from command prompt. If it is Disabled, set it to Enabled. *1

(2) Shutdown Windows. Then turn power off.

(3) Set the 3rd switch of DIP switch 1 to ON.

[How to set the DIP switch for write protect from ON to OFF]

(1) Turn power off.

(2) Set the 4th switch of DIP switch 1 to OFF.

(3) If you want to turn EWF off, start up Windows, set EWF to Disabled from command prompt, then reboot OS. *1

*1: In order to know how to set EWF, refer to "Notes on Windows Embedded Standard", which is packed with this product.

SSD Enable switch

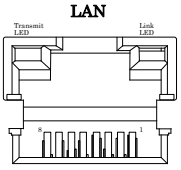
The 3rd swich of DIP switch 1 can change the condition of built-in SSD to Enabled / Disabled. Set this swich to ON if your application or system requires it or you want to make SSD unrecognizable from OS and BIOS.

Giga bit-Ethernet：LAN A - B

This product is equipped with 2 ports for giga bit.

- Network type : 1000BASE-T/100BASE-TX/10BASE-T
- Transmission speed : 1000M/100M/10M bps
- Max. network path length : 100m/segment
- Controller : Intel 82574L

Table 5.3 1st Ethernet Connector



PIN#	Function	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

LEDs for display of network statuses:

Right LED	: Link LED	
	Normal connection	: Green ON
	Operation	: Green Blinking
Left LED	: Operation LED	
	10M	: Off
	100M	: Green
	1000M	: Orange

LAN drivers

Installed

LED Displays

Table 5.4 LED Displays

Abbreviation	Name	Color	Status	Definition
RDY	H/W READY	Green	On	The hardware is all set to go.
			Off	The hardware is not ready or a system WDT error has occurred.
			Blink	A reset by the reset switch has been accepted. The hardware is reset two seconds after the LED starts blinking.
B.RUN	BUS I/F DRIVER RUN	Green	On	The bus interface driver is running. (User applications have been enabled for bus access.)
			Off	The bus interface driver has been suspended. (The Y output is off. User applications have been disabled for bus access.)
			Blink	The bus interface driver has accepted a reset generated either by setting the toggle switch to B.RST or by resetting module No. 1 in the multiple programmable controller CPU configuration. *1
ERR.	SYSTEM ERROR	Red	On	A system error has occurred without stopping the output.
			Off	This product is in the normal state.
			Blink	A system error has occurred while stopping the output.
USER	USER ERROR	Red	On	A user error has occurred.
			Off	This product is in the normal state.
BAT.	BATTERY ALARM	Orange	On	This product has caused an internal battery error.
			Off	This product is in the normal state.
EXIT	EXIT	Green	On	The shutdown and hardware reset procedure has been completed. *2
			Off	The shutdown and hardware reset procedure has not been completed.
CF/SSD	CF/SSD ACCESS	Green	On	Access is being made to IDE (built-in SSD/a CF card)
			Off	Access is not being made to IDE (built-in SSD/a CF card).

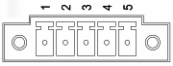
*1 When the B.RUN LED is blinking, do not reset again the bus interface driver by setting the toggle switch to B.RST or resetting module No. 1 in the multiple programmable controller CPU configuration.

*2 When the shutdown of OS is completed, nothing is displayed on a CRT screen but it becomes a black screen.

Terminal block: I/O

Connect it using the terminal block connector packed with this product

Table 5.5 Terminal Block



Pin	Signal	Connection method
1	Shutdown input (+)	Refer to figure 5.2 input circuit
2	Shutdown input (-)	
3	Shutdown complete output	Refer to figure 5.3 output circuit
4	Watch dog timer start output	
5	Common terminal for Pin 3,4	

⚠ CAUTION

- Shutdown input /output is supported by Windows Embedded Standard 2009 only.
- If ON-period of shutdown input is longer than 5 seconds, the forced shutdown will run. It is not normal shutdown. After this procedure, OS may not boot up in order.
  (*) In general, do not use the forced shutdown.
  (*) When you want to shutdown the OS (Windows Embedded Standard 2009) using the shutdown input, the ON-period should be within the range 0.7sec – 3sec.
- If you want to reboot the module after the normal shutdown or the forced shutdown (the condition that the shutdown complete output of this module is ON and EXIT LED of CONTECWinCPU module lights), you should turn power off -> on or send a signal to the shutdown input (ON-period : 0.7sec – 3sec) again.
  (*) If the reset button of CONTECWinCPU module is pushed, you can not reboot the module.
- If the shutdown input is ON, an CONTECWinCPU module can not start up.

Specification

[Common]

Item	Specification
Available wire range	Single wire: 24 to 16AWG
	Twisted wire: 24 to 16AWG
The standard length of peeled wire	10mm
Recommended tool to control buttons	A minus driver (diameter: 3mm, edge width: 2.6mm)
Terminal block tightening torque	0.2 - 0.3Nm
Wire type	Use 60/75˚C Copper Conductor Only

(*) Use a rod terminal as needed

[Input part]

Item	Specification
Input specification	Current drive input insulated by photocoupler
Input resistence	3.3kΩ
Input protect circuit	With diode to protect circuit from reversed input
Input response time	less than 100μsec
External circuit power	DC12 - 24V (±10%)
Normal shutdown	Input ON time: 0.7sec - 3sec
Forced shutdown	Input ON time: more than 5sec

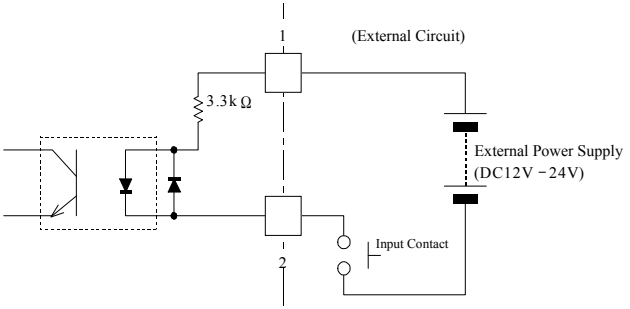


Figure 5.2 Input Circuit

[Output part]

Item	Specification
Output specification	Open collector output insulated by photocoupler
Output condition	(1) Shutdown complete output becomes ON when the shutdown has finished (2) Watch dog timer start output becomes OFF when timeup has come
Rest voltage of output ON	Less than 1.3V (output current≦ 50mA) 、 Less than 1.5V (output current≦ 100mA)
Rating output	Max. DC30V 100mA
Output response time	Less than 300μsec

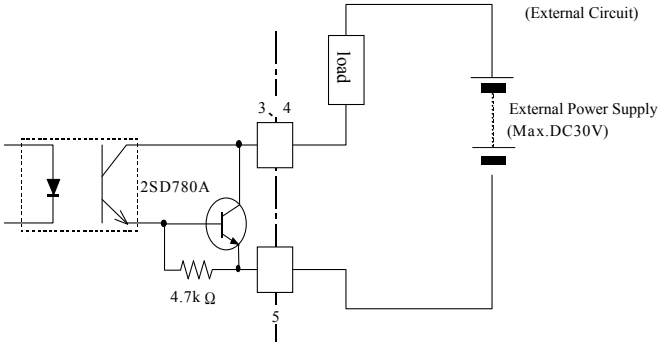


Figure 5.3 Output Circuit

Serial Port Interface：SERIAL

This product has one RS-232C-compliant serial port connector. You can set it to COM1 – 4 or unused on BIOS setup (refer to “Chapter 4 BIOS Setup”).

Table 5.6 SERIAL 1 I/O address, Interruption

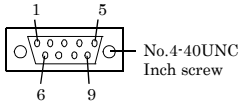
COM	I/O address	Interruption
1	3F8h-3FFh	IRQ 3 IRQ 4
2	2F8h-2FFh	IRQ 5 IRQ 7
3	3E8h-3EFh	IRQ 9 IRQ 10
4	2E8h-2EFh	IRQ 11 IRQ 15

The default setting of BIOS is as follows.

Serial port：COM1(3F8h-3FFh), IRQ4

Table 5.7 Serial Connector

Connector used	9-pin D-SUB male connector

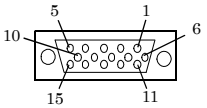


Pin No.	Signal name	Meaning	Direction
1	DCD	Data carrier detect	Input
2	RXD	Receive data from equipment	Input
3	TXD	Transmit data to equipment	Output
4	DTR	Data terminal ready	Output
5	GND	Signal ground	None
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Ring indicator	Input

CRT Interface: A-RGB

It has a connector [A-RGB] for CRT connection.

Table 5.8 RGB connector

Connector used	15-pin HD-SUB female connector		
			
Pin No.	Signal name	Pin No.	Signal name
1	RED	9	N.C.
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	None	

In order to know which LCD can connect it, refer to “Chapter 9 List of Options and Recommended Parts”.

Display driver

Installed

⚠ CAUTION

- Connected displays should be compliant with the VESA standard.
- The display may show nothing according to the type of connected monitor after the install of VGA driver. In the case, press <Ctrl>, <Alt> and <F1> keys at the same time.
- When the analog display is used, Windows MS-DOS may not be properly displayed in full-screen mode.
  This is because the frequency and resolution of Windows and MS-DOS (full-screen display) are the same due to the screen settings while the display parameters are different.
  For display, as only one parameter can be stored for one frequency or resolution, only either of Windows or MS-DOS screen can be displayed properly.
  In this case, change the resolution or display frequency of Windows so that it is not the same as for the MS-DOS display.

USB Port

It has 5ch of USB 2.0 interface [USB].

Figure 5.9 USB connector

Pin No.	Signal name
1	Vcc (+5V)
2	DATA-
3	DATA+
4	GND

Maximum power supply

The power capacity which each channel of USB connectors can supply is as follows. But the actual power capacity to supply is limited by the requirement that the current comsumption of the total system can not exceed the capacity of the power supply module. Therefore actual available capacity can not necessarily be equal to the maximum power capacity to supply.

The maximum power capacity to supply: 5V 0.5A (Max.) / channel

⚠ CAUTION

- When selecting USB devices, take inrush current into consideration.

Control Switch

Reset switch

Name	Switch Type	Definition
Reset switch	Push switch	Hardware reset switch Pushing over 1 second make the product reset.

⚠ CAUTION

Use a control switch only when the product gets to show no response because of getting out of order and so on. If you use it on normal operations (when OS is working), the system gets down without shutdown procedure. Then OS may not work in order after it.

3-positions toggle switch

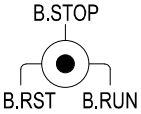


Figure 5.5 Factory Default of 3-position toggle switch

Name	Switch type	Definition
Toggle switch	3-position toggle switch	Bus interface driver control switch *1 B.RST (Bus interface driver RESET): Holding the toggle switch at the B.RST position for two seconds resets the MELSEC-Q Series modules under control of this product and the bus interface as well. Use this switch to reset only the MELSEC-Q Series modules instead of causing a hardware reset of the entire system including this product. B.STOP (Bus interface driver STOP): Stops of the operation of the bus interface driver, prevents user applications from issuing access to the modules on the bus, and turns the Y output (*2) off. Module diagnostic utilities (such as forced Y output and buffer memory batch-monitor) can be executed. B.RUN (Bus interface driver RUN): Makes the bus interface driver active, allowing user applications to access modules on the bus.

*1 The bus interface driver allows this product to access various MELSEC-Q Series modules such as the programmable controller CPU, I/O, and intelligent function modules.

*2 The MELSEC-Q Series sequence program places "Y" at the beginning of the output number of each output module. The Y output signifies the output to an output module.

Examples of using the toggle switch for the single-CPU configuration with this product alone

Operation expected	Action to take
Stop user application access to the modules on the bus	1) Set the toggle switch to B.STOP
Restart user application access to the modules on the bus	1) Set the toggle switch to B.RUN
Resets the modules on the bus and recover from the reset	1) Set the toggle switch to B.RUN. 2) Hold the toggle switch at the B.RST position for two seconds, then release the switch. 3) Set the toggle switch to B.RUN. 4) Execute the user application.

DIP switch 1

Figure 5.6 Factory Default of DIP switch 1

No.	Name	Switch type	Definition
1	SW-1*1*2	4-poles sliding dip switch	CMOS clear switch (factory setting: OFF) Refer to “Chapter 4 Position and Setting of CMOS, ROM clear switch”
2	SW-2		ROM clear switch (factory setting: OFF) Refer to “Chapter 4 Position and Setting of CMOS, ROM clear switch”
3	SW-3*1		SSD Enable switch (factory setting: OFF) ON: It sets built-in SSD to Disabled OFF: It sets built-in SSD to Enabled Refer to “Chapter 5 Built-in SSD“.
4	SW-4*1		SSD write protect switch (factory setting: OFF) This switch controls the write protect function of built-in SSD. ON: It forbids built-in SSD to be writed in. OFF: It permits built-in SSD to be writed in. Refer to “Chapter 5 Built-in SSD“.

*1: When changing SW-1, 3, 4 of DIP switches, check that power of the product is OFF. While power is ON, don’t change DIP switches.

*2: You change set SW-1 to ON only when power of the product is OFF. If power of the product is ON and SW-1 is ON, it does not work in order. Before turning ON power of the product, be sure to check that SW-1 is OFF.

DIP Switch 2

Figure 5.6. Factory Default of DIP switch 2

No	Name	Switch type	Definition
1	SW-1	6-bit slide DIP switch	Reserved (Factory default: OFF)
2	SW-2		Reserved (Factory default: OFF)
3	SW-3		Reserved (Factory default: OFF)
4	SW-4		Reserved (Factory default: OFF)
5	SW-5		Reset method select switch (Factory default: OFF) When this product is module No.2 - 4 in the multiple programmable controller CPU system *1 OFF: Setting the RESET/L.CLR switch on module No.1 (programmable controller CPU) to RESET resets the bus interface driver without resetting this product. *2 ON: Setting the RESET/L.CLR switch on module No.1 (programmable controller CPU) to RESET resets this product.*3
6	SW-6		Reserved (Factory default: OFF)

*1 Before making changes to DIP switch settings, turn off the power to this product. Do not touch any DIP switch setting with the module powered.

*2 Usually, leave SW-5 set to OFF. If you set SW-5 to ON, the reset operation on module No.1 resets this product as well. If the OS is still up and running at that time, the reset causes the OS to abort without executing the legitimate shutdown procedure. Note that this may prevent the OS from running normally when restarted.

*3 Only when Windows® Embedded Standard 2009, turning on SW-5 becomes effective.

6. Combination with the MELSEC-Q Series

Overview

This product can communicate with the MELSEC-Q Series programmable controller CPU module, intelligent function module and I/O module at high speed by connecting the buses using the MELSEC-Q Series bus module.
Please refer to the manual of QCPU used for details for the restriction matter.

Note that the bus interface driver is used for communication with the various modules in the MELSEC-Q Series, including the programmable controller CPU.

For details on each MELSEC-Q Series module and the bus interface driver, refer to the relevant manuals.

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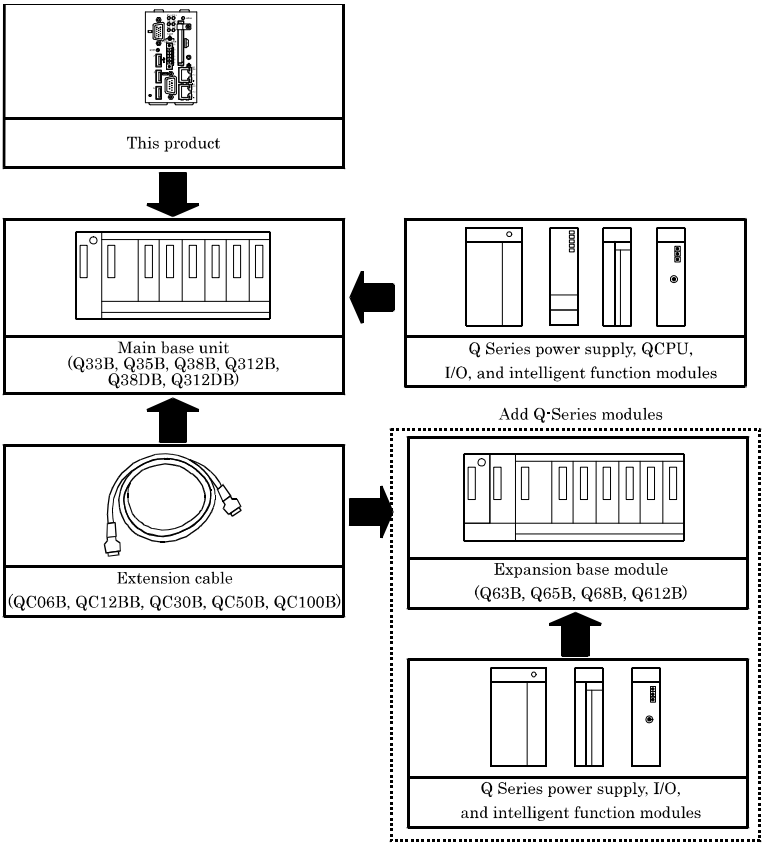
System Configuration

This product can be combined with MELSEC-Q Series modules as shown below.



Supported Modules*1

Classification	Model name
Base unit	Q33B, Q35B, Q38B, Q312B, Q38DB, Q312DB, Q63B, Q65B, Q68B, Q612B
Power supply module *6	Q61P, Q63P, Q64PN, Q61P-D
AC input module	Q-series modules are available. For details, refer to the manual of each module.
DC input module	
DC/AC input module	
High-speed input module	QX40H, QX70H, QX80H, QX90H
Contact output module	Q-series modules are available. For details, refer to the manual of each module.
TRIAC output module	
Transistor output module	
DC input transistor output mixing module	
A-D conversion module	Q64AD *2, Q68ADV *2, Q68ADI *2
D-A conversion module	Q62DAN, Q64DAN, Q68DAVN, Q68DAIN
Analog I/O module	Q64AD2DA
Loadcell input module	Q61LD
High-speed counter module	QD62, QD62D, QD62E, QD63P6, QD64D2
Positioning module *5	QD75P1 *2, QD75P2 *2, QD75P4 *2, QD75D1 *2, QD75D2 *2, QD75D4 *2, QD70P4 *2, QD70P8 *2, QD75M1, QD75M2, QD75M4, QD75MH1, QD75MH2, QD75MH4, QD74MH8, QD74MH16, QD72P3C3, QD70D4, QD70D8
Temperature control module *2	Q64TCTT, Q64TCRT, Q64TCTTBW, Q64TCRTBW
Temperature-digital conversion module	Q64TD *2, Q64TDV-GH, Q64RD-G, Q68RD3-G, Q68TD-G-H01, Q68TD-G-H02
Temperature input module	Q64RD *2
Pulse input module with insulated channels	QD60P8-G
A-D conversion module with insulated channels	Q68AD-G, Q64AD-GH, Q62AD-DGH
D-A conversion module with insulated channels	Q66DA-G, Q62DA-FG
Distributor with insulated channels	Q66AD-DG
Loop control module	Q62HLC
Interrupt module	QI60, QX40H*3, QX70H*3, QX80H*3, QX90H*3
MELSECNET/H module *4 *5	QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71BR11 *2 ,QJ71LP21GE
CC-Link module *5	QJ61BT11N
CC-Link/LT module	QJ61CL12 *2
FL-net(OPCN-2) module *5	QJ71FL71*2, QJ71FL71-F01*2, QJ71FL71-T, QJ71FL71-B5, QJ71FL71-B2 *2, QJ71FL71-T-F01, QJ71FL71-B5-F01, QJ71FL71-B2-F01 *2
AS-i master module *2	QJ71AS92
ID interface module	QD35ID1, QD35ID2
Serial communication module *5	QJ71C24N, QJ71C24N-R2, QJ71C24N-R4
DeviceNet module	QJ71DN91

*1: MELSEC-Q Series modules are manufactured by Mitsubishi Electric Corporation.

*2: Use the product with later function than version B.

*3: It is the case where you turn off the function switch (SW2) and change it to an interrupt module.

*4: Following MELSECNET/H module is not available.

Classification	Model name
MELSECNET/H remote I/O station	QJ72LP25-25, QJ72LP25G, QJ72BR15, QJ72LP25GE
MELSECNET/H (twist bus type)	QJ71NT11B

*5: Some functions have limitation. Refer to “Note on using I/O module and intelligent function module”.

*6: Take care so that total current consumption of the whole system would not exceed DC5V reted output current of a power supply module.

*7: PPC-100 series are to be powered by limited Voltage/Current (LVLC) circuit of Listed Power Supplies.

⚠ CAUTION

After power supply capacity had exceeded, when it is used, there is a case where system reset occurs and a file is damaged during operation of personal computer CPU. Please use it within power supply capacity.

Note on using I/O module and intelligent function module

(1) Note on using MELSECNET/H module

MELSECNET/H module under the control of CONTECWinCPU module has following limitation.

(a) It does not support Remote I/O network.
Only PLC to PLC network is available.

(b) It can not be used as a relay station of forwarding function between data links or rooting forwarding.
If you use forwarding function between data links or rooting forwarding, select MELSECNET/H module under the control of programmable controller CPU as a relay station.

(c) MELSECNET/H special commands are not available.

(d) SEND/RECV function is not available.

(e) Interrupt sequence program startup is not available.

(f) Network diagnosis (test) function is not available.

(g) Network easy doubling function is not available.
(You can not set network classification to “MNET/H standby station”.)

(h) When it accesses other staions on doubling CPUs, it can not specify the chain.
Only its own chain can be accessed (where a station number is specified).

(i) “Debug mode” is not available.

(2) Note on using CC-Link module

CC-Link module under the control of CONTECWinCPU module has following limitation.

(a) The parameter for CC-link which is set on SWnD5C-J61P (n is later than 0) is not available.
In order to set the parameter, use a CC-Link utility provided by SW1PNC-WCPU-B.

(b) CC-Link special commands are not available.

(c) Interrupt sequence program startup is not available.

(d) CC-Link automatic startup is not available.

(e) It does not support remote I/O network mode.

(f) It can not be set as a master station (doubling function).

(g) Standby master function is not available.

(3) Note on using positioning module

You can not use the parameter set on GX Configurator-QP on a positioning module under the control of CONTECWinCPU module.

You should use bus interface function (QBF_ToBuF) and write each parameter in the buffer memory of a positioning module.

(4) Note on using serial communication module

Only the communication by the protocols with no procedure is suppored on a serial communication module under the control of CONTECWinCPU module.

(a) Following function is not available.

- MC protocol and bi-directional protocol are not available.
- Serial communication module special commands are not available.
- Watch function for programmable controller CPU is not available.
- Modem function is not available.

(b) When using interrupt program, follow the procedure below.

- Select interrupt event No. on <<System Setting>> tab of CONTECWinCPU setting utility.
- Write "1" in the buffer memory (address : 2010H/2110H) of a serial communication module.
- In your program, make the procedures where it receives the interrupt event using QBF_WaitUnitEvent function and runs the proper process.

(5) Note on using FL-net module

FL-net module under the control of CONTECWinCPU module has following limitation.

- In your program, make the procedures where it receives the interrupt event using QBF_WaitUnitEvent function and runs the proper process.
- Automatic refresh function is not available.

(6) Note on using GX Configurator

By using CONTECWinCPU setting utility, you can read the default setting of the parameters of an intelligent function module from the project file of GX Developer.
If using GX Works2, first save the project as GX Developer format and read it.
For the note on available project files of GX Developer, refer to followings.

- Q-Bus interface driver user's manual for CONTECWinCPU module (utility control and programming)

Notes on I/O No. assignment

CONTECWinCPU module occupies 2 slots. Therefore the right 1 slot of occupied 2 slots would be treated as a blank slot. Don't set I/O assignment to the right 1 slot. (Default settings occupy "Blank", "16 points" and I/O No. of the right slot neighboring a CONTECWinCPU module becomes "0010H").
You can use I/O No. from "0000H" for the right slot neighboring a CONTECWinCPU module by setting "0 points" to the right 1 slot of 2 slots occupied by CONTECWinCPU module.

(1) Slot conditions after I/O assignment

Slots after I/O assignment settings would work according to the specification of the mounted module.

(a) If you set less points than ones of mounted I/O module.
The actual available points of mounted I/O module would get less.
For example, if you set "16 points" for the input module with "32 points", you can not use descending 16 points.

(b) If you set less points than ones of mounted intelligent function module.
Intelligent function module assignment error (error code: 2100, SP.UNITLAY ERR.) would happen.

(c) If you set more points than ones of mounted I/O module.
You can not use the points exceeding the specified points of a mounted I/O module.

(d) If you set different type from a mounted module.
You should set the same type to I/O assignment setting as the actual mounted module. If not, it would work out of order.
If you use an intelligent function module, you should set the same I/O point No. adding to above.
For results when the different type from the actual mounted module was set to an I/O assignment setting, refer to followings.

The list of results when I/O assignment was different from the mounted module

A mounted module	The type set to I/O assignment setting	Result
Input module High-speed input module Output module I/O mixing module	Intelligent / Interruption	Intelligent function module assignment error happens. (Error code: 2100, S P.UNITLAY ERR.)
Input module High-speed input module I/O mixing module	Output	Works as input / high-speed / I/O mixing module. (according to the actual type of the mounted module)
Output module I/O mixing module	Input / High-speed input	Works as output / I/O mixing module. (according to the actual type of the mounted module)
Intelligent function module Interruption module	Input / High-speed input Output / I/O mixing	Intellligent function module assignment error happens. (Error code: 2100, S P.UNIT LAY ERR.)
Blank slot	Input / High-speed input Output / I/O mixing Intelligent / Interruption	Treated as a blank slot. (All points becomes OFF.)
All modules	Blank	Treated as a blank slot. (All points becomes OFF.)
Other combination		No errors happen but not work in order.

(e) The last I/O No.
On I/O assignment settings, make sure that the last I/O No. becomes less than 0FFFH.
If you set I/O assignment so that the last I/O No. exceeds 0FFFH, intelligent function module assignment error (error code: 2124, SP.UNIT LAY ERR.) happens.

(2) Notes when a CONTECWinCPU module automatically assigns the first XY.

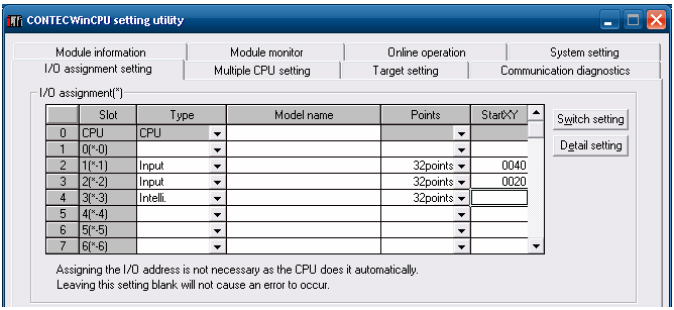
If the first XY was not set to an I/O assignment setting, a CONTECWinCPU module automatically assigns the first XY.

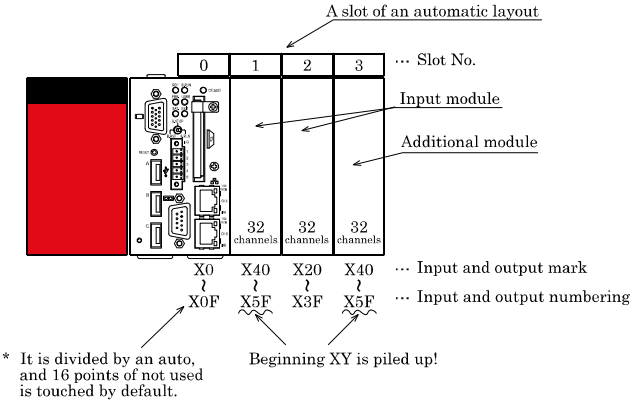
Therefore the first XY setting of each slot may conflict with the one which CONTECWinCPU module assigned in following cases (a) and (b).

(a) On the first XY setting, you have swapped the front I/O No. with the rear one.

(b) There exist both the slot which you assign the first XY to and the slot which you did not do so (the slot CONTECWinCPU module automatically assigns).

Refer to the example of the collision of the first XY as follows.

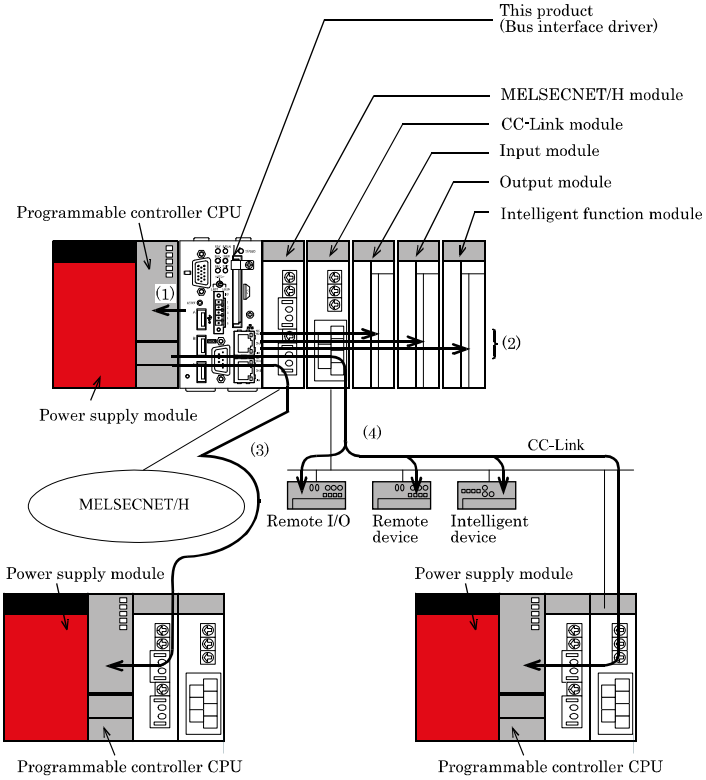




Take care enough not to cause the collision of the first XY of each slot.

If the collision happens, intelligent function module assignment error (error code: 2107, SP.UNIT LAY ERR.) follows.

Access Forms



The Module can access various modules in the following forms.

(1) Access another programmable controller CPU in the local system.

(2) Access the I/O module or intelligent function module in the local system.

(3) Access a programmable controller CPU via the MELSECNET/H module.

(4) Access a remote I/O, remote device, intelligent device, or programmable controller CPU via the CC-Link module.

Multiple CPU Configuration

Multiple CPU Configuration Including this product

This product supports both of the single-CPU configuration with the Module as only one CPU and the multiple CPU configuration with this product combined with other CPUs.
The maximum number of this product to be installed is only one.

Combination of CPUs

- Main base unit (Q3□B)

Module No.1		Number in which CPU module since Module No.2 can be installed							Maximum number of modules to be installed (Module No.1 is contained.)
		High performance model QCPU	Universal model QCPU		Process CPU	Motion CPU		CONTEC WinCPU module	
			Q00UCPU Q01UCPU Q02UCPU	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU		Q172CPUN Q173CPUN Q172CPUN-T Q173CPUN-T Q172HCPU Q173HCPU Q172HCPU-T Q173HCPU-T	Q172DCPU Q173DCPU		
Basic model QCPU		–	–	–	–	1	–	1	3
High performance model QCPU / Process CPU		3	–	3	3	3	–	1	4
Universal model QCPU	Q00UCPU Q01UCPU Q02UCPU	–	–	–	–	1	–	1	3
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU	3	–	3	3	–	–	1	4

-: The combination is impossible.

- Multiple CPU high speed main base unit (Q3□DB)

Module No.1		Number in which CPU module since Module No.2 can be installed							Maximum number of modules to be installed (Module No.1 is contained.)
		High performance model QCPU	Universal model QCPU		Process CPU	Motion CPU		CONTEC WinCPU module	
			Q00UCPU Q01UCPU Q02UCPU	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU		Q172CPUN Q173CPUN Q172CPUN-T Q173CPUN-T Q172HCPU Q173HCPU Q172HCPU-T Q173HCPU-T	Q172DCPU Q173DCPU		
Basic model QCPU		–	–	–	–	–	–	1	2
High performance model QCPU / Process CPU		3	–	3	3	–	–	1	4
Universal model QCPU	Q00UCPU Q01UCPU Q02UCPU	–	–	–	–	–	–	1	2
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU	3	–	3	3	–	3	1	4

- : The combination is impossible.

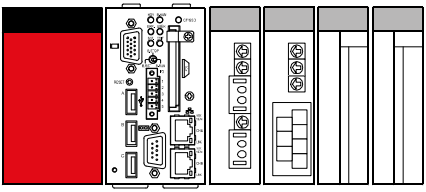
⚠ CAUTION

1) This product cannot be Module No.1 in the multiple CPU configuration. The multiple CPU configuration requires a programmable controller CPU.
2) For the multiple CPU configuration, place this product at the right end of a series of CPUs.
3) Although a total of up to three programmable controller CPUs and motion CPUs can be installed, the number of modules installable is restricted by the power capacity of the power supply module (Q61P). See “Restriction by Power Capacity” in “Notes” for details.

CPU Configuration Diagrams

- Single-CPU configuration with this product as only one CPU

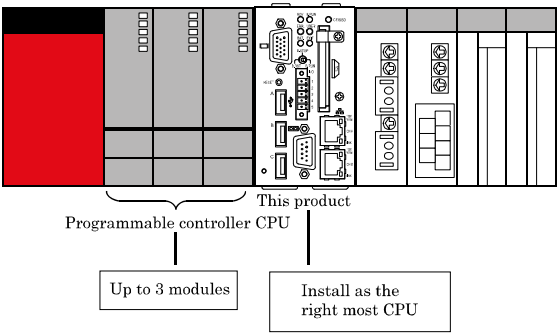
  Module No.1 ···This product



- Multiple CPU configuration with this product in combination with programmable controller CPUs

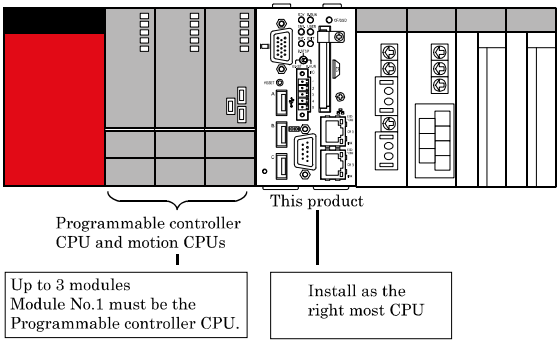
Maximum configuration with this product and three programmable controller CPUs

  Modules No.1 - 3 ··· Programmable controller CPU
  Module No. 4 ···This product



- Multiple CPU configuration with this Module in combination with a programmable controller CPU and motion CPUs

  Module No.1 ··· Programmable controller CPU
  Modules No.2 - 3 ···Motion CPU
  Module No.4 ···This product



⚠ CAUTION

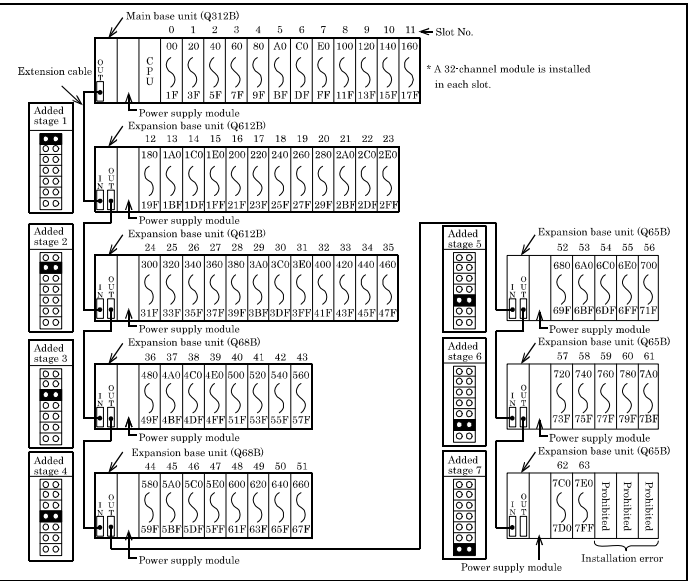
The total number of programmable controller CPUs and motion CPUs installable is restricted by the power capacity of the Q Series power supply module (Q61P).
When a large number of I/O modules and intelligent function modules are used, the equivalent restriction applies to them in the same way. For details, see “Restriction by Power Capacity” in “Notes”.

Notes

Maximum Number of modules Installed and Maximum Number of I/O Channels

When installing single-CPU configuration

Refer to the maximum mountable number and the maximum I/O number as follows.

Example of system expansion	
Maximum number of stages added	7 stages
Maximum number of I/O modules installed	64 modules
Maximum number of I/O channels	4,096 channels
Maximum number of MELSECNET/H modules installed	4 modules
Maximum number of CC-Link modules installed	8 modules
Maximum number of interrupt modules installed	1 module
Maximum number of other intelligent function modules installed	64 modules
Notes	(1) Up to seven expansion base units can be added. (2) The total length of extension cables must be 13.2 m. (3) When using an extension cable, do not bundle it with route it near any main circuit (high voltage, large current) line. (4) Set the expansion stage numbers in ascending order without number duplication. (5) Connect each extension cable from the extension cable connector OUT on one base unit to the extension cable connector IN on the expansion base unit at the next stage. (6) Installing 65 modules or more results in an error.

When installing multi-CPU configuration

Refer to “QCPU user’s manual (multiple CPU system)”.

Restriction by Power Capacity

The current consumption of this product is the total value of one of the main body and ones of peripheral devices. Take care that the summation of the current consumption of this product and ones of other modules should not exceed the power capacity of your Q series power module.
(For the actual current consumption values of modules, refer to their manuals.)

Multiple CPU configuration with a CF card

As the Q61P cannot be used if the total current consumption of the modules exceeds 6A, consider using the Q64PN (power capacity = 5VDC/8.5A) instead.

Number of CPU modules			Main base unit	Total current consumption (A)	Remaining current capacity (A)	
Programmable controller CPU	Motion CPU	This product				
Q25HCPU (0.64A)	Q173CPUN (1.25A)	PPC-100-DC5xx CF-1GB-B (3.10A) *1	Q312B (0.087A)		Q61P (6A)	Judgement
0	0	1	1	3.187	2.813	O
1	0	1	1	3.827	2.173	O
2	0	1	1	4.467	1.533	O
3	0	1	1	5.107	0.893	Δ
1	1	1	1	5.007	0.923	Δ
2	1	1	1	5.717	0.283	Δ
1	2	1	1	6.907	- 0.907	x *2

The remaining current capacity is used as a criterion.

O: 1A to less than 3A: The system can grow.

Δ: 0A to less than 1A: The configuration is acceptable but not expandable.

×: Less than 0A: The configuration is not acceptable.

*1 Excluding the consumption current in the USB peripherals.

*2 The system can be configured by using a Q64PN instead.

- Configuration with many I/O modules and intelligent function modules
  If the total current consumption by the modules on the main base unit, including this product and peripheral devices, exceeds the power capacity used, move I/O modules and intelligent function modules to an expansion module. The total current consumption by the modules on each base unit must not exceed the power capacity. If the system configuration is short of power capacity even with one expansion base unit added, add more than one expansion base unit.

7. Reset Specifications

This product has following kind of a reset.

The range to be reset depends on system configuration and the condition of DIP swiches.

Reset Specifications

Reset type	Single-CPU configuration (1st station)	Multiple CPU configuration (Modules No.2 - 4)	
		SW-5 of DIP switch 2 is OFF	SW-5 of DIP switch 2 is ON *1
Reset by power OFF to ON	○ A CONTECWinCPU module and all the modules on a bus will be reset.	○ A CONTECWinCPU module and all the modules on a bus will be reset. After the completion of shutdown, the main station becomes CPU DOWN condition and other stations detect multiple CPU DOWN error.	○ A CONTECWinCPU module and all the modules on a bus will be reset. After the completion of shutdown, the main module becomes CPU DOWN condition and other stations detect multiple CPU DOWN error.
Reset by OS rebooting	○ A CONTECWinCPU module and all the modules on a bus will be reset.	○ A CONTECWinCPU module and all the modules on a bus will be reset. After the reboot of OS, the main station and the others detect multiple CPU DOWN error. Then you should reset the 1st station.	- After the reboot of OS, other stations detect multiple CPU DOWN error. Then you should reset the 1st station.
Reset of 1st station (Only on multiple CPU configuration)	-	○ Bus interface driver and all the modules on a bus will be reset.	○ A CONTECWinCPU module and all the modules on a bus will be reset.
Reset by a toggle switch	○ Bus interface driver and all the modules on a bus will be reset.	× On multiple CPU configuration, you can not reset even if you set a toggle switch to B.RST.	× On multiple CPU configuration, you can not reset even if you set a toggle switch to B.RST.

○: Available ×: Unavailable -: No combination

*1 The reset of the 1st station forces a CONTECWinCPU module and all the modules on a bus reset. Then a CONTECWinCPU module becomes the condition without any power. If OS is working, it means that you finished the system without shutdown procedure and OS may not work in order after the next reboot.

Reset Procedure of a CONTECWinCPU module and All the Modules on a Bus

Reset by Recycling the Power Supply

(1) Shut down the OS on the screen (or set the shutdown command input to ON).
(2) Check that the EXIT LED on this product comes on
(or that the shutdown completion output is turned ON).
(3) Turn the power off.
(4) Turn the power on back.

Restarting the OS (DIP switch 2 with SW-5 set to OFF)

(1) Shut down the OS on the screen, then restart it.
(2) In the multiple CPU configuration, reset CPU Module No.1 after the completion of OS boot up.

Reset of Module No.1 (programmable controller CPU) (DIP switch 2 with SW-5 set to ON)

(1) Reset the switch on Module No.1.

⚠ CAUTION

- Be sure to give ON time of a shutdown directions input as a range of 20msec - 3sec.
- If 3 or more secs are turned ON, re-starting of a CONTECWinCPU module will become impossible. (The time of a re-injection of a power supply is included.) When this operation is performed and re-starting of a CONTECWinCPU module becomes impossible, first turn OFF the shutdown indication input, and then send the shutdown indication input (ON period: 20msec – 3sec) again in the condition that the main power is ON. As a result, a CONTECWinCPU module will wake up in order (It does not wake up only if you turn OFF the shutdown indication input and turn power ON).
- The EXIT LED comes on only when you shut down Windows or hardware reset.
- If you reset this product or restart the OS in the multiple CPU configuration, other CPUs detect a multiple CPU down error.
- While a CONTECWinCPU module is doing a shutdown procedure (EXIT LED is lighting), the condition of the main station becomes resetting or CPU DOWN.
- If you reset the 1st station while SW-5 of DIP switch 2 is ON using multiple CPU configuration, a CONTECWinCPU module will also be reset and becomes the condition without any power. If you did so while OS is working, it means that you finished the system without a shutdown procedure and OS may not work in order after the next reboot.
- After you turn off power supply to this product, wait for more than 5 seconds till the next power ON.

Reset Procedure of Bus Interface Driver and All the Modules on a Bus

Single-CPU configuration with this product as only one CPU Module

(1) Stop the user application.
(2) Set the toggle switch to B.RST (hold the switch at the B.RST position for two seconds, then release it).
(3) Set the toggle switch to B.RUN.
(4) Execute the user application.

Multiple CPU configuration (DIP switch 2 with SW-5 set to OFF)

(1) Stop the user application.
(2) Reset CPU Module No.1.
(3) Execute the user application.

⚠ CAUTION

In the multiple CPU configuration, reset the bus interface driver by resetting CPU Module No.1 (programmable controller CPU). Setting the toggle switch to B.RST without resetting the CPU Module No.1, results in a multiple CPU down error on another CPU module.

8. Troubleshooting

Tips for Better Troubleshooting

Key points for establishing a system faster are minimizing the number of problems developing and, once a problem has developed, identifying the cause as soon as possible.

You should perform troubleshooting with the following three basic points in mind.

(1) Check visually

Check the following items:

(1) Behavior of external devices
(2) Existence or absence of power supply
(3) Wiring state (connection cable)
(4) LED indication (Power indicator LED)

After checking the Module for items (1) - (4), connect the Module to external devices and check the behavior of the user program.

(2) Identify the problem

Take the following steps to observe how the symptom changes:

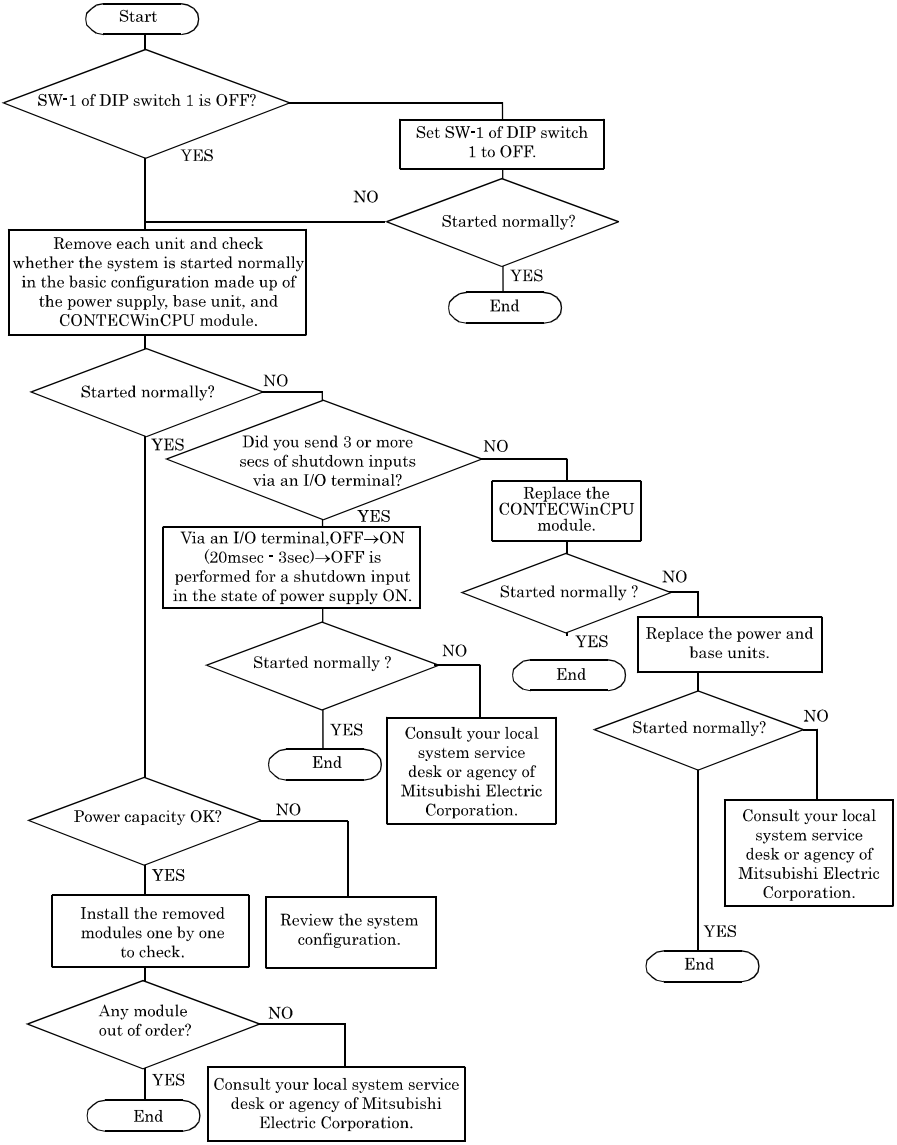
(1) Change the input state to check whether the correct change can be read by the test program.
(2) Turning the output on and off repeatedly to check whether the state of the external device changes correctly.

(3) Narrow the range down

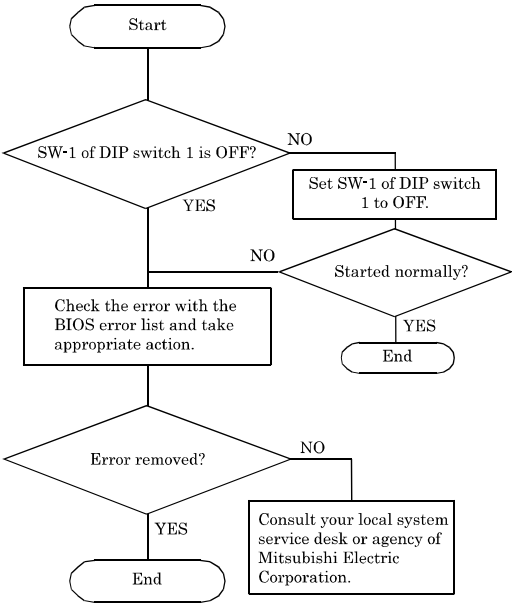
Check the results of (1) and (2) above to locate the fault in one of the following options:

(1) This program side or external device side
(2) This program or any other Module
(3) Connection cable
(4) User program

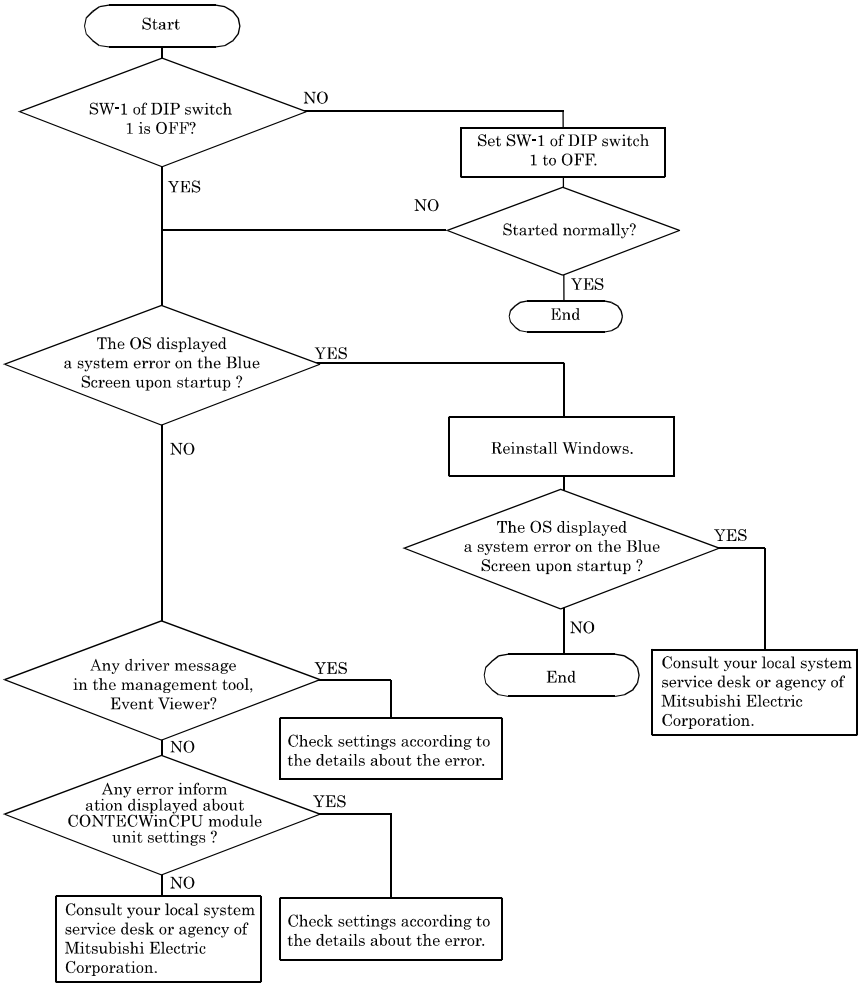
This product Won't Start Normally



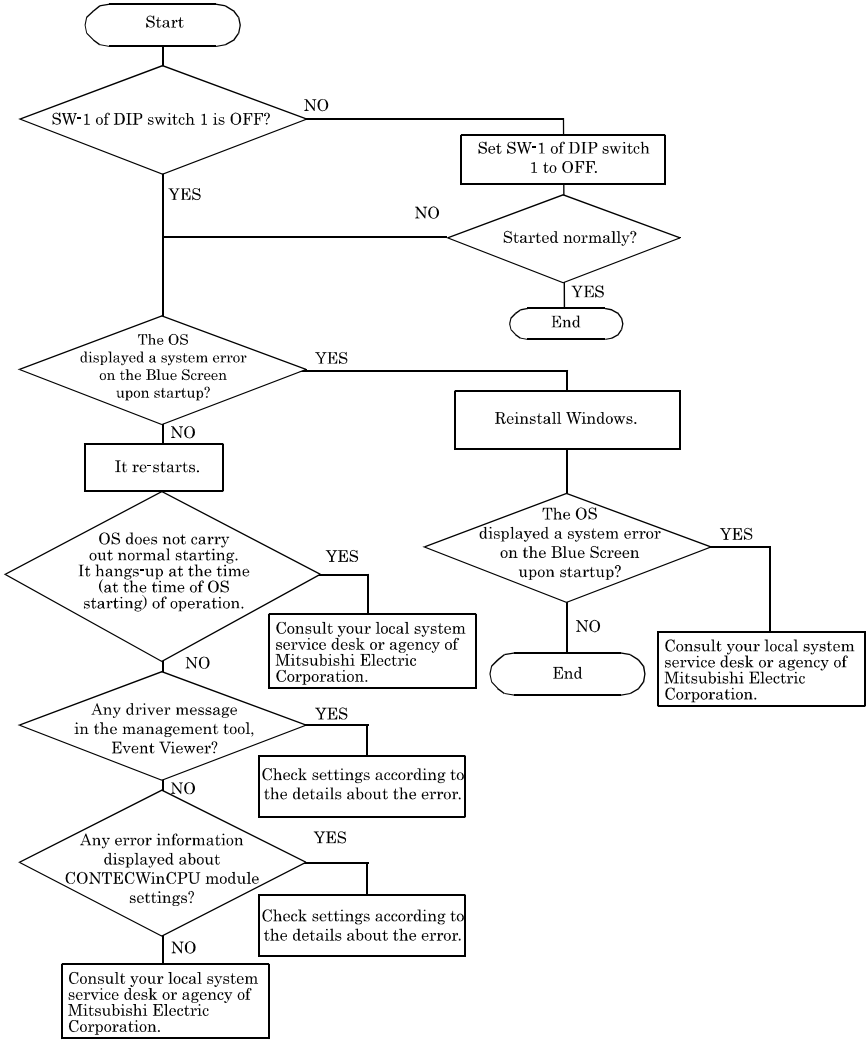
This product Starts with a BIOS Error displayed



The OS Won't Start Normally



It hangs-up at the time (after OS starting) of operation



BIOS Error

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

If the items not described below apperar frequently, the product should be repaired.

CMOS battery has failí

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

Refer to “Appendix 2 Battery” about the exchange of a battery.

Error encountered initializing hard drive

CF card or SSD cannot be initialized. If you installed a CF card, check if it is installed properly.

Error initializing hard disk controller

Can not initialize a controller.

Keyboard error or no keyboard present

Can not initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.
If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD or NO ERRORS. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory address error at…

Indicates a memory address error at a specific location.

Press a key to REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot.

Press F1 to disable NMI, F2 to REBOOT

BIOS detect a Non-maskable Interrupt (NMI) condition during boot.

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

Indicates the system should be rebooted. Press and hold down the <Ctrl>+ <Alt>+<Del> keys.

Hard disk(s) fail (80)

HDD reset failed. If you installed a CF card, check if it is installed properly.s

Hard disk(s) fail (40)

HDD controller diagnostics failed.

Hard disk(s) fail (20)

HDD initialization error. If you installed a CF card, check if it is installed properly.

Hard disk(s) fail (08)

Sector Verify failed. If you installed a CF card, check if it is installed properly.

Keyboard error or no keyboard present

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

BIOS ROM checksum error – System halted

The check sum of ROM address F0000H-FFFFFH is wrong.

Memory test fail

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

9. List of Options and Recommended Parts

List of Options

Type	Name	Model Name
CF card (FIX DISK types)	CompactFlash 1GB	CF-1GB-B
	CompactFlash 2GB	CF-2GB-B
	CompactFlash 4GB	CF-4GB-B
	CompactFlash 8GB	CF-8GB-B
TFT color liquid-crystal display (Analog RGB types)	15 inch (1024 x 768 dots) Panel mounted type	FPD-H21XT-AC
	12.1 inch (800 x 600 dots) Panel mounted type	FPD-L21ST-AC
	10.4 inch (640 x 480 dots) Panel mounted type	FPD-M21VT-AC
Touchpanel cable	RS-232C cable (2m)	IPC-CBL3-2
	RS-232C cable (5m)	IPC-CBL3-5

List of Recommended Parts

Name	Model Name	Maker
USB keyboard	ANB-00035	Microsoft®
USB mouse	D1T-00007	Microsoft®
USB HUB	UPort 404	MOXA

10. Appendix

Appendix 1. Resources

Memory Map

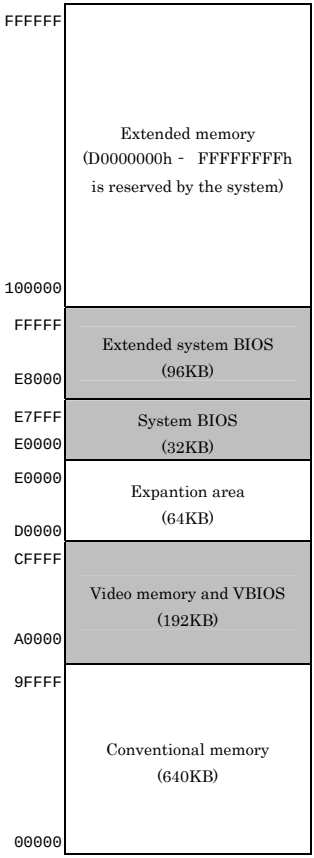


Figure 10.1 Memory map

I/O port address

Table 10.1 I/O port address

Address	Size	Description
0000 - 000F	16 bytes	DMA controller
0010 – 001F	16 bytes	Reserved
0020 - 0021	2 bytes	PIC interrupt controller
0022 – 003F	30 bytes	Reserved
0040 - 0043	4 bytes	System timer 1
0044 – 005F	24 bytes	Reserved
0060	1 byte	Keyboard controller
0061	1 byte	NMI, speaker controller
0062 - 0063	2 bytes	Reserved
0064	1 byte	Keyboard controller
0070 - 0073	4 bytes	RTC real time clock
0074 – 007F	12 bytes	Reserved
0080 – 0090	17 bytes	DMA page register
00A0 - 00A1	2 bytes	Interrupt controller 2
00B2 - 00B3	2 bytes	Reserved
00C0 - 00DE	31 bytes	DMA controller 2
00E0 – 00EF	16 bytes	Reserved
00F0 - 00FF	16 bytes	Arithmetic processor for numerical values
0170 - 0177	8 bytes	Secondary IDE controller
01F0 - 01F7	8 bytes	Primary IDE controller
0200 - 0207	8 bytes	Reserved
0330 - 0331	2 bytes	Reserved
0376 - 0377	2 bytes	Secondary IDE
0120 - 0127	8 bytes	Reserved
0274 - 0277	4 bytes	Reserved (ISA PnP)
0290 - 029F	16 bytes	Hardware monitor
0388 - 038D	6 bytes	Reserved
03B0 - 03BB	12 bytes	Video (Monochrome)
03C0 - 03DF	32 bytes	Video (VGA)
03F6	1 byte	Primary IDE
03F8 - 03FF	8 bytes	COM1
04D0 - 04D1	2 bytes	Interrupt setting register (Edge/level triggered PIC)
0530 - 0537	8 bytes	Reserved (Windows Sound System)
0CF8 - 0CFF	4 bytes	PCI configuration register
0CF9	1 byte	Turbo and reset control register
D000-FFFF	12287 bytes	Reserved
440 - 44F	16 byte	Reserved
800 - 80F	16 byte	Reserved
4000 - 400F	16 byte	Reserved
1000 - 107F	128 byte	Reserved
1180 - 11BF	64 byte	Reserved

Interrupt Level List

Table 10.2 Hardware Interrupt Levels (Factory Settings)

Type	8259	Priority	Description	Vector
NMI		High	-I/O CH CK or WDT	02H
IRQ0	MASTER	↑	Timer 0	08H
IRQ1	〃	|	Keyboard	09H
IRQ2	〃	|	Interrupt controller 2 (slave)	0AH
IRQ8	SLAVE	|	Real-time clock	70H
IRQ9	〃	|	System reserved	71H
IRQ10	〃	|	System reserved	72H
IRQ11	〃	|	System reserved	73H
IRQ12	〃	|	System reserved	74H
IRQ13	〃	|	Co-processor	75H
IRQ14	〃	|	IDE	76H
IRQ15	〃	|	System reserved	77H
IRQ3	MASTER	|	System reserved	0BH
IRQ4	〃	|	Serial port 1(COM1)	0CH
IRQ5	〃	|	System reserved	0DH
IRQ6	〃	↓	System reserved	0EH
IRQ7	〃	Low	System reserved	0FH

(*) The interruption list is one when APIC is not used.

APIC is used on Windows, so the interruption of PCI devices is assigned behind IRQ16.

Appendix 2. Battery

Battery Specification

This product uses the following battery.

- Type : Lithium primary battery
- Model : BR-1/2AA
- Maker : Panasonic
- Nominal voltage : 3V
- Nominal capacity : 1000mAh
- Lithium content : 1g or less

⚠ CAUTION

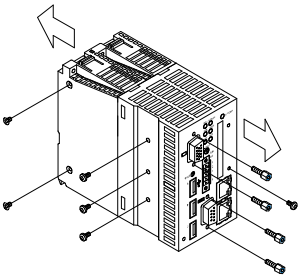
- We charge the exchange of a battery. Consult a nearby branch or an agency.
- You should treat it according to exportation regulations when you export the product with the battery including lithium.
  When we ship it, we packaged it according to exportation regulations. But if you export it after re-packaging or unpacking, you should export it according to IATA Dangerous Goods Regulations, IMDG Code and other exportation regulations of each contries.
  For details, consult your transporter.

Appendix 3. Disposal of Battery

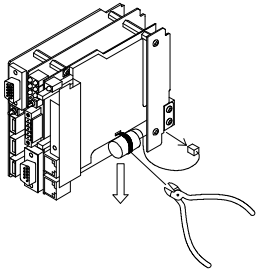
Remove of battery

Remove a battery as folows

(1) Remove screws and take the case off.



(2) Cut the tie binding a battery and remove a battery



Disposal of battery

When dumping the product, treat it as an industrial waste.

When dumping a battery, separate it according to regional laws of your area.

⚠ CAUTION

EU has a separate collection system for used batteries. Dispose it correctly at a collection / recycle center of your area.

CONTEC programmable controller CPU shows a following symbol mark on the battery or the package of the product including a battery.

Note: This symbol mark is valid in EU only.
This symbol mark is listed on the 20th clause “Information for an end user” of directive 2006/66/EC of the European parliament and of the council and on the attached document II.

The symbol mark above indicates that the battery should be dumped separately from normal wastes.

Exportation of Battery

According to directive 2006/66/EC of the European parliament and of the council, you should keep following procedures when selling or exporting a battery or the product with a battery.

- The indication of the symbol mark on a battery, a product or a package.
- Description about the symbol mark in the product guide.

(1) The indication of the symbol mark.

If you sell or export the battery of the product with the battery which not indicate the symbol mark to EU after 2008/09/26, indicate the symbol mark of “Appendix 3 Disposal of Battery” on the main body of a product or on its package.

(2) Addition of the explanation to a product guide

When you export the product with our sequencer to EU after 2008/09/26 and you attach the product guide of our programmable controller CPU to it, attach the latest product guide which has the explanation of the symbol mark of a battery.

When you don’t attach the product guide of our programmable controller CPU or an attached product guide is elder one which doesn’t have the explanation of the symbol mark, newly describe the explanation of the symbol mark on the product guide of each product.

⚠ CAUTION

The battery and the product with a battery produced before the enforcement of directive 2006/66/EC are also the target of the directive.

Appendix 4. EMC directive

If you want to apply EMC directive and low voltage derective to CONTECWinCPU system, refer to QCPU User's Manual (Hardware Design, Maintenance and Inspection).

Appendix 5. Backup of built-in SSD

This section shows how to use the backup function of the BIOS of CONTECWinCPU.

This function supports data backup and rewrite from CONTECWinCPU built-in SSD for OS or from a CF card to another CF card.

Refer to all devices to be used for backup as follows.

Table 10.3 List of Devices

No.	Device	Comment
1	The main body of CONTECWinCPU	
2	Display	
3	USB keyboard	
4	CF card	Used to reserve backup data.

*1 The capacity of the CF card for backup data should be larger than one of built-in SSD. Backup will be done by copying physical sectors. Note that the number of physical sectors of each drive may be different even if the capacity of SSD is equal to one of a CF card,

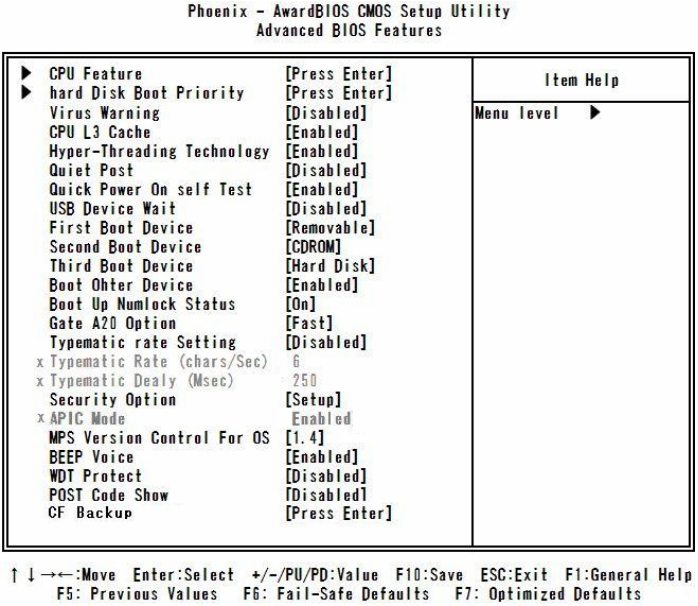
Backup procedure

How to backup the data of build-in SSD for OS to another CF card

(1) Connect a display and a keyboard to CONTECWinCPU. Then insert a CF card to the slot.

(2) Turn power on and the system boots up. The message ”Press DEL to enter SETUP” will be shown at the left-bottom corner of the screen. Then press <Del> key and BIOS setup menu will be shown.

(3) Select ”Advanced BIOS Features” -> ”CF Backup”. Then press ENTER key.



(4) Following message will be shown. Press Y key.

```
DISK BACKUP

Start BACKUP(Y/N) *If (N) Reboot.
```

(5) Connected drives will be shown as follows. Select built-in SSD for OS as “Source Disk”.
In the following figure, “4GB NANDrive” (SSD) and “GBDriver RA8” (CF card) are connected. For backup, press A key and select SSD as “Source Disk”.

```
Now Connect Disk.

Select Source Disk.


    A:4GB NANDRIVE

    B: GBDriver RA8
```

(6) Next select the CF card for backup (A or B key) as “Destination Disk”. In the following figure, only B is selectable as “Destination Disk”.

```
Now Connect Disk
Select Destination Disk.


    B: GBDriver RA8
```

(7) Next following message will be shown. If you want to verify data when copying, press Y key.

```
Need Verify(Y/N)
```

(8) Copy procesure will start.

```
DISK BACKUP


0000AB00/003C0000 Sectors
```

(9) Following message will be shown after copy procedure has finished. Press alphabet key A-Z and reboot the system.

```
BACKUP finish, Press any key reboot.
```

(10) When the screen of BIOS apprears in rebooting, turn power off. That’s all about backup procedure.

(*) You can not boot OS using the CF card for backup.

Rewrite procedure from the CF card for backup to built-in SSD for OS

For previous procedure, rewrite procedure will be done by selecting the CF card for backup as “Source Disk” and built-in SSD for OS as “Destication Disk”.

Other procedures are equal to one of backup.

Revision History

PPC-100-DC5xxx
User's Manual

PPC-100-DC5xxx

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