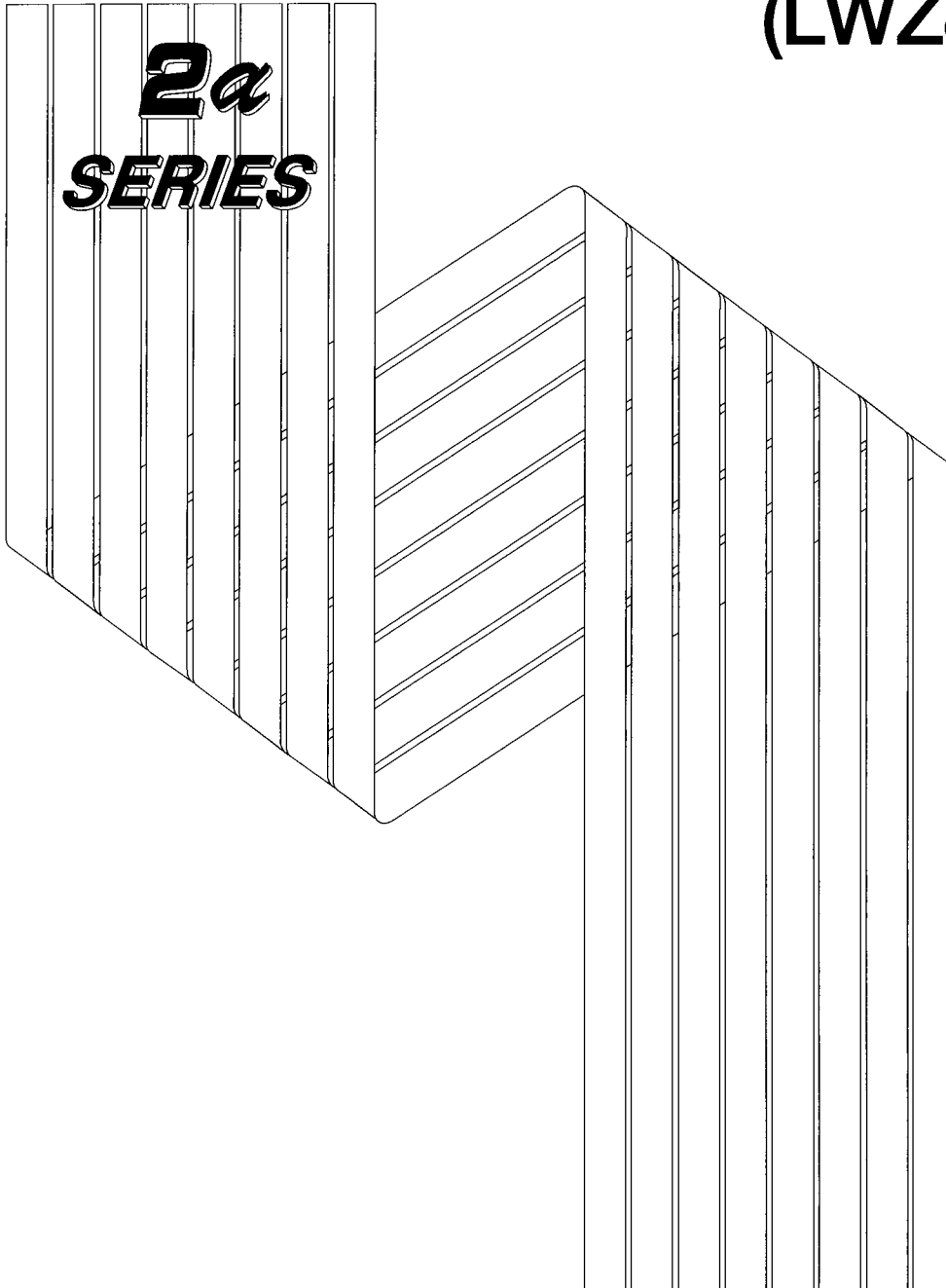


HARDWARE MANUAL  
OPTION

# OPTION ADAPTER (LWZ800)



**HITACHI**

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IC-IC-ST (FL-MW20)

## SAFETY PRECAUTIONS

Be sure to carefully read this manual and any other attached documents before installing, operating, or performing maintenance/inspection: Use the module properly. Thoroughly read the knowledge on instrument, safety information and any other precautions before use. Be sure to hand this manual to the ultimate maintenance representative.

This manual uses the ranks of safety precautions: DANGER and CAUTION.



DANGER

: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



CAUTION


: Indicates a potentially hazardous situation which, if not handled correctly, may possibly result in minor to moderate injury, or only damage to the product.

Note that even an item listed in  may lead to a serious accident in some cases.


Be sure to observe the following since they are all important.

The following shows the explanation of prohibition and necessity icons:



: Indicates prohibition (must not be done). For example,  indicates prohibition of disassembly.



: Indicates necessity (always must be done). For example,  shows the necessity of grounding.



## DANGER

- Configure an emergency stop circuit, interlock circuit, etc. outside the programmable controller. If the programmable controller is faulty, the equipment may be damaged or an accident could occur.
- Danger of electric shock due to high voltage. Be sure to turn power off when removing/reattaching the module or disconnecting/reconnecting cables. If you remove/reattach or disconnect/reconnect cables with power turned on and touch the power terminal by mistake, it may cause electric shock. Also, short-circuit or noise could damage the equipment.
- Be sure to turn power off before wiring the terminal board. Wiring with power turned on could result in electric shock.
- Electric shock could result in death, burns, or noise which could cause the system to malfunction. Always ground the line ground (LG), frame ground (FG) and shield wire (SHD).



## CAUTION

- High temperatures could cause the equipment to be faulty. Electromagnetic interference from adjacent equipment could cause the equipment to malfunction. Provide the specified spaces between the case and programmable controller, and between programmable controllers, to allow heat to dissipate and reduce electromagnetic interference.
- After mounting, measure the temperature near the programmable controller before trial run, and make sure that the temperature is within the specifications. If the specified space cannot be provided or the temperature is too high, mount a cooling fan for forced cooling.
- High temperatures could cause the equipment to be faulty. Fix the mount base on a vertical plane. If the mount base is secured on a horizontal plane, ventilation will be poor, and the temperature rise could cause a fault or the components to deteriorate.
- Static electricity could damage the module. Discharge static electricity from your body before setting various switches, connecting/disconnecting cables, unplugging/plugging in connectors, etc.
- Module could be damaged. Take care with the following when installing the module or removing it:
  - Before plugging the module into the mount base or the connector of this option adapter, make sure that the connector pins are not bent or broken, that they are lined up straight and that no dust adheres to them.
  - Move the module in parallel along with the vertical plane of the mount base or this option adapter.  
If the module is unplugged or re-plugged from/into the connector while it is tilted, the connector pins could be bent or the connector could be damaged.



## REQUIREMENT

- Isolate the mount base from case, and when isolating the mount base, do not remove the insulating sheet provided with the mount base.
- LG is a ground terminal for power noise, and FG and SHD are ground terminals for line noise in remote I/O, communication module, etc. To prevent their interference with each other, ground LG and FG separately.



## PROHIBITION

Do not disassemble the module. Doing so could damage the internal components. If the module is faulty, replace the entire module.

## WARRANTY AND SERVICING

Unless a special warranty contract has been arranged, the following warranty is applicable to this product.

### 1. Warranty period and scope

#### Warranty period

The warranty period for this product is for one year after the product has been delivered to the specified delivery site.

#### Scope

If a malfunction should occur during the above warranty period while using this product under normal product specification conditions as described in this manual, please deliver the malfunctioning part of the product to the dealer or Hitachi Engineering & Services Co., Ltd. The malfunctioning part will be replaced or repaired free of charge. If the malfunctioning is shipped, however, the shipment charge and packaging expenses must be paid for by the customer.

This warranty is not applicable if any of the following are true.

- The malfunction was caused by handling or use of the product in a manner not specified in the product specifications.
- The malfunction was caused by a unit other than that which was delivered.
- The malfunction was caused by modifications or repairs made by a vendor other than the vendor that delivered the unit.
- The malfunction was caused by a relay or other consumable which has passed the end of its service life.
- The malfunction was caused by a disaster, natural or otherwise, for which the vendor is not responsible.

The warranty mentioned here means the warranty for the individual product that is delivered. Therefore, we cannot be held responsible for any losses or lost profits that result from the operation of this product or from malfunctions of this product. This warranty is valid only in Japan and is not transferable.

### 2. Range of services

The price of the delivered product does not include on-site servicing fees by engineers. Extra fees will be charged for the following:

- Instruction for installation and adjustments, and witnessing trial operations.
- Inspections, maintenance and adjustments.
- Technical instruction, technical training and training schools.
- Examinations and repairs after the warranty period is concluded.
- Even if the warranty is valid, examination of malfunctions that are caused by reasons outside the above warranty scope.

## PREFACE

Thank you for purchasing the option adapter module.

This “hardware manual – option adapter” explains how to handle the option adapter. Thoroughly read this manual; use the option adapter properly.

Using this conversion module (option adapter), you can mount the S10mini or S10V option module (except for some models) on S10/2 $\alpha$  series CPU mount base. Refer to “2.3 Option Adapter Combinable Range” for whether the S10mini or S10V option module can be mounted.

<Notes on calculations of storage capacity>

- In case of  $2^n$  calculation value (memory capacity/required capacity, file capacity/required capacity, etc.):

1 kB (kilobytes) = Calculation value of 1,024 bytes

1 MB (megabytes) = Calculation value of 1,048,576 bytes

1 GB (gigabytes) = Calculation value of 1,073,741,824 bytes

- In case of  $10^n$  calculation value (disc capacity, etc.):

1 kB (kilobytes) = Calculation value of 1,000 bytes

1 MB (megabytes) = Calculation value of  $1,000^2$  bytes

1 GB (gigabytes) = Calculation value of  $1,000^3$  bytes

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# 1 BEFORE USE

# 1 BEFORE USE

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## 1.1 Environment for Use

Use this product in the range of environment shown in Table 1-1.

Table 1-1 Usable Environment

Item		Specifications
Temperature	For operation	0~55℃
	For storage	-20~70℃
Humidity	For operation	30~90%RH
	For storage	10~90%RH
Vibration resistance		5.8m/s <sup>2</sup>
Impact resistance		98m/s <sup>2</sup>
Atmosphere for use		Dust 0.1 mg/m <sup>3</sup> or less (no corrosive gas)

## 1.2 Wiring Grounds

Wire the grounds using the following procedure:

1. Connect the LG of power line to board ground, and the FG terminals of CPU and option module to PC ground. The FG terminal of power module is connected to the FG on mount base inside the module so do not connect the FG terminal and LG terminal.
2. Separate the board ground and PC ground.
3. Isolate the PC ground from board.

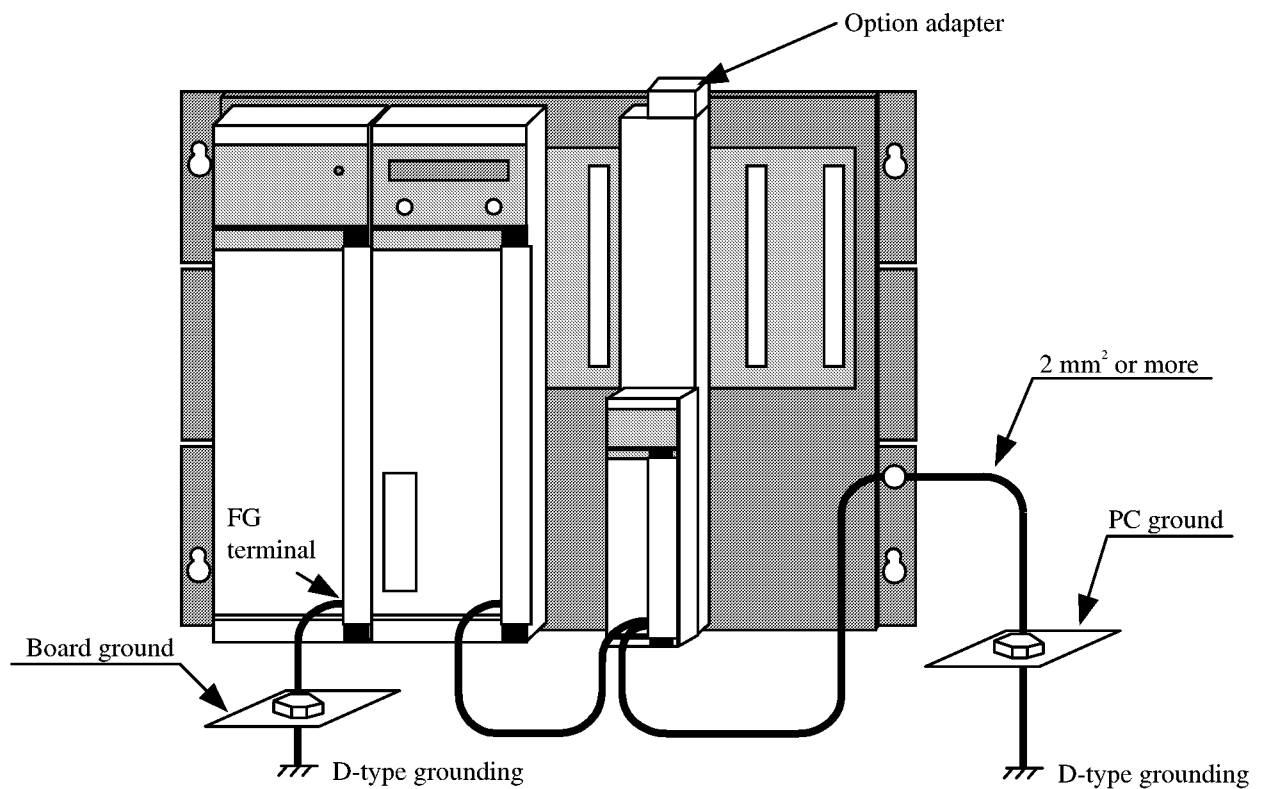


Fig. 1-1 Wiring Ground

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## **2 SPECIFICATIONS**

## 2 SPECIFICATIONS

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### 2.1 Applications

This product is a conversion module (option adapter) used to mount the S10mini or S10V option module on S10/2 $\alpha$  series CPU mount base.

Using this conversion module (option adapter), you can mount the S10mini or S10V option module (except for some models) on S10/2 $\alpha$  series CPU mount base. You can also use this option adapter by mixing it with the option module of conventional S10/2 $\alpha$  series.

### 2.2 Specifications

Table 2-1 shows the specifications of option adapter.

Table 2-1 Specifications of Option Adapter

Item	Specification
Module model	LWZ800
Number of mountable adapters in 8-slot CPU mount base	Up to 4 (only in odd slots)
Number of mountable adapters in 4-slot CPU mount base	Up to 2 (only in odd slots)
Number of mountable S10mini and S10V option modules to option adapter	1



### 2.3 Option Adapter Combinable Range

The option adapter can be combined with the mount bases and option modules shown in Tables 2-2 through 2-6. Refer to each manual for how to use individual modules.


 CAUTION
Be sure to combine the option adapter with the modules shown in this section: If the option adapter is combined with a module other than those shown in this section, it could malfunction.

Table 2-2 Combinable Mount Bases

Product name	Model	Remarks
8-slot CPU mount base	HPC-1000	Mountable only in odd slots
4-slot CPU mount base	HPC-1002	

Table 2-3 Combinable Power Modules

Product name	Model
100V AC power supply	LWV000
100V AC/DC power supply	LWV010
24 V DC power supply	LWV100

Table 2-4 Combinable CPU Modules

Product name	Model	Remarks
2 $\alpha$ CPU module	LWP000	Cannot be combined with LWP040
2 $\alpha$ H CPU module	LWP070	
2 $\alpha$ Hf CPU module	LWP075	

## 2 SPECIFICATIONS

Table 2-5 Combinable S10•Option Modules

Product name	Model
Expanded memory	LWM413
	LWM414
	LWM423
	LWM424
	LWM000
	LWM001
	LWM002
	LWM003
LWM004	
Link between CPUs	LWE020
High-speed RI/O	LWE100
OD.RING	LWE500
ET link	LWE400
ET.NET	LWE550
J.NET	LWE580
RS-232C	LWE450
External device link	LWE046
PSE link	LWE040
F link	LWE480
Parallel interface	LWZ400
Optical adapter	LWZ440

Table 2-6 Combinable S10mini and S10V Option Modules

Product name	S10mini model	S10V/S10mini common use model
FL.NET	LQE000	LQE500
OD.RING	LQE010	LQE510
	LQE015	LQE515
ET.NET	LQE020	LQE520
SV.LINK	LQE021	LQE521
SD.LINK	LQE030	LQE530
J.NET	LQE040	LQE540
J.NET-INT	LQE045	LQE545
IR.LINK	LQE046	LQE546
Link between CPUs	LQE050	LQE550
RS-232C	LQE160	LQE560
RS-422	LQE165	LQE565
D.NET	LQE170	LQE570
	LQE175	LQE575

## 2.4 Restrictions in Mounting

### 2.4.1 Restriction in CPU module function conversion number

Depending on the CPU to be combined, the total of option module function conversion numbers is restricted; Refer to “2.4.2 Restriction in mounting option modules” for function conversion number of each option module.

Table 2-7 Restriction in CPU Module Function Conversion Number

Product name	Model	Total of function conversion numbers
2 $\alpha$ CPU module	LWP000	8
2 $\alpha$ H CPU module	LWP070	14
2 $\alpha$ Hf CPU module	LWP075	13

## 2.4.2 Restriction in mounting option modules

Table 2-8 Restriction in Mounting (1/2)

Product name	Module model		Number of mountable modules per mount base	Function conversion number	Restriction in mounting slots	Compatibility with other option modules
	S10 α	S10mini/S10V common use				
Expanded memory	LWM413	—	When combined with LWP000: 4 MB max. When combined with LWP070: 3 MB max. When combined with LWP075: 2 MB max.	2 (1) *	None	OS of CPU module must be Ver. 3.0, Rev. 0.1 or higher.
	LWM414	—		2 (1) *		
	LWM423	—		2 (1) *		
	LWM424	—		2 (1) *		
	LWM000	—		1		
	LWM001	—		1		
	LWM002	—		1		
	LWM003	—		1		
	LWM004	—		2		
	LWM004B	—		3 (2) *		
High-speed RI/O	LWE100	—	Up to 4	1	None	OS of CPU module must be Ver. 3.0, Rev. 0.1 or higher. Cannot be mounted when LWE450 is set to channel 2, 3.
FL.NET	—	LQE000	Up to 2	1	In odd slots, from left	
OD.RING(4km ver.) OD.RING(1km ver.)	LWE500	—	Up to 2 in total	1	In odd slots, from left	
	—	LQE010		1		
	—	LQE015		1		
	—	LQE030		1		
SD.LINK	LWE400	—	Up to 2	1	None	
ET.LINK	—	—	Up to 2	1	In odd slots, from left	If LQE021 or LQE521 is mounted, only one can be mounted.
ET.NET	LWE550	LQE020	Up to 2	1	In odd slots, from left	Cannot be mounted if any two of LQE020, LQE520 and LWE550 are mounted.
SV.LINK	—	LQE021	1	1	In odd slots, from left	If LQE046 or LQE546 is mounted, only one can be mounted.
J.NET	LWE580	—	Up to 2 in total	1	In odd slots, from left	Cannot be mounted if any two of LWE580, LQE040, LQE540, LQE045 and LQE545 are mounted.
	—	LQE040		1		
J.NET-INT	—	LQE045	1	1		
IR.LINK	—	LQE046	1	1		
Optical adapter	LWZ440	—	1	0	None	

(\*) If the header address is set to other than H100000, the function conversion number will appear in parentheses.

Table 2-8 Restriction in Mounting (2/2)

Product name	Module model			Number of mountable modules per mount base	Function conversion number	Restriction in mounting slots	Compatibility with other option modules
	S10 α	S10mini	S10mini/S10V common use				
Link between CPUs	LWE020	—	—	Up to 2	1	Mount from left, in even slot on left and in odd slot on right.	If the module revision is “C” or lower, be sure to observe the restriction shown in Table 2-1.
	—	LQE050	LQE550		1	In odd slots, from left	
RS-232C	LWE450	—	—	Up to 2 in total	2	None	• If set to channel 2, 3, it cannot be mounted in the same unit with LWE480 or LWE100.
	—	LQE160	LQE560		2	In odd slots, from left	
External device link	LWE046	—	—	Up to 2 in total	1	None	Cannot be mounted in the same unit with LWE480.
	—	LQE165	LQE565		2	In odd slots, from left	
PSE link	LWE040	—	—	1	None	Cannot be mounted in the same unit with LWE480.	
F link	LWE480	—	—	Up to 2	1	In odd slots, from left	<ul style="list-style-type: none"> <li>• Cannot be mounted in the same unit with LWE040 (can be mounted in Ver. 3.0, Rev. 0.0 or higher unit if it is sub-link).</li> <li>• Cannot be mounted if LWE450 is set to channel 2, 3.</li> </ul>
	—	—	—		0	In odd slot, from left	
Parallel interface	LWZ400	—	—	Up to 4 in total	1	In odd slots, from left	
	—	LQE170	LQE570		1	In odd slots, from left	
D.NET	—	LQE175	LQE575	Up to 4 in total	1	In odd slots, from left	
	—	—	—		1	In odd slots, from left	

When mounting LWE020 with module revision “C” or lower (to be referred to as LWE020 hereafter) and the modules shown below together, mount LWE020 on the right of those modules shown below. Especially when additionally mounting the modules shown below on the existing mount base, be sure to change the mounted slots so that LWE020 is on the right of the modules shown below.

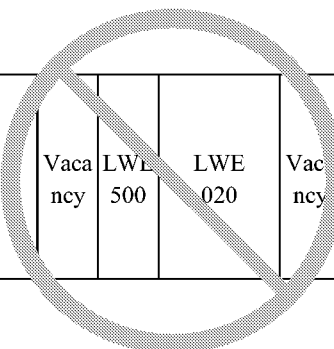
<Object modules>

- LWE500            · LQE000            · LQE500
- LWE550            · LQE010            · LQE510
- LWE580            · LQE015            · LQE515
- LWE480            · LQE020            · LQE520
- LWZ400            · LQE021            · LQE521
- LQE030            · LQE530
- LQE040            · LQE540
- LQE045            · LQE545
- LQE046            · LQE546
- LQE050            · LQE550

Power supply	CPU	Vacancy	LWE500	Vacancy	LQE550	LWE020	LWE450	LWM414
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Example 1: LWE020 is mounted on the right of the object modules.

Power supply	CPU	Vacancy	LWE500	LWE020	Vacancy	LQE550	LWE450	LWM414
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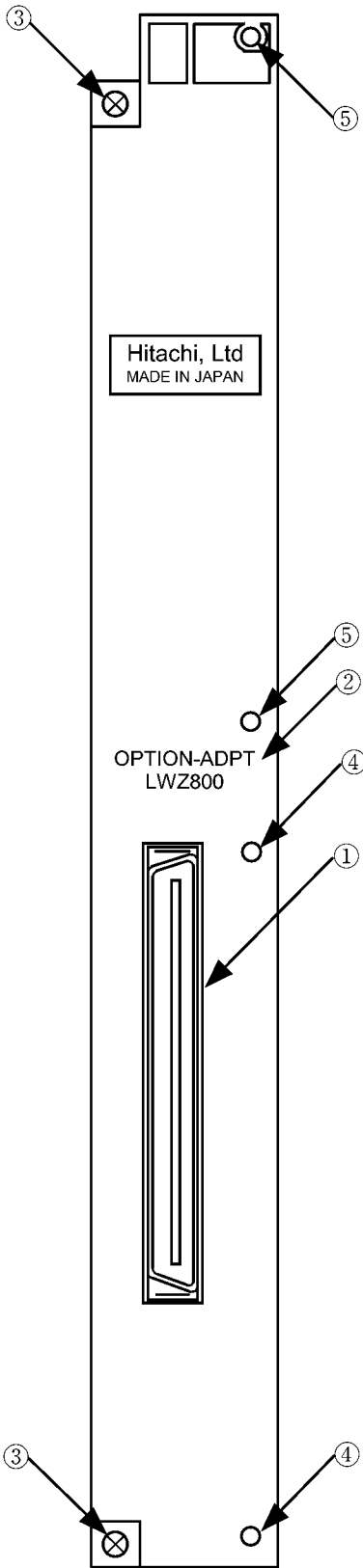
Example 2: LWE020 is mounted on the left of the object modules.

Fig. 2-1 Caution when mounting LWE020 together with other modules

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# 3 Names of Parts and Functions

3.1 Names of Parts and Functions



- ① S10mini option module mounting connector  
Mount an S10mini option module in this connector.  
Refer to “2.3 Option Adapter Combinable Range” for mountable modules.
- ② Function and model indications
- ③ Screws holding option adapter  
Use these screws to fix the option adapter to mount base.
- ④ Screw holes for securing S10mini option module  
Use these screw holes to secure the S10mini option module.
- ⑤ Unused screw holes  
These screw holes are not used for option adapter.

Fig. 3-1 Appearance of Option Adapter



## 4 Guidelines for Usage

### 4.1 Mounting Option Adapter

#### 4.1.1 Option adapter attachment procedure

1. Cut off power supply to the power module.
2. Mount an option adapter in an odd slot in mount base, and secure the option adapter using the screws.
3. Mount an S10mini option module in the mounting slot, and secure it using the screws.
4. When mounting the option adapter, be sure to mount the S10mini option module.

#### 4.1.2 Option adapter removal procedure

1. Cut off power supply to the power module.
2. Loosen the screws and remove the S10mini option module.
3. Loosen the screws holding the option adapter, and then remove the option adapter.

# APPENDIX

### A.1 Trouble report

Your company name			
Person in charge		Date and time of occurrence	
Contact address and numbers	Address		
	Phone		
	Fax		
Model of defective module		CPU model	
OS Ver. Rev.	Program name:		Ver. Rev.
Support program	Program name:		Ver. Rev.
Symptom of defect			
Connection load	Type		
	Model		
	Cabling status		
System configuration and switch setting			
Space for correspondence			