PC CPU Module
Compatible with MELSEC-Q Series

PPC-CPU852(MS)

User's Guide

CONTEC CO.,LTD.

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Table of Contents

1. Introduction

This product is a PC/AT compatible personal computer that can be incorporated into the general-purpose MELSEC-Q Series manufactured by Mitsubishi Electric Corporation. Equipped with a faster CPU and increased memory capacities, this product is capable of calculating massive data at a faster speed, compared with the previous product [PPC-CPU686(MS)-128]. When used in a multi-CPU configuration with a sequencer CPU, this product enables seamless control and information processing. In addition, the product comes with a CF card slot (Type I/II), which enables boot-up using a CF card.

Supporting a network configuration, the product can be incorporated into a system using the Web and Internet/Intranet.

Features

- Capable of processing information and control data seamlessly by the combination of the MELSEC-Q Series PLC CPU unit for sequence control and the PC CPU unit for information processing
- Integrating the major features of the personal computer in a compact unit fit in two slots in the MELSEC-Q Series base unit
- Capable of high-speed processing of massive data without a fan, using the high-speed Ultra Low Voltage Intel(R) Celeron(R) M Processor 600MHz (FSB400MHz) as its CPU
- Coming standard with a wide variety of interface such as 100BASE-TX LAN, PC Card slot, USB2.0 and CF card slot
- Containing the CONTEC-customized BIOS (manufactured by Phoenix Technologies), providing BIOS-level support
- Capable of connecting a hard disk unit and CF Card as external storage devices on the same base unit, best suited for use in a place subject to vibration and shock or for continuous operation for an extended period of time

Supported OS

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

Customer Support

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

Web Site

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

Latest product information

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

Free download

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

Note! For product information

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

Limited One-Year Warranty

CONTEC products are warranted by CONTEC CO., LTD. to be free from defects in material and workmanship for up to one year from the date of purchase by the original purchaser.
Repair will be free of charge only when this device is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office, from which it was purchased.
This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original products. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

How to Obtain Service

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

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

Liability

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

Safety Precautions

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

Safety Information

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

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

Handling Precautions

⚠ CAUTION

- Do not use or store the product where it is subject to shock or vibration as it contains precision electronic components.
- Do not modify the product. CONTEC bears absolutely no responsibility for the product which has been modified.
- Do not use or store the product where it is exposed to extremely high or low temperature or to an abrupt change in temperature.
- Do not use or store the product under direct sunlight or near any heating apparatus such as a heater or stove.
- 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.
- Do not use or store the product in a highly humid or dusty place.
- If you find anything wrong with the product, consult your retailer.

Design Precautions

⚠ DANGER

- Provide this product with external safety circuits so that the entire system is protected even if the external power supply or this product goes wrong.

  (1) Configure those circuits outside this product which include an emergency stop circuit, a protection circuit, an interlock circuit for contrary operations such as normal and 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 unit 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 unit, the output may remain on or off. For 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 unit 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 a data link causes a communication error, the operation status of the affected station changes depending on the type of the data link in use. Configure an interlock circuit in a user program so that the system acts on the safe side.
- An output error or malfunction may cause an accident.

  (1) The data link holds data existing prior to the occurrence of the communication error.

  (2) The remote I/O station of MELSEC (II/B/10) turns all of its outputs off.

- When configuring the system, do not leave an empty slot in the base unit. If the base unit has an empty slot, be sure to apply a blank cover (QG60) to the slot.
  Internal components of this product may scatter around when a short-circuit test is performed or when an overcurrent or overvoltage is applied to the external I/O section.

⚠ 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 unit 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 unit of a higher rated current.

Installation Precautions

⚠ CAUTION

- Use this product in the environment specified in this manual. Using this product in an 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 unit 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 unit fixing screw to fasten this product securely to the base unit. Unit 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 unit, 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 Unit. 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.
- Do not directly touch any conductive part or electronic component of this product. Doing so may cause the Unit to malfunction or fail.

Wiring Precautions

⚠ DANGER

Before mounting or wiring this product or any other product, be sure to turn the external power supply for all phases.
Failure to turn it off for all phases may cause an electric shock, product damage, or malfunction.

⚠ CAUTION

- Be sure to ground the FG and LG terminals by at least Class D Grounding (former Class3 Grounding) exclusive for sequencers. 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 Unit 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 Unit, also resulting in a short circuit or malfunction.
- 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 units in parallel.
  Doing so heats up the power units, 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 unit user's manual. An imperfect connection can cause a short circuit, fire, or malfunction.

Power Supply and Maintenance Precautions

⚠ DANGER

- Do not touch any terminal with the Unit 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 unit. Doing so may result in a fault, malfunction, injury, or fire.
- Before attaching or detaching the Unit, be sure to turn the external power supply off for all phases. Failure to turn it off for all phases may cause the Unit to fail or malfunction.

Disposal Precautions

⚠ CAUTION

When disposing of the product, treat it as industrial waste.

EMC and Low Voltage Directives

To make the equipment based on the MELSEC-Q Series PLC including this product conform to the EMC and Low Voltage Directives, be sure to refer to “EMC and Low Voltage Directives” in the following MELSEC-Q Series manual to configure the equipment as specified therein.

- QCPU (Q Mode) CPU Unit User’s Manual (Hardware)
  Model name : QCPU(Q)-U(H/W)
- QCPU (Q Mode) CPU Unit User’s Manual (Hardware Design, Maintenance and Inspection)
  Model name : QCPU(Q)-U(HH)

* The cables lead from this product to the outside of the control panel must be shielded cables and ferrite core. For each shielded cable, apply a metal clamp to the shield exposed by partly stripping the cable and ground it for connection to the control panel as near this product as possible. And please equip a cable with a ferrite core near this product.

2. Overview

Specifications

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

<table>
<tr><th colspan="2">Model</th><th>PPC-CPU852(MS)</th></tr>
<tr><td colspan="2">CPU</td><td>Ultra Low Voltage Intel(R) Celeron(R) M Processor 600MHz (FSB400MHz)</td></tr>
<tr><td colspan="2">Chipset</td><td>Intel(R) 852GM</td></tr>
<tr><td rowspan="3">Memory</td><td>L1 Cache</td><td>32KB x 2</td></tr>
<tr><td>L2 Cache</td><td>512KB</td></tr>
<tr><td>Main memory</td><td>512KB (3.3V 200pin DDR SO-DIMM DDR266 Socket x 1)</td></tr>
<tr><td rowspan="4">Video</td><td>Controller</td><td>Built in 852GM</td></tr>
<tr><td>Video RAM</td><td>Main mamory shared (Max. 64MB)</td></tr>
<tr><td>CRT I/F</td><td>Analog RGB 15-pin HD-SUB connector</td></tr>
<tr><td>Specifications</td><td>
<table>
<tr><th></th><th>VGA
(640 x 480)</th><th>SVGA
(800 x 600)</th><th>XGA
(1024 x 768)</th><th>SXGA
(1280 x 1024)</th></tr>
<tr><td>Horizontal sync signal frequency</td><td>31.5KHz</td><td>37.9KHz</td><td>48.4KHz</td><td>64.1KHz</td></tr>
<tr><td>Vertical sync signal frequency</td><td>60Hz</td><td>60Hz</td><td>60Hz</td><td>60Hz</td></tr>
<tr><td>Display colors</td><td>16,777,215</td><td>16,777,215</td><td>16,777,215</td><td>16,777,215</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">IDE I/F</td><td>Primary</td><td>40-pin half-pitch connector (Max. 2 units acceptable) *1</td></tr>
<tr><td>Secondary</td><td>Not supported</td></tr>
<tr><td colspan="2">Serial interfaces</td><td>RS-232C compliant: 2 channels (9-pin D-SUB connector and extension interface (EX.I/F)) Transfer rate: 50 - 115,200 bps</td></tr>
<tr><td colspan="2">Parallel interface</td><td>1 channel (Extension interface (EX.I/F))
Supported modes: Normal, SPP, EPP 1.7/1.9, ECP</td></tr>
<tr><td rowspan="2">LAN</td><td>I/F</td><td>Ethernet 100BASE-TX/10BASE-T RJ-45 connector</td></tr>
<tr><td>Controller</td><td>82551QM (Intel)</td></tr>
<tr><td rowspan="3">PC Cards</td><td>Controller</td><td>R5C485 (RICOH)</td></tr>
<tr><td>Card Type</td><td>Supproting PCMCIA, CardBus</td></tr>
<tr><td>Card Slot</td><td>Type I, II x 1</td></tr>
<tr><td>Display *2</td><td>Card detection LED (green)</td></tr>
<tr><td colspan="2">CF card slot *3</td><td>CF CARD Type I, II x 1 (dedicated to memory card) (primary IDE) *1
CF card master/slave switching SW</td></tr>
<tr><td colspan="2">USB I/F</td><td>USB2.0 compliant 3ch (Front:1ch, Bottom:2ch) Transfer rate : 480Mbps
USB1.1 compliant 1ch (extension interface(EX.I/F)) Transfer rate : 1.5M/12Mbps</td></tr>
<tr><td colspan="2">Keyboard/PS2 mouse interface</td><td>6-pin mini-DIN connector (shared by keyboard and mouse)
Both can be used at the same time with the conversion cable KB-PSY02K3 (SANWA SUPPLY).</td></tr>
<tr><td colspan="2">Watchdog timers</td><td>2ch
Time-out period : System WDT 20msec - 2sec, User WDT 10msec - 10sec</td></tr>
<tr><td colspan="2">RTC/CMOS</td><td>Lithium-ion battery backup. Battery life: 10 years min. (at 25ºC)
Real Time Clock precision: [+/-]3 minute/month (at 25ºC)</td></tr>
<tr><td colspan="2">Display LEDs</td><td>RDY (Green), B.RUN (Green), ERR. (Red), USER (Red), BAT. (Orange), EXIT (Green), ACCESS (Green)</td></tr>
<tr><td colspan="2">Controls</td><td>Reset pushbutton, 6-bit DIP switch, 3-position toggle switch</td></tr>
<tr><td colspan="2">Supported OS</td><td>Windows XP Professional, Windows XP Embedded, Windows 2000 Professional</td></tr>
</table>

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

Model	PPC-CPU852(MS)
Base unit slots occupied	2 slot
External dimensions (mm)	55.2(W) x 115.0(D) x 98.0(H) (Excluding protrusions)
Power consumption	+5VDC 3.0A (Max.) *4
Acceptable momentary power failure time	Depending on the power supply unit
Weight	440g

*1 The IDE device (HDD, CF card, and CD-ROM/DVD-ROM) that can be connected at the same time is up to two additionally. Please refer to the system configuration for more details.

*2 Comes on when the card is recognized normally and remains on until unplugging the card is detected.

*3 Please use the CONTEC's CF (FIX DISK specification) when you start Windows from the CF card. (However, select a CF card with a capacity sufficient to install Windows successfully.)

*4 This does not include the current consumption by any peripheral device (such as the PC Card, USB device, keyboard, or mouse) or by the connector terminal.

Table 2.2. Installation Environment Conditions

<table>
<tr><th>Item</th><th>Condition</th></tr>
<tr><td>Operating temperature</td><td>0 - 55°C</td></tr>
<tr><td>Storage temperature</td><td>-25 - 75°C</td></tr>
<tr><td>Operating humidity</td><td>5 - 95%RH (No condensation)</td></tr>
<tr><td>Storage humidity</td><td>5 - 95%RH (No condensation)</td></tr>
<tr><td>Vibration resistance</td><td>Conforming to JIS B 3502 IEC61131-2
<table>
<tr><td colspan="3">With intermittent vibration</td></tr>
<tr><td>Frequency</td><td>Acceleration</td><td>Amplitude</td></tr>
<tr><td>5≤f<9Hz</td><td>None</td><td>3.5mm</td></tr>
<tr><td>9≤f<150Hz</td><td>9.8m/s^2</td><td>None</td></tr>
</table>
<table>
<tr><td colspan="3">With continuous vibration</td></tr>
<tr><td>Frequency</td><td>Acceleration</td><td>Amplitude</td></tr>
<tr><td>5≤f<9Hz</td><td>None</td><td>1.75mm</td></tr>
<tr><td>9≤f<150Hz</td><td>4.9m/s^2</td><td>None</td></tr>
</table>
Tested 10 times (for 80 minutes) in each of the X, Y, and Z directions</td></tr>
<tr><td>Shock resistance</td><td>Conforming to JIS B 3502, IEC61131-2
(147m/s^2, 3 times in each of three direction)</td></tr>
<tr><td>Operating ambiance</td><td>No corrosive gas</td></tr>
<tr><td>Operating altitude</td><td>2000m or less *3</td></tr>
<tr><td>Installation location</td><td>Inside the control panel</td></tr>
<tr><td>Overvoltage category *1</td><td>II or less</td></tr>
<tr><td>Pollution degree *2</td><td>2 or less</td></tr>
</table>

*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.

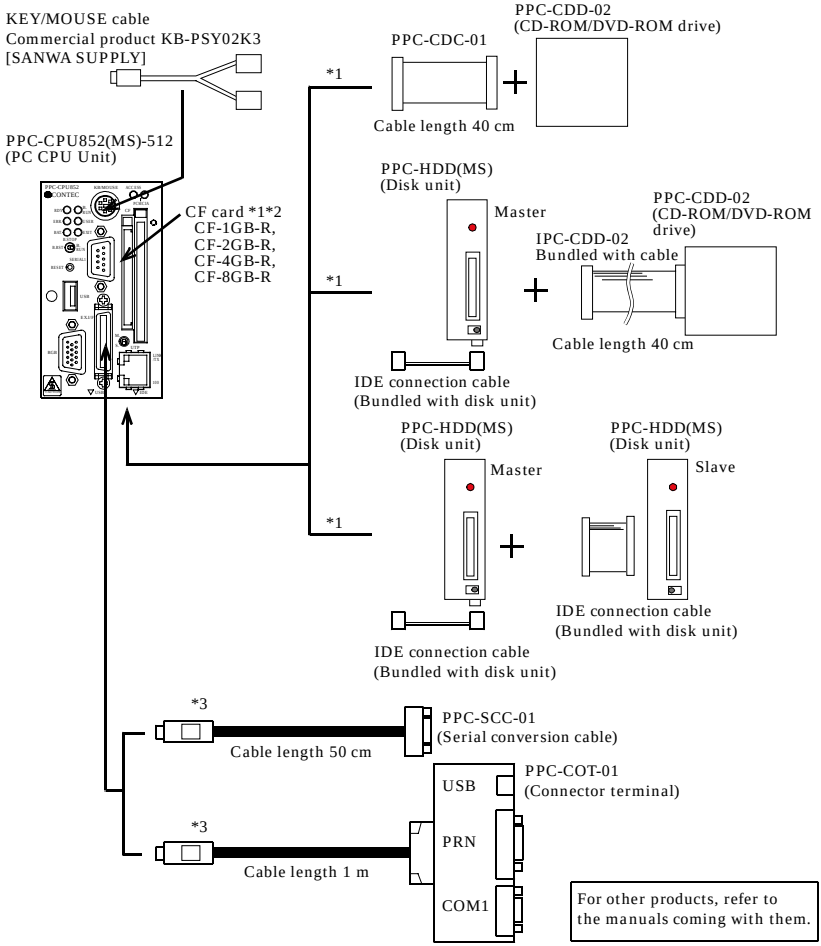
*2 The index indicating the degree to which conductive substances are generated in the operating environment. Pollution level 2 indicates the environment that generates only nonconductive pollutants while allowing accidental condensation to cause temporary conduction.

*3 The Unit 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 PC Card, USB device, keyboard, or mouse) is installed, satisfy the installation environment conditions specified for that device or those for the Unit, whichever are harder.

System Configuration



Notes) *1 : The IDE device (HDD, CF card and CD-ROM/DVD-ROM) that can be connected at the same time is up to two additionally. Please refer to the system configuration for more details.

	CF	HDD	HDD	CD-ROM / DVD-ROM
Combination		○	○	
		○		○
	○	○		
	○			○*2

*2 : An exclusive cable PPC-CDC-01 is required, to connect IPC-CDD-02 with this product and install OS in CF card.

*3 : Please connect either if necessary.

Figure 2.1. System Configuration Diagram

External Dimensions

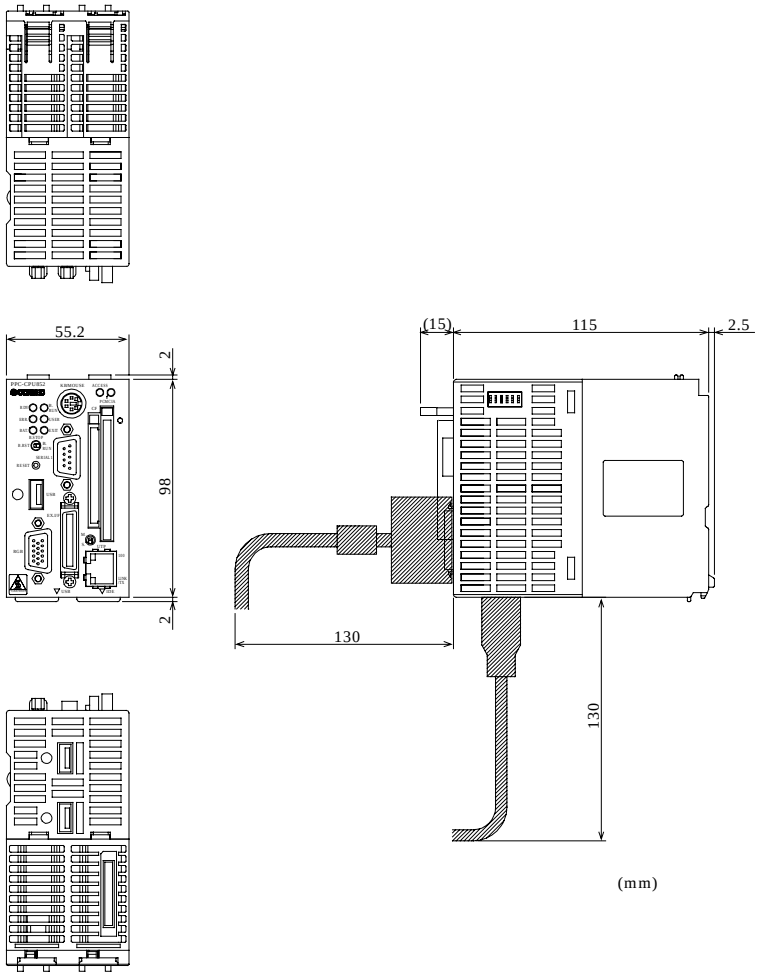


Figure 2.2. External Dimensions

3. Installing and Uninstalling the Hardware Notes on Use

Install this product on the MELSEC-Q Series base unit before use. This product requires the MELSEC-Q Series power supply unit as well.

Refer to the manuals for the base unit and power supply unit for their specifications, installation procedures, and wiring methods.

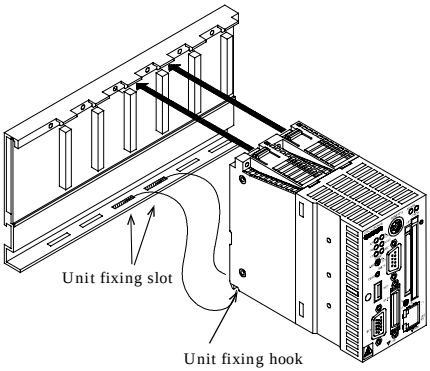
Note that this product occupies two slots in the base unit.

⚠ 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.

Installing the Unit

- Before installing this product, remove the transparent protective sheet from the rear panel (which comes into contact with the base unit).
- Fit the unit fixing hook in the unit fixing slot in the base unit, then push the Unit in the direction of the arrow to mount the Unit on the base unit.



⚠ CAUTION

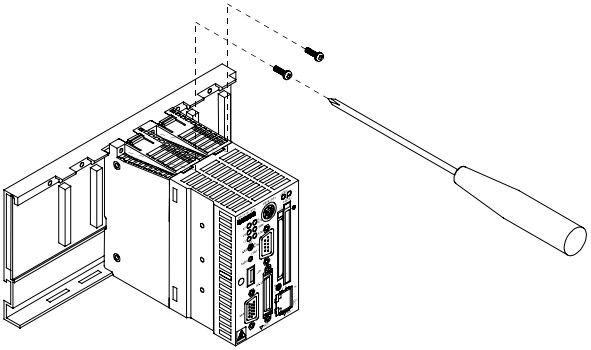
Be sure to turn off the power to this product before installing it.

- 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.

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

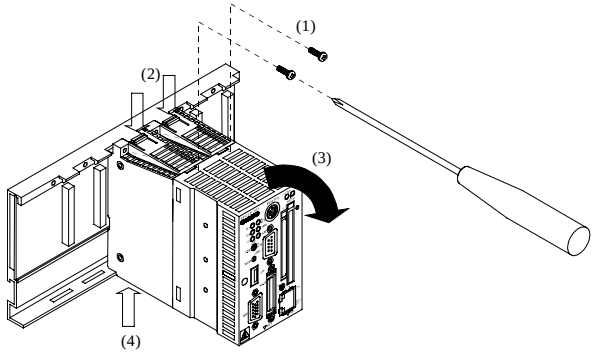
  Tighten the screws within the following torque range :

Tightening torque range	36 - 48N cm



Uninstalling the Unit

- If this product has been fastened with unit 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 unit fixing hook from the unit fixing slot (4).



⚠ 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.

4. BIOS Setup

BIOS Setup

BIOS Setup allows you to make various settings upon startup. When you use the Unit 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.

Invoking BIOS Setup

Turn on the power to your system, and the message “Press F2 to System Utilities” appears when the system is normal. Press the <F2> key at this prompt.

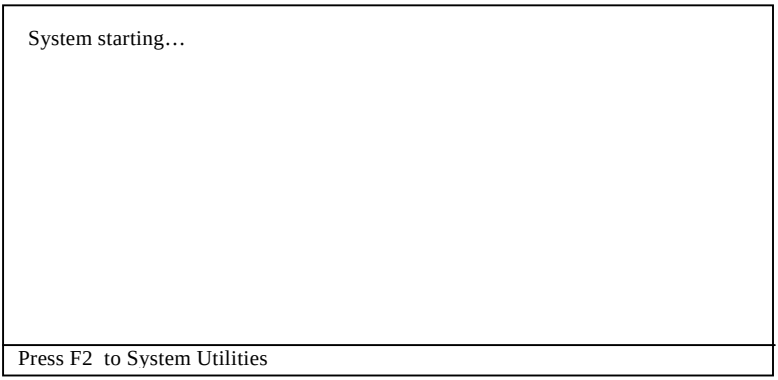


Figure 4.1. Initial Screen

Key Operations

The table below lists the major key functions used in BIOS Setup.

Table 4.1. Key Operations

Key(s)	Function
→, ←	Move around between setting items
↑, ↓	Move around within the main menu
<Tab>	Move forward within a setting item
<Shift>+<Tab>	Move backward within a setting item
<Spacebar>	Select the next value
+	Same effect as <Spacebar>
-	Select the previous value
<Enter>	Open the submenu
<Esc>	Move to the [Exit] window
<F9>	Reset all items to factory defaults.
<F10>	Save the current settings and exit Setup

Main Menu

Phoenix BIOS Setup Utility		
Main Advanced Boot Exit		
System Time:	HH: MM : SS	
System Date:	MM / DD / YYYY	*1
Legacy Diskette A:	[1.44/1.25MB, 3.5]	
Legacy Diskette B:	[Disabled]	
> Primary Master	[Auto] *2	
> Primary Slave	[Auto]	
System Memory	XxxKB	
Extended Memory	XxxxxKB	
(General key operation help)		

*1 This field displays HELP information contained in each setting item.

*2 The item marked with ">" has additional information in a sub screen.

Figure 4.2. Main Window (with Factory Defaults)

System Time : Set the time in the clock/calendar in the Unit.

System Date : Set the date in the clock/calendar in the Unit.

Primary Master : Specify the type of the disk unit to be used as the first drive.
Use the [Auto] option usually.

Primary Slave : Specify the type of the disk unit to be used as the second drive.
Use the [Auto] option usually.

Advanced Window

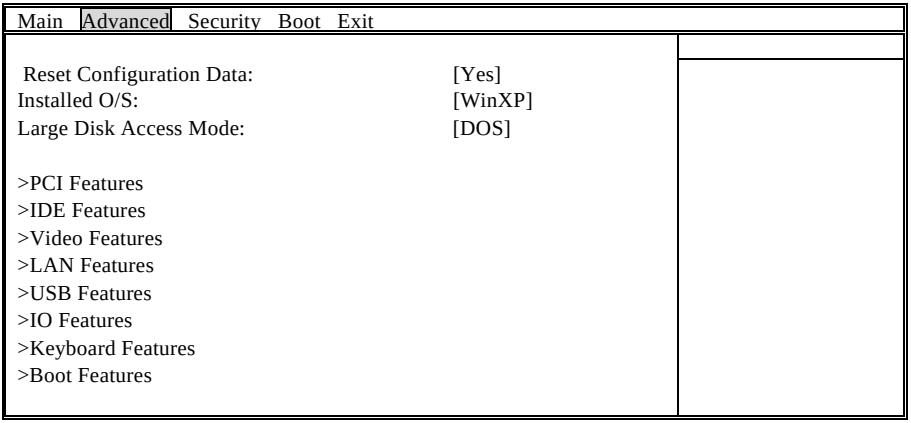


Figure 4.3. Advanced Window (with Factory Defaults)

Reset Configuration Data	:	Reset system construction data stored in the flash memory ROM. When set to [Yes], the data is reset upon the next boot-up. This item is automatically set back to [No] after a reset. When installing OS, make sure to set the item to [Yes] to reset the data beforehand.
Installed OS	:	Use the [WinXP] option usually.
Large Disk Access Mode	:	Use the [DOS] option usually.
PCI Features	:	Set PCI bus interrupts, etc.
IDE Features	:	Set the IDE port.
Video Features	:	Set display devices.
USB Features	:	Set the USB.
IO Features	:	Set the COM/LPT device.
Keyboard Features	:	Set the keyboard.
Boot Features	:	Set the boot.

PCI Features Window

Main	Advanced	Security	Boot	Exit	
PCI Features					
> PCI IRQ					

Figure 4.4. PCI Features Screen (with Factory Defaults)

PCI IRQ : Start up the setup screen for PCI IRQ.
Allow you to set the IRQ that will be assigned to the PCI slot from the startup screen.
Use all PCI IRQ in the “IRQ10” environment under normal conditions.

IDE Features Window

Main	Advanced	Boot	Exit	
IDE Features				
Hard Disk Pre-Delay:		[Disabled]		
IDE Primary Cable:		[40-conductor]		

Figure 4.5. IDE Features Screen (with Factory Defaults)

Hard Disk Pre-Delay : Use the [Disabled] option usually.

IDE Primary Cable : Use the [40-conductor] option usually.

Video Features Window

Main Advanced Boot Exit		
Video Features		
IGD - Memory Size:	[UMA = 8MB]	
Splash Screen Size	[1024x768]	

Figure 4.6. Video Features Screen (with Factory Defaults)

IGD - Memory Size : Specify the main memory capacity to be assigned to a video device.

Splash Screen Size : Set the display resolution for startup.

USB Features Screen

Main Advanced Boot Exit		
USB Features		
USB 2.0:	[Enabled]	
Legacy USB Support:	[Enabled]	

Figure 4.7. USB Features Screen (with Factory Defaults)

“Legacy USB Support” should be used when required, upon installation, etc.

USB 2.0 : Enable or disable USB2.0 connection.

Legacy USB Support : Use the [Enabled] option usually.

I/O Device Configuration Window

Main	Advanced	Boot	Exit	
IO Features				
Serial port A:		[Enabled]		
Base I/O address:		[3F8]		
Interrupt:		[IRQ 4]		
Serial port B:		[Enabled]		
Base I/O address:		[2F8]		
Interrupt:		[IRQ 3]		
Parallel port:		[Enabled]		
Mode:		[ECP]		
Base I/O address:		[378]		
Interrupt:		[IRQ 7]		
DMA channel:		[DMA 3]		

Figure 4.8. I/O Device Configuration Window (with Factory Defaults)

Serial port A : Set the SERIAL1 connector on the Unit.

Serial port B : Set the SERIAL2 port in the extension interface (EX.I/F).

Parallel port : Set the PARALLEL port in the extension interface (EX.I/F).
The following settings are available, when [Enabled] is selected.

- Base I/O address : I/O address setting
- Interrupt : IRQ setting
- Mode : Operating mode setting of parallel port
- DMA channel : DMA setting (at the time of ECP)

Keyboard Features Screen

Main	Advanced	Boot	Exit	
Keyboard Features				
Keyboard check:		[Disabled]		
Num Lock:		[On]		
Key Click:		[Disabled]		
Keyboard auto-repeat rate:		[30/sec]		
Keyboard auto-repeat delay		[1/2 sec]		

Figure 4.9. Keyboard Features Screen (with Factory Defaults)

Keyboard check	:	Enable or disable the checking of keyboard connection upon startup.
Num Lock	:	Set the Num Lock status upon startup.
Key Click	:	Set the clicking sound for key entry.
Keyboard auto-repeat rate	:	Set the number of repeated entries when a key is clicked in succession.
Keyboard auto-repeat delay	:	Set the duration required to determine repeated key entry.
PS/2 Mouse	:	Enable or disable PS/2 Mouse.

Boot Features Screen

Main	Advanced	Boot	Exit	
Boot Features				
Summary screen:		[Disabled]		
Boot-time Diagnostic Screen:		[Disabled]		
QuickBoot Mode:		[Disabled]		
Date/Time check:		[Enabled]		

Figure 4.10. Boot Features Screen (with Factory Defaults)

Summary screen	:	Set the summary screen display for startup.
Boot-time Diagnostic Screen	:	Set the self-diagnostic screen display for startup.
QuickBoot Mode	:	Set QuickBoot.
Date/Time check	:	Set (enable/disable) the checking of the real time clock.

Security Window

Main Advanced Security Power PC Health Boot Exit		
Set Supervisor Password	[Enter]	
Set User Password	[Enter]	
Supervisor Password Is:	Clear	
User Password Is:	Clear	
Password on boot:	[Disabled]	
Fixed disk boot sector:	[Normal]	
Diskette access:	[Supervisor]	
Clear All Password:	[Enter]	

Figure 4.11. Security Window (with Factory Defaults)

Set Supervisor Password : Determine whether BIOS Setup prompts you for a password upon startup.
When a password has been set here, "Supervisor Password is" is followed by ”Enabled”. In Supervisor mode, you can set all items.

Set User Password : Determine whether BIOS Setup prompts you for a password upon startup. When a password has been set here, “User Password is” is followed by “Enabled”. In User mode, you can set only the date and time.

Fixed disk boot sector : Set the write protect function to protect the hard disk from viruses.

Diskette access : Set password protection for accessing a floppy disk.

Password on boot : Determine whether the system prompts you for a password when booted.

Clear All Password : The supervisor can erase both of the user and administrator passwords.

⚠ CAUTION

- Once you have set a password, you cannot clear the password without it. When you have set a password, record it and store the record carefully.
- If you loose your password, you need to request CONTEC for clearing internal CMOS data at a charge for a repair. Handle your password with great care.

Boot Window

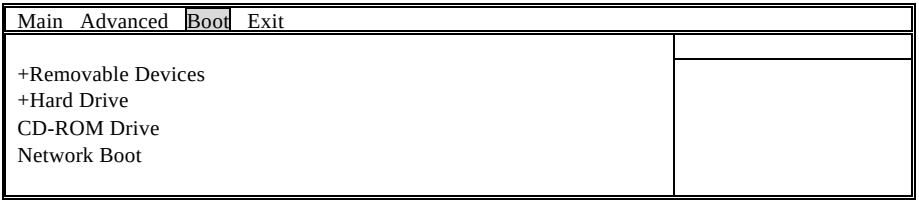


Figure 4.12. Boot Window (with Factory Defaults)

Use the <+> and <-> keys to set the priority of boot devices. Entering the keys on each item makes the item go up and down. System boot is performed from the device specified at the top.

Removable Devices	:	Indicate the USB floppy disk.
Hard Drive	:	Indicate the HDD and SDD.
CD-ROM Drive	:	Indicate the CD-ROM drive. Move this item to the top line when booting from CD-ROM.
Network Boot	:	Specify the Network Boot option after enabling the extended ROM of the PXE using LAN settings.

Devices are listed from top to bottom in the order of descending priorities.

Exit Window

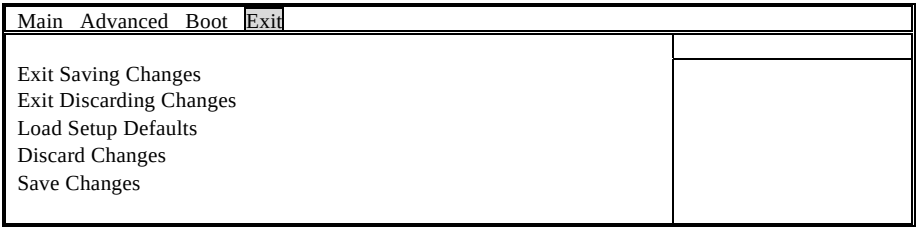


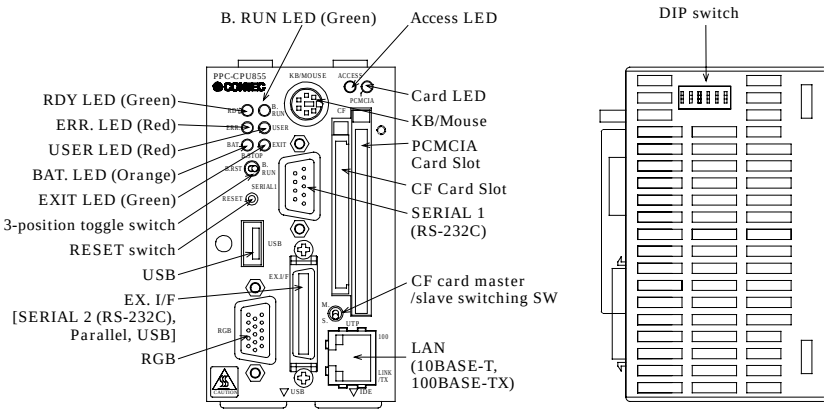
Figure 4.13. Exit Window

Exit Saving Changes	:	Save the changes you have made in BIOS Setup windows to CMOS and EEPROM, then reboot the system with the new settings.
Exit Discarding Changes	:	Discard the changes you have made without saving, then reboot the system with previous values.
Load Setup Defaults	:	Load the default values retained by the BIOS.
Discard Changes	:	Load the current values from CMOS.
Save Changes	:	Save the changes you have made in BIOS Setup windows to CMOS and EEPROM.

5. Parts Name and Functions of Components

Parts Name of Components

Front panel



Bottom

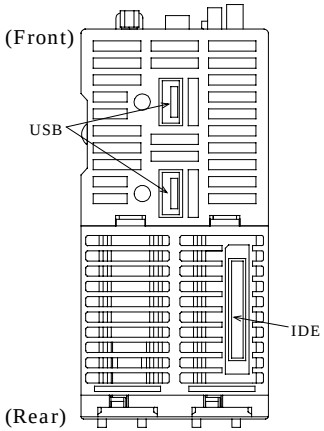


Figure 5.1. Component Locations

Table 5.1. Component Functions

Name	Function
KB/MOUSE	Keyboard/PS2 mouse shared connector (6-pin mini-DIN connector)
SERIAL 1	Serial port 1 connector (9-pin D-SUB male connector)
RGB	CRT connector (15-pin HD-SUB female connector)
PC-CARD	PCMCIA card slot
CF-CARD	CF card slot
CF card master /slave switching SW	Master / slave setting swtich of CF card
USB	USB port connector
UTP	Ethernet connector (RJ-45)
IDE	IDE connector (40-pin half-pitch connector)
EX.I/F	Connector terminal (Option), Serial conversion cable (option) connector
RESET	Hard reset pushbutton
3-position toggle switch	Bus interface driver control switch
DIP switch	Reset method select and KB/MOUSE connector select switches
RDY LED	Hardware ready display
B.RUN LED	Bus interface driver execution display
ERR. LED	System error display
USER LED	User error display
BAT. LED	Battery alarm display
EXIT LED	Shutdown (power-off) and hardware reset display
PC-CARD LED	PC-CARD accessible display
ACCESS LED	IDE or CF-CARD access display
100 LED	Ethernet transfer rate display
LINK/TX LED	Link/data transmission display

Functions of Components

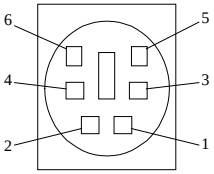
Keyboard/Mouse Interface

The Unit has a shared connector [KB/MOUSE] for use by the keyboard and the mouse.

The connector name is [KB/MOUSE].

Table 5.2. KB/MOUSE Connector

Connector type	MD-DS12300-14S-14 (JST) equivalent



SW6-OFF *1(Factory default)				SW6-ON *2			
Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name
1	KDATA	4	Vcc (+5V)	1	MDATA	4	Vcc (+5V)
2	MDATA	5	KCLOCK	2	KDATA	5	MCLOCK
3	GND	6	MCLOCK	3	GND	6	KCLOCK

*1 The keyboard can be connected directly.

*2 Both of the keyboard and the mouse can be connected with a conversion cable. Otherwise, the mouse can be connected directly.

Power Supply Capacity

The power supply to the KB/MOUSE connector has the following capacity (for both of the keyboard and mouse to be used). However, since the power supply capacity which can actually be supplied serves as the range in which the consumption current of the whole system does not exceed power supply unit capacity, the capacity which can be used, and this Max. power supply capacity may not.

Max. power supply capacity : 5V 0.5A(Max.)

Serial Port Interfaces

This product has two RS-232C compatible serial port connectors (SERIAL1 as Serial PortA, SERIAL2 as Serial PortB). You can set COM1 - COM4 or disabled using BIOS Setup (described in Chapter 4). Note that SERIAL2 can be used by connecting the optional connector terminal [PPC-COT-01] or the serial conversion cable [PPC-SCC-01].

Table 5.3. I/O Addresses and IRQs for SERIAL 1

COM	I/O address	IRQ
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

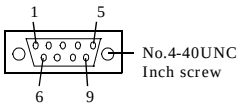
The BIOS's factory defaults for the serial port settings are as follows :

Serial port A : COM1(3F8h - 3FFh), IRQ4

Serial port B : COM2(2F8h - 2FFh), IRQ3

Table 5.4. Serial1 Connector

Connector used	9-pin D-SUB male connector



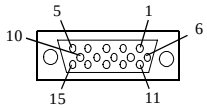
Pin No.	Signal name	Meaning	Direction
1	DCD	Data carrier detect	Input
2	RXD	Receive data from equipment	Input
3	TXD	Transmit data to equipment	Output
4	DTR	Data terminal ready	Output
5	GND	Signal ground	None
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Ring indicator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

CRT Interface

This product has a CRT connector [RGB].

Table 5.5. 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	

⚠ CAUTION

- A connection display should use the display of VESA conformity.
- A screen may not be reflected after VGA driver installation by the monitor which connects. In this case, please push "Ctrl+Alt+F1".

Note that, when the optional connector terminal [PPC-COT-01] or serial conversion cable [PPC-SCC-01] is connected to the EX.I/F connector, the connector at the end of the CRT cable may interfere with that of the connector terminal cable or serial conversion cable if the shell of the CRT cable connector is 16mm or more in width.

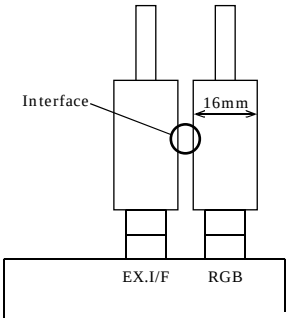


Figure 5.2. Viewed from top of the Unit

PCMCIA Slots

This product has PCMCIA compliant card slots (TYPE II x 1 size).

Figure 5.3. Slot Locations

Attaching a card stopper

Attach a card stopper, as shown below, after inserting a PC Card.

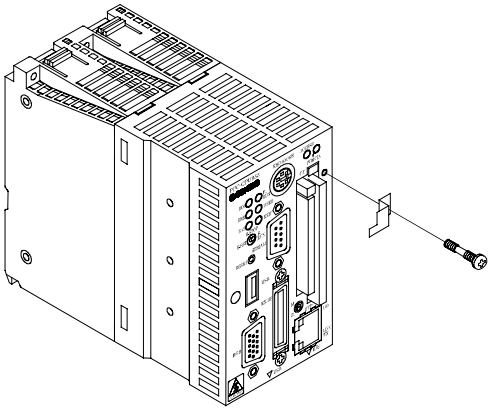


Figure 5.4. Attaching a Card Stopper

Card Slot Power Supply

The table below lists the card voltages and current capacities available to each PCMCIA slot. However, since the power supply capacity which can actually be supplied serves as the range in which the consumption current of the whole system does not exceed power supply unit capacity, the capacity which can be used, and this Max. current capacity may not.

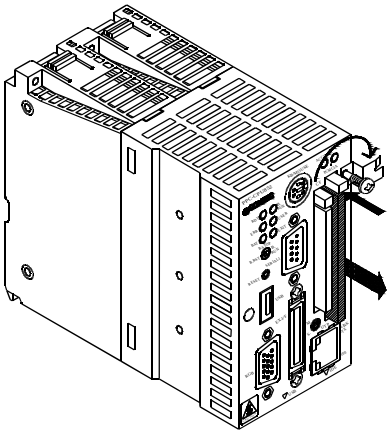
Table 5.6. Card Slot Power Supply

Voltage	Current capacity (Max.)
+5V	0.5A/Slot
+3.3V	0.5A/Slot
+12V	Not supplied

The card extraction method

As shown in the following figure, please push an eject button, and take out a card.

(When card omission prevention metallic ornaments are attached, please take out a card after removing.)

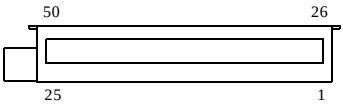


CF Card slot

This product has the CF card slot (Type I, II x 1 : dedicated to memory card).

Table 5.7. 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

- When you take out and insert CF Card, please be sure to carry out, where a power supply is disconnected. If CF Card is taken out and inserted during turning on electricity, it will become a cause of failure or malfunction.
- When you install Windows OS in CF Card, Please use CF Card specified as "Chapter 10 Options".
- CF Card specified as "Chapter 10 Options" is performing operation of CF Card. Operation of CF Cards (commercial CF Card etc.) besides specification is not secured.
- An exclusive cable (PPC-CDC-01) is required, to connect IPC-CDD-02 with this product and install OS in CF Card.

About write endurance

CF Card have a write endurance which limits the number of times each memory may be written, due to the characteristic of the memory that is used. A write endurance can be calculated by the following formula as a reference value :

- The formula to calculate a write endurance (hour)

$$\text{Endurance [time]} = N \times \frac{\text{The free space of CF Card (KB)}}{\text{FStyp}} \times fw$$

N	:	Write endurance (100,000 times)
FStyp	:	Total capacity of the file to be written (KB) (Note: in 16KB units)
fw	:	Time interval for the repeated file writing of the Fstyp capacity file (in hour)

Example : When the free space of CF Card is 900MB and 1MB of file is written every 5 seconds, the endurance is

- An example of a write endurance (hour) calculation

$$\text{Endurance [time]} = 100{,}000 \times \frac{921{,}600}{1024} \times \frac{5}{3{,}600} = 125{,}000 \text{ (= About 14 years)}$$

(Note : 1MB = 1024KB)

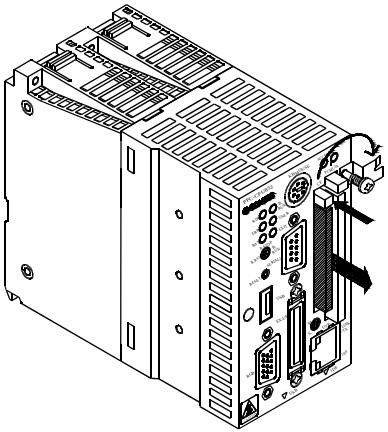
Attaching a card stopper

By using PC card omission prevention metallic ornaments, the omission stop of CF card is possible.

The card extraction method

As shown in the following figure, please push an eject button, and take out a card.

(When card omission prevention metallic ornaments are attached, please take out a card after removing.)



* Since near is crowded with interfaces, be careful and take out a card.

USB Port

This product has three channel of USB2.0 interface. You can add one channel of USB1.1 interface by connecting the optional connector terminal [PPC-COT-01] to this product.

Table 5.8. USB Connector

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

Power Supply Capacity

The capacity of power supplied to the USB connector per channel is as follows. However, since the power supply capacity which can actually be supplied serves as the range in which the consumption current of the whole system does not exceed power supply unit capacity, the capacity which can be used, and this Max. power supply capacity may not.

Max. power supply capacity : 5V 0.3A(Max.) / channel

⚠ CAUTION

PPC-COT-01 does not support USB2.0 apparatus. Please use USB1.1 apparatus..

About an insulation lock attachment hole

That a USB cable should stop falling out, as business, as shown in the following figure, an insulation lock is attached, and things are made.
[Recommendation article : RSG-100 V0] (Kitagawa Industries)

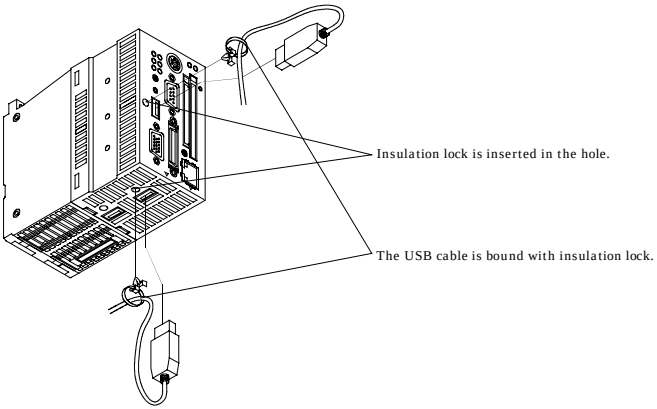


Figure 5.5. Insulation lock attachment hole

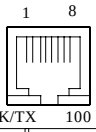
Ethernet

This product has Fast-Ethernet [UTP].

- Network system : 100BASE-TX/10BASE-T
- Transmission rate * : 100M/10M bps
- Maximum cable length : 100m/segment
- Controller : 82551QM(INTEL)

* The category 5 cable must be used for transmission at 100Mbps.

Table 5.9. UTP Connector

Connector type	RJ-45				
					
Pin no.	Signal name	Meaning	Pin no.	Signal name	Meaning
1	TD+	Transmit data to equipment (+)	5	N.C.	Not connected
2	TD-	Transmit data to equipment (-)	6	RD-	Receive data from equipment (-)
3	RD+	Receive data from equipment (+)	7	N.C.	Not connected
4	N.C.	Not connected	8	N.C.	Not connected

Network status indication LEDs

- LINK/TX : Remains on during normal connection and blinks during data transmission.
- 100M : Remains on during 100M operation.

⚠ CAUTION

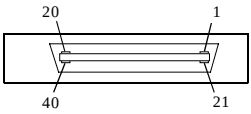
When used in the place with many noises, please perform noise removal of equipping with a ferrite core to this product and connection apparatus side.
Recommendation Ferrite Core : ZCAT 3035-1330 (TDK)

IDE Interface

This product has an E-IDE controller, allowing the IDE connector [IDE] at the bottom to connect the optional Hard disk unit. Moreover, optional CD-ROM/DVD-ROM drive [IPC-CDD-02] are connectable by connecting optional exclusive CD cable [PPC-CDC-01].

Table 5.10. IDE Connector

Connector used	40-pin half-pitch connector (1.27 mm pitch)



Pin No.	Signal name	Direction	Pin No.	Signal name	Direction
1	RESET#	Output	21	GND	None
2	DD7	I/O	22	DD8	I/O
3	DD6	I/O	23	DD9	I/O
4	DD5	I/O	24	DD10	I/O
5	DD4	I/O	25	DD11	I/O
6	DD3	I/O	26	DD12	I/O
7	DD2	I/O	27	DD13	I/O
8	DD1	I/O	28	DD14	I/O
9	DD0	I/O	29	DD15	I/O
10	GND	None	30	N.C.	None
11	DDRQ	Input	31	GND	None
12	DIOW#	Output	32	GND	None
13	DIOR#	Output	33	GND	None
14	IOCHRDY#	Input	34	DALE	Output
15	DDACK#	Output	35	GND	None
16	INTRQ	Input	36	Reserve	None
17	DA1	Output	37	Reserve	None
18	DA0	Output	38	DA2	Output
19	CSI#	Output	39	CS3#	Output
20	DACT#	Output	40	GND	None

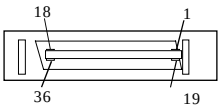
* This connector is common to the PC CPU module (bottom) and the disk unit (front and bottom).

Extension Interface

The extension interface can connect either the optional connector terminal [PPC-COT-01] that converts the serial, parallel, or USB interface in the extension interface [EX.I/F] to the PC standard connector or the optional serial conversion cable [PPC-SCC-01] for serial use only.

Table 5.11. EX.I/F Connector

Connector type	36-pin half-pitch connector DX10G1M-36SE equivalent



Pin No.	Signal name	Direction	Pin No.	Signal name	Direction
1	DCD	Input	19	DSR	Input
2	RXD	Input	20	RTS	Output
3	TXD	Output	21	CTS	Input
4	DTR	Output	22	RI	Input
5	GND	None	23	GND	None
6	STRB#	Output	24	AFFED#	Output
7	DATA0	Output	25	ERROR#	Input
8	DATA1	Output	26	INIT#	Output
9	DATA2	Output	27	SELECT IN#	Output
10	DATA3	Output	28	GND	None
11	DATA4	Output	29	BUSY	Input
12	DATA5	Output	30	PE	Input
13	DATA6	Output	31	SELECT	Input
14	DATA7	Output	32	EXITOUT#	Output
15	ACK#	Input	33	SWDTOUT#	Output
16	SHUTIN#	Input	34	GND	None
17	DATA+		35	DATA-	
18	+5V	None	36	+5V	None

Operation Switches

Reset Switch

Name	Switch type	Definition
Reset switch	Pushbutton switch	Hardware reset switch Pressing the switch for at least one second reset this product.

⚠ CAUTION

Use the operation switch only when this product has hung or crashed. Using the switch in a normal state (with the OS up and running) causes the OS to abort without executing the legitimate shutdown procedure, possibly preventing the OS from running normally when restarted.

Three-Position Toggle Switch

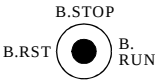


Figure 5.6. Factory Default

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 units under control of this product and the bus interface as well. Use this switch to reset only the MELSEC-Q Series units 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 units on the bus, and turns the Y output (*2) off. Unit 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 units on the bus.

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

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

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 units on the bus	1) Set the toggle switch to B.STOP
Restart user application access to the units on the bus	1) Set the toggle switch to B.RUN
Resets the units 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

Figure 5.7. Factory Default

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 unit No.2 - 4 in the multiple PLC system *1 OFF : Setting the RESET/L.CLR switch on unit No.1 (PLC CPU) to RESET resets the bus interface driver without resetting this product. *2 ON : Setting the RESET/L.CLR switch on unit No.1 (PLC CPU) to RESET resets this product.
6	SW-6		KB/MOUSE connector select switch (Factory default: OFF) OFF : Connect the PS2 keyboard ON : Connect the PS/2 mouse or KB/MOUSE cable.

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

*2 Usually, leave SW-5 set to OFF. If you set SW-5 to ON, the reset operation on Unit 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.

CF Card master/slave changeover switch

Figure 5.8. Factory Default

Name	Switch type	Definition
CF Card master/slave changeover switch	2-position toggle switch	CF card master/slave is set up. (At the time of factory shipments : master)

LED Displays

Abbreviation	Name	Color	LED 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 unit No. 1 in the multiple PLC 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 or PC Card has caused an internal battery error. *2 *3
			Off	This product is in the normal state.
EXIT	EXIT	Green	On	The shutdown and hardware reset procedure has been completed. *4
			Off	The shutdown and hardware reset procedure has not been completed.
PC-CARD	PC CARD RDY	Green	On	PC CARD has been recognized normally by this product and is accessible.
			Off	PC CARD is not accessible.
ACCESS	IDE & CD CARD ACCESS	Green	On	Access is being made to IDE (HDD/SDD) or the CF card.*5
			Off	Access is not being made to IDE (HDD/SDD) or the CF card.
100	100Mbps	Yellow	On	The transmission rate is 100 Mbps.
			Off	The transmission rate is 10 Mbps.
LINK/TX	LINK/TX	Green	On	This product has been connected normally to the Ethernet network.
			Off	This product has not been connected normally to the Ethernet network.
			Blink	Data is being transmitted.

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

*2 Only the PC Cards which can detect their internal battery error normally are memory cards. When a PC Card other than memory cards, such as an I/O card (ATA card) or CardBus card, is used, this LED may go on with the card detected as a battery error. When using a PC Card other than memory cards, therefore, use the bus interface driver utility to disable the detection of memory card battery error. When hardware is removed on Windows, the battery error with a built-in PC card may be detected, but it is canceled by extracting a card.

*3 When removing hardware by Windows, the battery error with a built-in PC card may be detected. It is canceled by extracting a card.

*4 When the shutdown of OS is completed, nothing is displayed on a CRT screen but it becomes a black screen. Since lighting of EXIT LED shows the completion of a shutdown, when you turn off a power supply, please check that this LED is on.

*5 When it is used with an HDD(master setup)+CF card (slave setup). Although there is a case where this Light Emitting Diode lights up, at the time of a shutdown of Windows, it is satisfactory in operation. Please check and carry out power supply OFF of EXIT Light Emitting Diode being on.

6. Combination with the MELSEC-Q Series

Overview

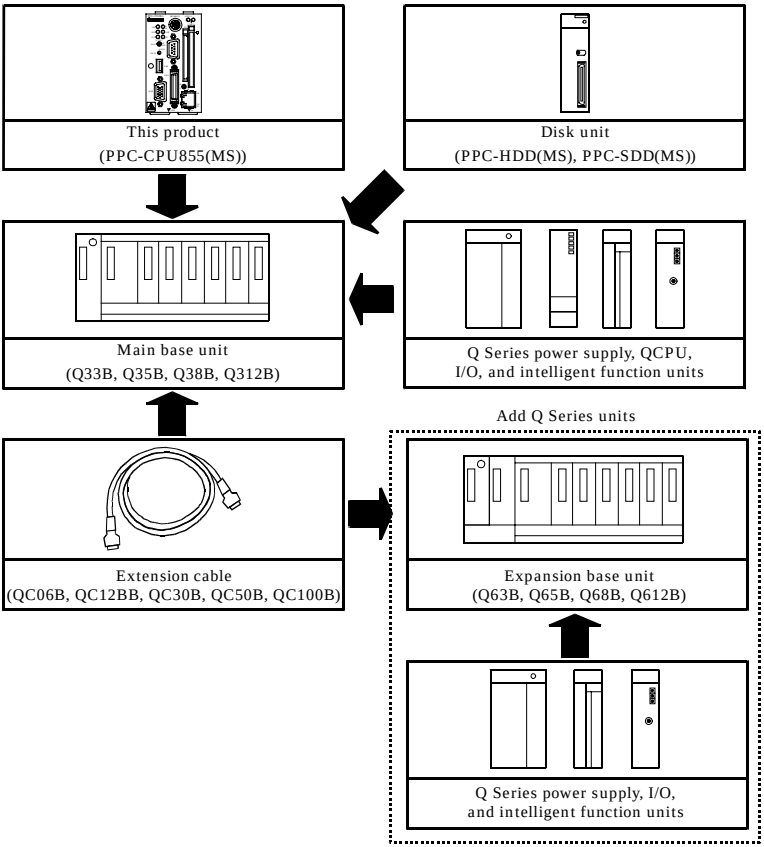
This product can communicate with the MELSEC-Q Series PLC CPU unit, intelligent function unit, and I/O unit at high speed by connecting the buses using the MELSEC-Q Series bus unit.

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

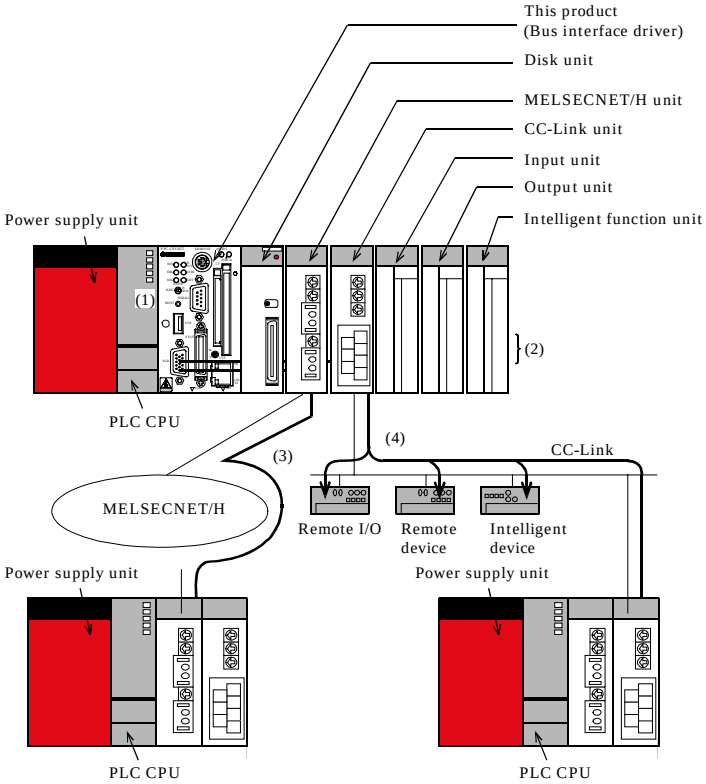
For details on each MELSEC-Q Series unit and the bus interface driver, refer to the relevant manuals.

System Configuration

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



Access Forms



The Unit can access various units in the following forms.

(1) Access another PLC CPU in the local system.

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

(3) Access a PLC CPU via the MELSECNET/H unit.

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

Multiple PLC Configuration

Multiple PLC Configuration Including this product

This product supports both of the single-CPU configuration with the Unit as only one CPU and the multiple PLC configuration with this product combined with other CPUs.

Combination of CPUs

		Units No. 2 - 4 (Machines No. 2 and No. 3 when machine No. 1 is a basic model)			
		Sequencer CPU	Motion CPU	PC CPU	None (Single-CPU configuration)
Unit No.1	Sequencer CPU (Basic model)	×	1	1	O
	(High performance model/Process CPU)	3	3	1	O
	Motion CPU	×	×	×	×
	PC CPU	×	×	×	O

O : available

× : Un-corresponding

Number in the table: Maximum number of units to be installed

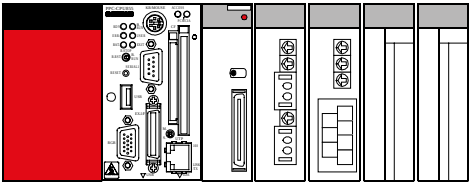
⚠ CAUTION

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

CPU Configuration Diagrams

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

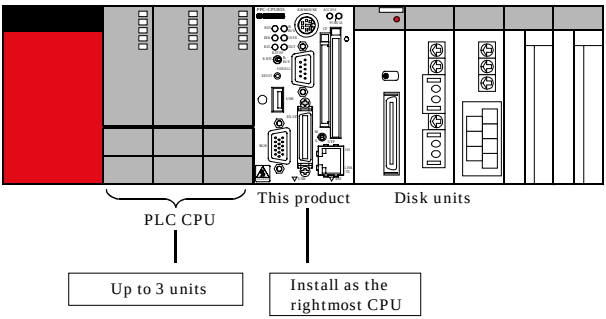
  Unit No.1 ···This product



- Multiple PLC configuration with this product in combination with PLC CPUs

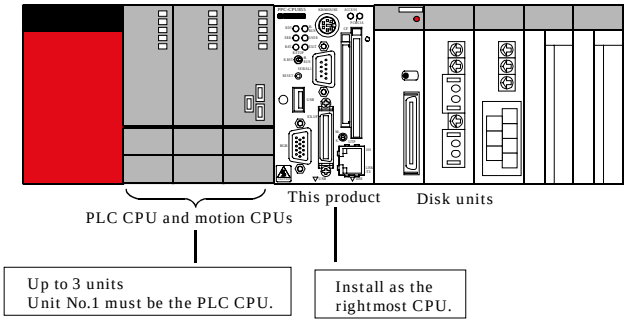
Maximum configuration with this product and three PLC CPUs

  Units No.1 - 3 ···PLC CPUs
  Unit No. 4 ···This product



- Multiple PLC configuration with this Unit in combination with a PLC CPU and motion CPUs

  Unit No.1 ···PLC CPU
  Units No.2 - 3 ···Motion CPU
  Unit No.4 ···This product



⚠ CAUTION

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

Supported units

Series	Classification	Model name	Support	Supported function version *1
Q Series	Base unit	All base units	O	None
	Power supply unit	Q61P-A1, Q61P-A2, Q63P, Q64P	O	None
	I/O unit	All I/O units	O	None
	A-D conversion unit	Q64AD, Q68ADV, Q68ADI	O	B and later
	D-A conversion unit	Q62DA, Q64DA, Q68DAV, Q68DAI	O	B and later
	Temperature control unit	Q64TCTT, Q64TCRT, Q64TCTTBW, Q64TCRTBW	O	B and later
	Temperature-digital conversion unit	Q64TD, Q64RD	O	B and later
	Positioning unit	QD75P1, QD75P2, QD75P4, QD75D1, QD75D2, QD75D4, QD70P4, QD70P8	O	B and later
	High-speed counter	QD62, QD62D, QD62E	O	None
	Interrupt unit	QI60	O	None
	FL-net (OPCN-2) unit	QJ71FL71, QJ71FL71-B2	O	B and later
	MELSECNET/H unit	QJ71LP21-25, QJ71BR11, QJ71LP21G, QJ71LP21GE	Δ *2	B and later
	CC-Link unit	QJ61BT11	Δ *3	B and later
	Ethernet unit	QJ71E71, QJ71E71-B2, QJ71E71-100	×	None
	Serial communication unit	QJ71C24, QJ71C24-R2	×	None
	Intelligent communication unit	QD51, QD51-R24	×	None
A Series	All models		×	None
GOT	All models		×	None

O : Supported Δ : Conditionally supported × : Not supported

*1 : The units with "B and later" are supported in function version B and later.

*2 : - Only inter-PC networks can be used; remote I/O networks cannot be used.
- Transfer between data links cannot be performed.
- MELSECNET/H dedicated instruction cannot be used.
- The interrupt program start function cannot be used.
- Application programs can perform connunication using the md function.
- Network parameters are set by the bundled utility.

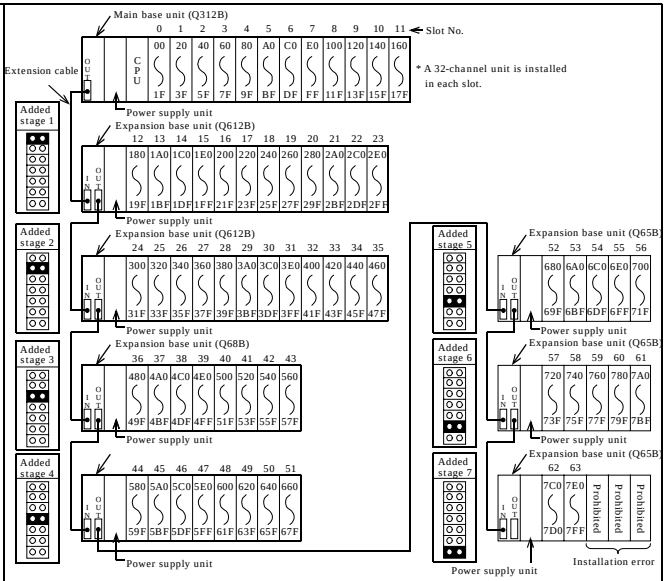
*3 : - CC-Link dedicated instructions cannot be used.
- The interrupt program start function cannot be used.
- Application programs can perform connunication using the md function.
- Network parameters are set by the bundled utility.

⚠ 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.

Notes

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

Example of system expansion	
Maximum number of stages added	7 stages
Maximum number of I/O units installed	64 units
Maximum number of I/O channels	4,096 channels
Maximum number of MELSECNET/H units installed	4 units
Maximum number of CC-Link units installed	4 units
Maximum number of interrupt units installed	1 unit
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 units or more results in an error.

Restriction by Power Capacity

The power capacity when using a Q61P as the Q Series power supply unit is 5VDC/6A. When Q Series units are used with this product, this capacity may be insufficient for the power supply to be used, depending on the combination of devices.

Calculate the total current consumption by the base units, PLC CPU units, I/O units, intelligent function units, and peripheral devices to be used. Your system configuration is acceptable when the total current consumption is within 6A.

If the total current consumption exceeds 6A, consider using the Q64P heavy duty power supply unit (power capacity = 5VDC/8.5A) instead.

The table below lists the current consumption values of some units for you reference. For the actual current consumption values of units, refer to their manuals.

Classification	Model name	Current consumption (A) at 5 VDC
Main base unit	Q38B	0.077
	Q312B	0.087
PC CPU unit	PPC-CPU852(MS)	3.0
Hard disk unit	PPC-HDD(MS)	0.88
CF Card	CF-1GB-R	0.09
PLC CPU unit	Q02CPU	0.60
	Q25HCPU	0.64
Motion CPU unit	Q172CPU	1.62
	Q173CPU	1.75
Input unit	QX10	0.05
	QX40	0.05
Output unit	QY10	0.43
	QY40P	0.065
A-D conversion unit	Q68ADV	0.64
D-A conversion unit	Q64DA	0.345
Positioning unit	QD75P4	0.58

- Multiple PLC configuration with the hard disk unit

As the Q61P cannot be used if the total current consumption of the units exceeds 6A, consider using the Q64P (power capacity = 5VDC/8.5A) instead.

Number of CPU units			Main base unit	Total current consumption (A)	Remaining current capacity (A)	
PLC CPU	Motion CPU	This product				
Q25HCPU (0.64A)	Q173CPU cooling fan (1.83A)	PPC-CPU852(MS) PPC-HDD(MS) (3.88A) *1	Q312B (0.087A)		Q61P (6A)	Judgement
0	0	1	1	3.967	2.033	O
1	0	1	1	4.607	1.393	O
2	0	1	1	5.247	0.753	Δ
3	0	1	1	5.887	0.113	Δ
1	1	1	1	6.437	-0.437	× *2
2	1	1	1	7.077	-1.077	× *2
1	2	1	1	8.267	-2.267	× *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 peripherals (including PC Cards, USB equipment, keyboard, mouse) and/or connector terminals.

*2 The system can be configured by using a Q64P instead.

- Multiple PLC configuration with the CF Card

As the Q61P cannot be used if the total current consumption of the units exceeds 6A, consider using the Q64P (power capacity = 5VDC/8.5A) instead.

Number of CPU units			Main base unit	Total current consumption (A)	Remaining current capacity (A)	
PLC CPU	Motion CPU	This product				
Q25HCPU (0.64A)	Q173CPU cooling fan (1.83A)	PPC-CPU852(MS) CF-1GB-R (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	Δ
3	0	1	1	5.107	0.893	Δ
1	1	1	1	5.657	0.343	× *2
2	1	1	1	6.297	-0.297	× *2
1	2	1	1	7.487	-1.487	× *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 peripherals (including PC Cards, USB equipment, keyboard, mouse) and/or connector terminals.

*2 The system can be configured by using a Q64P instead.

- Configuration with many I/O units and intelligent function units

If the total current consumption by the units on the main base unit, including this product and peripheral devices, exceeds the power capacity used, move I/O units and intelligent function units to an expansion unit. The total current consumption by the units 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.

- When replacing with PPC-CPU686(MS)

In this case, although it is the same, since interfaces differ, notice the consumption current of a main part about the peripheral equipment and sum total consumption current to use, and build PPC-CPU686(MS) and this product.

Type	PPC-CPU686(MS)-128	PPC-CPU852(MS)-512
USB	USB1.1 compliant 2ch (Front : 1ch, extension interface (EX.I/F) : 1ch) Power supply +5V Each channel 0.3A (Max.)	USB2.0 compliant 3ch (Front:1ch, Bottom:2ch) USB1.1 compliant 1ch (extension interface (EX.I/F)) Power supply +5V Each channel 0.3A (Max.)
FDD I/F	26pin half pitch connector, Correspondence FDD : PC-FDD25BH	None
PCMCIA Card	Card Type : PCMCIA and CARD-BUS Card Slot:TypeI and II x 2 or TypeIII x 1 ATA card boot : Slot1 only Power supply +5V or +3.3V (No +12V supply) Each slot 0.5A (Max.)	Card Type:PCMCIA and CARD-BUS Card Slot:TypeI and IIx1 ATA card boot : non-supporting Power supply +5V or +3.3V (No +12V supply) Each slot 0.5A (Max.)
CF Card	None	CF CARD Type I (only for memory cards) (primary IDE) It changes a master/slave with a front switch.

7. Reset Specifications
Reset Specifications

Reset type		Single-CPU configuration	Multiple PLC configuration (Units No.2 - 4)	
			DIP switch with SW-5 set to OFF	DIP switch with SW-5 set to ON
Reset involving a reset of this product				
	Reset by recycling the power supply	Available : Recycling the power supply after shutdown. This product and all the units on the bus are reset.	Available : (Same as left)	Available : (Same as left)
	Reset by restarting the OS	Available : Restart followed by OS shutdown. This product and all the Units on the bus are reset.	Available : Restart followed by shutdown after resetting Unit No.1. This product and all the units on the bus are reset. (Restarting the OS without resetting Unit No.1 results in a multiple PLC down error. In the multiple PLC configuration, therefore, Unit No.1 must be reset first.)	Unavailable : This product and all the units on the bus are reset when Unit No.1 is reset. Therefore the OS restart cannot be executed. (Restarting the OS without resetting Unit No.1 results in a multiple PLC down error. In the multiple PLC configuration, therefore, Unit No.1 must be reset first.)
	Reset by resetting Unit No.1	No conbination :	No conbination :	Available : Resetting Unit No.1 after shutdown. This product and all the units on the bus are reset.
Bus interface driver reset				
	Reset by resetting Unit No.1	No conbination :	Available : Resetting Unit No.1. The bus interface driver and all the units on the bus are reset.	No conbination :
	Reset by the toggle switch	Available : Setting the toggle switch to B.RST. The bus interface driver and all the units on the bus are reset.	No conbination : Since the bus interface driver and all the units on the bus are reset when Unit No.1 is reset, there is no need to set the toggle switch to B.RST. (Setting the toggle switch to B.RST without resetting Unit No.1 results in a multiple PLC down error. In the multiple PLC configuration, therefore, Unit No.1 must be reset.)	Unavailable : Since this Unit and all the units on the bus are reset when Unit No.1 is reset, the toggle switch cannot be used to reset. (Setting the toggle switch to B.RST without resetting Unit No.1 results in a multiple PLC down error. In the multiple PLC configuration, therefore, Unit No.1 must be reset.)

Reset Procedure Involving a Reset of this product

Reset by Recycling the Power Supply

(1) Shut down the OS (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 with SW-5 set to OFF)

(1) In the multiple PLC CPU configuration, reset CPU Unit No.1 (PLC CPU).
(2) Shut down the OS on the screen, then restart it.
(3) In the multiple PLC CPU configuration, cancel the reset of CPU Unit No.1 (PLC CPU).

Reset by resetting Unit No.1 (PLC CPU) (DIP switch with SW-5 set to ON)

(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) Reset the switch on Unit No.1.
(4) Release the switch on Unit No.1 from the reset.

⚠ CAUTION

- The shutdown command input and shutdown completion output require the connector terminal (PPC-COT-01, separately priced). For details, refer to the connector terminal manual.
- 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 personal computer CPU will become impossible. (The time of a re-injection of a power supply is included.) When this operation is performed and re-starting of personal computer CPU becomes impossible, a shutd.
- The EXIT LED comes on only when you shut down Windows or hardware reset.
- To reset this product or restart the OS in the multiple PLC CPU configuration, be sure to reset CPU Unit No.1 (PLC CPU) in advance. Doing so without resetting CPU Unit No.1 causes a multiple PLC CPU down error on another CPU unit.

Reset Procedure for when Bus Interface Driver is Reset

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

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

(1) Stop the user application.
(2) Reset CPU Unit No.1.
(3) Release CPU Unit No.1 from the reset.
(4) Execute the user application.

⚠ CAUTION

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

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 Unit for items (1) - (4), connect the Unit 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 :

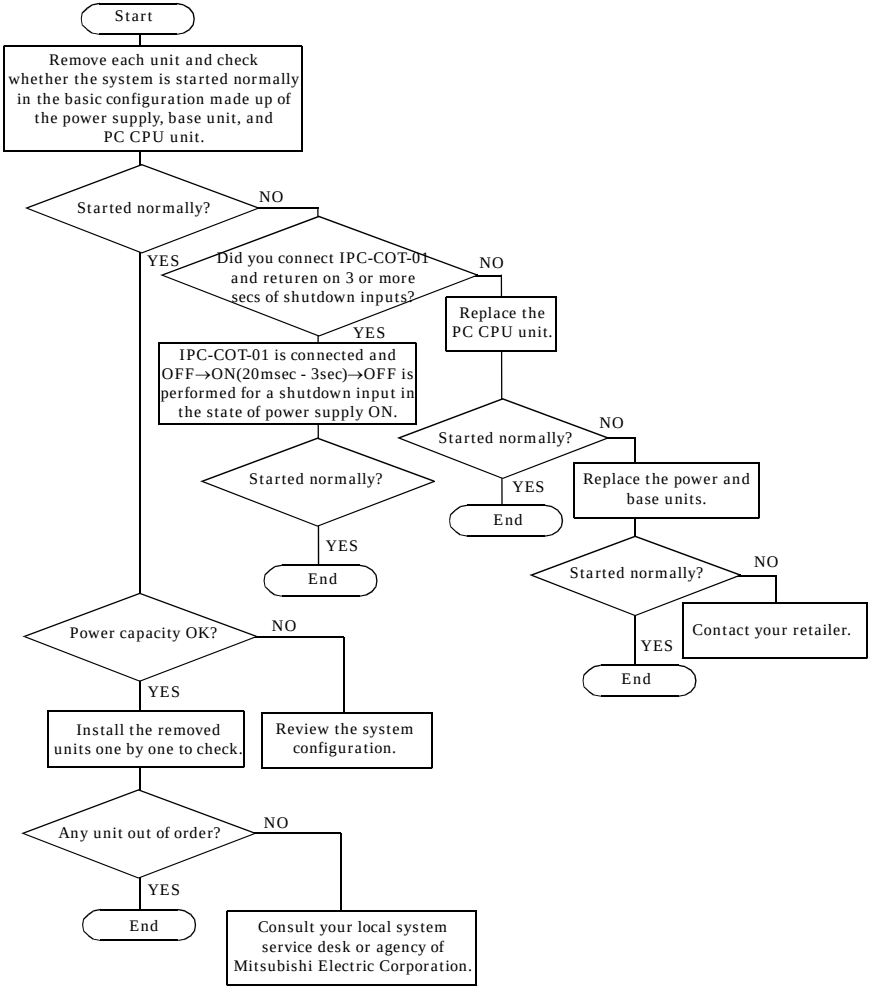
(1) Change the input state to check whether the correct change can be read by the test program.
(2) Turning the output on and off repeatedly to check whether the state of the external device changes correctly.

(3) Narrow the range down

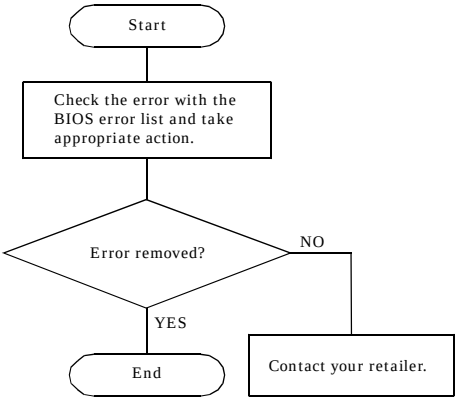
Check the results of (1) and (2) above to locate the fault in one of the following options :

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

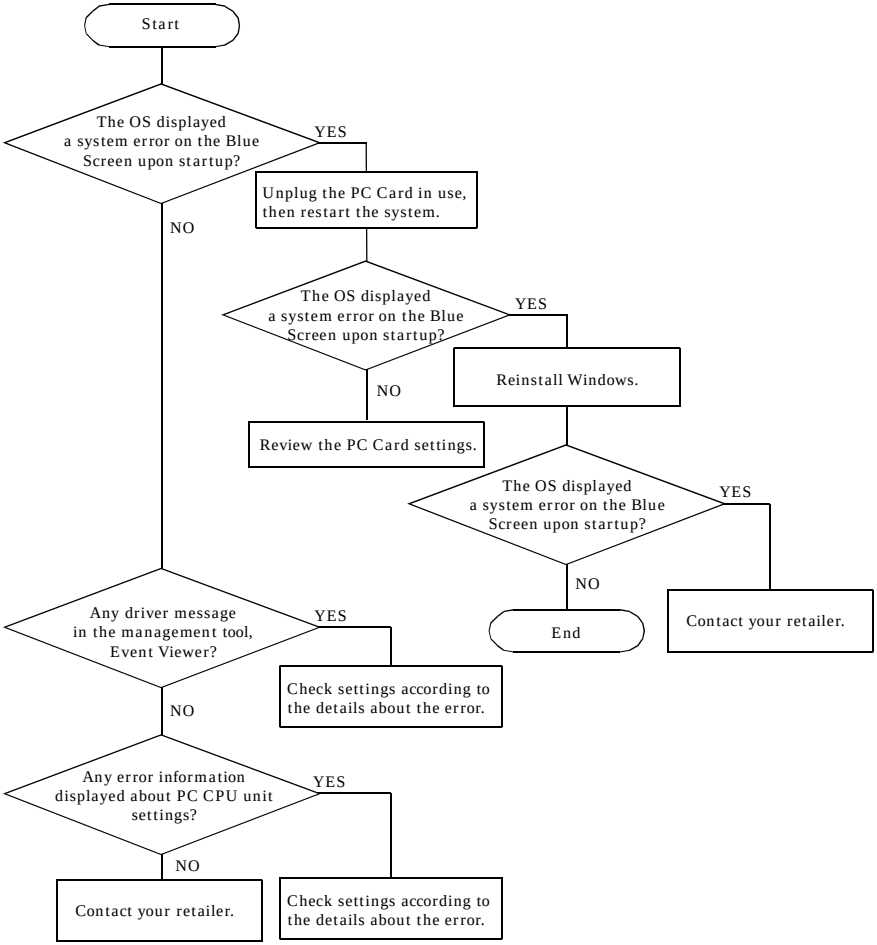
This program Won't Start Normally



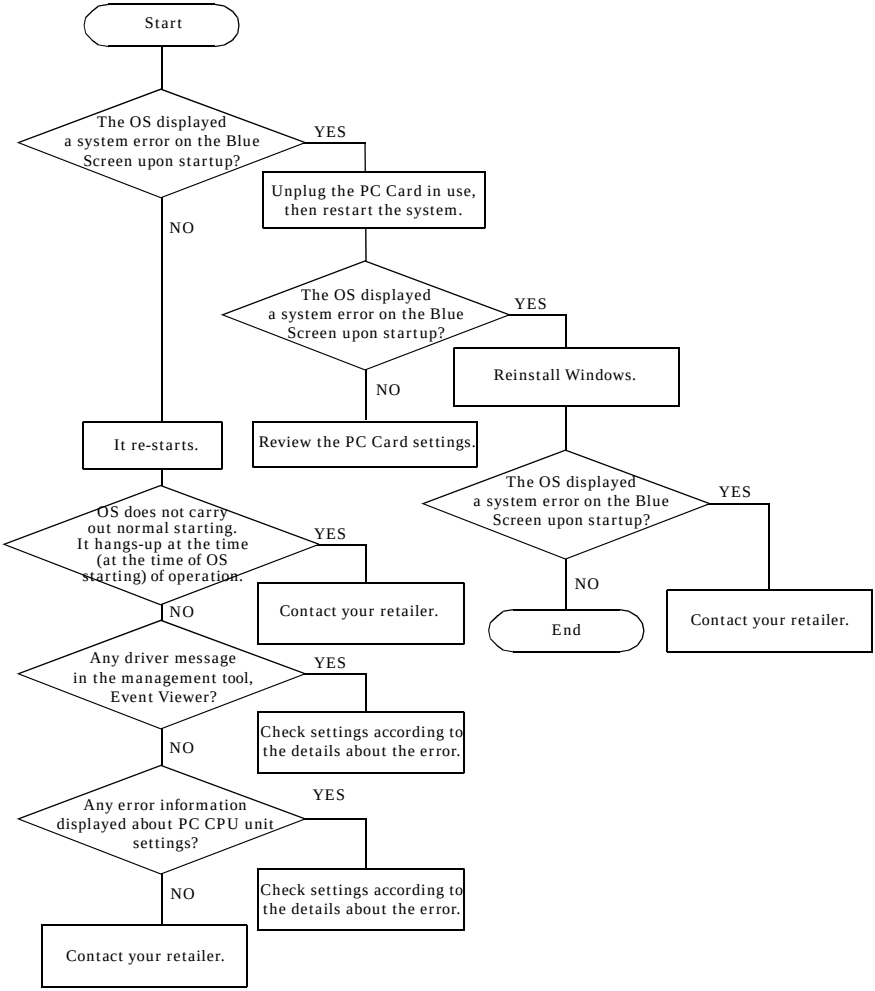
This program Starts with a BIOS Error displayed



The OS Won't Start Normally



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



BIOS Error List

Table 8.1. BIOS Error List ***< 1 / 2 >***

Error message	Description	Action to take
0200 : Failure Fixed Disk	Hard disk error	Check the hard disk connection cable, master/slave setting switch, and unit engagement. If they have no problem, something may be wrong with the drive.
0210 : Stuck Key	Keyboard error	Check the cable connection. If it has no problem, replace the keyboard with a different model.
0211 : Keyboard Error	Keyboard error	Replace the keyboard with a different model. If the error persists the keyboard interface may be faulty.
0212 : Keyboard Controller Failed	Keyboard controller error	Replace the keyboard with a different model. If the error persists the keyboard interface may be faulty.
0220 : Monitor type does not match CMOS - Run SETUP	The monitor type does not match CMOS data. Use BIOS Setup.	Run BIOS Setup to make the correct setting.
0230 : System RAM Failed at offset:	System RAM error	Repair the PC CPU unit by replacing the component.
0231 : Shadow Ram Failed at offset:	Shadow RAM error	Repair the PC CPU unit by replacing the component.
0232 : Extended RAM Failed at address line :	Extended RAM error	Repair the PC CPU unit by replacing the component.
0250 : System battery is dead - Replace and run SETUP	The system battery is dead. Replace the battery and use BIOS Setup.	The system battery is dead. Request CONTEC for repair because the RTC must be replaced.
0251 : System CMOS checksum bad - Default configuration used	System CMOS checksums are invalid. Factory defaults are loaded.	When CMOS data is cleared immediately after a BIOS update, system CMOS checksums become invalid. Run BIOS Setup to set up your system again. If this error is persistent, CMOS (RTC) may be defective or the battery may be dying.
0252 : Password checksum bad - Passwords cleared	The password checksum is invalid. The password is cleared.	Run BIOS Setup to set a password again. If this error is persistent, CMOS (RTC) may be defective or the battery may be dying.
0260 : System timer error	System timer error	Repair the PC CPU unit by replacing the component.
0270 : Real time clock error	Real time clock error	Repair the PC CPU unit by replacing the component.
0271 : Check date and time settings	Check the date and time with BIOS Setup.	Run BIOS Setup to set the date and time. If this error is persistent, CMOS (RTC) may be defective or the battery may be dying.

Table 8.1. BIOS Error List ***< 2 / 2 >***

Error message	Description	Action to take
0280 : Previous boot incomplete - Default configuration used	The last boot failed to terminate normally. Factory defaults are loaded.	A power shutdown or reset during a boot may cause this error upon the next boot. Run BIOS Setup to check settings. Avoid a power shutdown or reset during a boot.
02B0 : Diskette drive A error	Floppy disk A error	Check the connection cable for engagement. If it has no problem, something may be wrong with the PC CPU unit.
02B2 : Incorrect Drive A - run SETUP	The type of drive A is invalid. Use BIOS Setup.	Run BIOS Setup to set the drive type correctly.
02D0 : System cache error - Cache disabled	System cache error. The cache cannot be used.	Repair the PC CPU unit by replacing the component.
02F5 : DMA Test Failed	The DMA test terminated abnormally.	Repair the PC CPU unit by replacing the component.
Beep with no error message on the screen		There may be a problem with memory or ROM. Repair the PC CPU unit by replacing the component.

9. Appendix
Memory Map

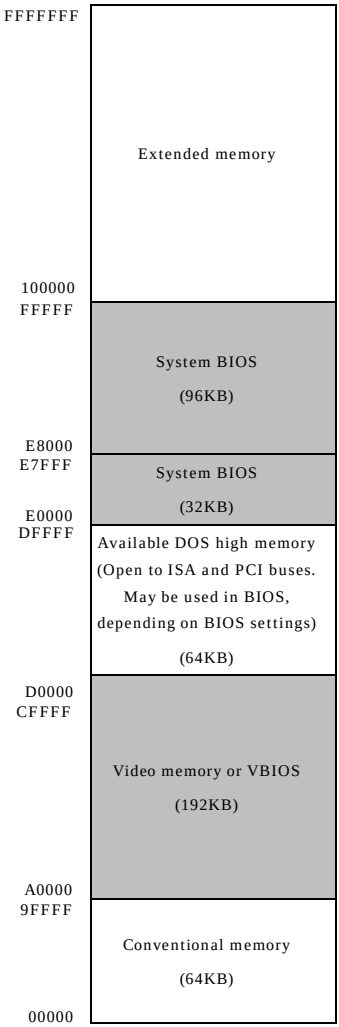


Figure 9.1. Memory Map

I/O Port Addresses

Table 9.1. I/O Port Addresses

Address	Size	Remarks
0000 - 000F	16 bytes	DMA controller
0020 - 0021	2 bytes	PIC interrupt controller
002E - 002F	2 bytes	Super I/O configuration register
0040 - 0043	4 bytes	System timer 1
0048 - 004B	4 bytes	System timer 2
0060	1 byte	Keyboard controller
0061	1 byte	NMI, speaker controller
0064	1 byte	Keyboard controller
0070 - 0073	4 bytes	RTC real time clock
0080 - 008F	16 bytes	DMA page register
00A0 - 00A1	2 bytes	Interrupt controller 2
00B2 - 00B3	2 bytes	Reserved (APM)
00C0 - 00DE	31 bytes	DMA controller 2
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 (Audio)
0228 - 022F	8 bytes	LPT3
0278 - 027F	8 bytes	LPT2
02E8 - 02EF	8 bytes	COM4
02F8 - 02FF	8 bytes	COM2
0330 - 0331	2 bytes	Reserved (MIDI)
0376 - 0377	2 bytes	Secondary IDE
0120 - 0127	8 bytes	Reserved (Audio)
0274 - 0277	4 bytes	Reserved (ISA PnP)
0290 - 029F	16 bytes	Hardware monitor
0378 - 037F	8 bytes	LPT1
0388 - 038D	6 bytes	Reserved (FM synthesizer)
03B0 - 03BB	12 bytes	Video (Monochrome)
03C0 - 03DF	32 bytes	Video (VGA)
03E8 - 03EF	8 bytes	COM3
03F0 - 03F5, 03F7	8 bytes	Floppy disk controller
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)
LPT n + 400h	8 bytes	ECP port, LPT n base address + 400h
0CF8 - 0CFF	4 bytes	PCI configuration register
0CF9	1 byte	Turbo and reset control register
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 Levels

Table 9.2. Hardware Interrupt Levels (Factory Defaults)

Type	8259	Priority	Description	Vector
NMI		Top	-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	”	|	Unused (Available to user)	72H
IRQ11	”	|	PCI device	73H
IRQ12	”	|	PS/2 mouse	74H
IRQ13	”	|	Coprocessor	75H
IRQ14	”	|	Hard disk	76H
IRQ15	”	|	System reserved	77H
IRQ3	MASTER	|	Serial port 2 (COM2)	0BH
IRQ4	”	|	Serial port 1 (COM1)	0CH
IRQ5	”	|	Unused (Available to user)	0DH
IRQ6	”	↓	Floppy disk	0EH
IRQ7	”	Bottom	Parallel port (LPT1)	0FH

10. Options

Serial Conversion Cable

- PPC-SCC-01 — 36-pin half-pitch to 9-pin D-SUB conversion cable (50cm in cable length)

Hard Disk Unit

- PPC-HDD(MS) — Hard disk unit
- PPC-HBR-01 — Hard disk unit shock-proof fixing brackets

CD-ROM drive and connection cable

- IPC-CDD-02 — CD-ROM/DVD-ROM drive (bundled with cable 40cm) *1

  *1 : When connecting with a personal computer CPU main part and installing OS in CF Card, bundled cable cannot be used. Please purchase an exclusive cable (PPC-CDC-01) separately.

- PPC-CDC-01 — CD-ROM DRIVE CABLE (40cm in cable length) *2

  *2 : When OS is installed in CF Card of a personal computer CPU main part, it is required for connection with CD-ROM/DVD-ROM drive [IPC-CDD-02].

Connector Terminal

- PPC-COT-01 — Connector Terminal (bundled with cable 1m) *3

  *3 : Convert the serial, parallel, and USB interfaces in the extension interface (EX.I/F) to the PC standard connectors.

- PPC-DINAD-01 — Adapter to install PPC-COT-01 on DIN rail

CF card

- CF-1GB-R — Compact frash 1GB(FIX DISK spec)
- CF-2GB-R — Compact frash 2GB(FIX DISK spec)
- CF-4GB-R — Compact frash 4GB(FIX DISK spec)
- CF-8GB-R — Compact frash 8GB(FIX DISK spec)

TFT color liquid-crystal display

- IPC-DT/S61VT-DC1 — (6.5inch 640 x 480dots, 12VDC, Panel mounted type)
- IPC-DT/S65VT-DC1 — (6.5inch 640 x 480dots, 12VDC, Embedded type)
- IPC-DT/M61VT-DC1 — (10.4inch 640 x 480dots, 12VDC, Panel mounted type)
- IPC-DT/M61VT-AC0 — (10.4inch 640 x 480dots, Panel mounted type)
- IPC-DT/M65VT-DC1 — (10.4inch 640 x 480dots, 12VDC, Embedded type)
- IPC-DT/L61SVT-DC1 — (12.1inch 800 x 600dots, 12VDC, Panel mounted type)
- IPC-DT/L61SVT-AC0 — (12.1inch 800 x 600dots, Panel mounted type)
- IPC-DT/L65SVT-DC1 — (12.1inch 800 x 600dots, 12VDC, Embedded type)

- IPC-DT/H61XT-DC1 (15inch 1024 x 768dots, 12VDC, Panel mounted type)
- IPC-DT/H61XT-AC0 (15inch 1024 x 768dots, Panel mounted type)
- IPC-DT/H65XT-DC1 (15inch 1024 x 768dots, 12VDC, Embedded type)

Touch-panel cable for an analog RGB display

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

Manuals

- PPC-CPU852(MS)-MJ Japanese version of the User's Manual Set
  - PC CPU unit User's Manual
  - Bus Interface Driver User's Manual

11.PC CPU Related Manuals

- MELSEC-Q PC CPU unit, Bus Interface Driver Manual

  Japanese version : PPC-CPU852(MS)-MJ, English version : PPC-CPU852(MS)-MU.

- Hard Disk Unit Manual

  Bundled with the PPC-HDD(MS)

- Silicon Disk Unit Manual

  Bundled with the PPC-SDD(MS) Series

- Connector Terminal Manual

  Bundled with the PPC-COT-01

- CD-ROM/DVD-ROM Drive Manual

  Bundled with the IPC-CDD-02

- Manual for Hard Disk Unit Shock-proof Fixing Brackets

  Bundled with the PPC-HBR-01

12. Recommended Third-Party Products

Keyboard/Mouse shared cable

- KB-PSY02K3 PS/2 splitter manufactured by SANWA SUPPLY

  This cable converts the keyboard/mouse connector on this product to the different connectors for the keyboard and the mouse.

USB FD drive

- USB-FDX4BK USB FD drive manufactured by I.O DATA DEVICE Inc.

PPC-CPU852(MS)-512
User's Manual

PPC-CPU852(MS)-MU

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