PC-HELPER

PCI Bus Expansion Chassis
Short size, 4-Slots, Silver

ECH-PCI-CE-H4D

User's Manual

CONTEC CO.,LTD.

Check Your Package

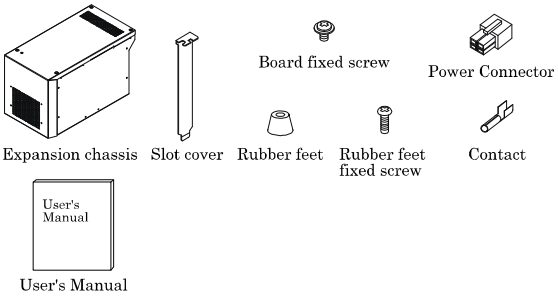
Thank you for purchasing the CONTEC product.

The product consists of the items listed below.

Check, with the following list, that your package is complete. If you discover damaged or missing items, contact your retailer

Product Configuration List

- Expansion chassis…1
  [ECH-PCI-CE-H4D]
- This User's Manual (this booklet) …1
- Slot cover …3
- Board fixed screw …4
- Rubber feet …4
- Rubber feet fixed screw …4
- Power Connector …1
- Contact…4



⚠ CAUTION

For operating this product, power supply (12 - 24VDC) is required separately.
For more details on the power supply, refer to "Chapter2 Step1 - DC Power Input Connector".

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Table of Contents

1 Before Using the Product

This chapter provides information you should know before using the product.

About the Chassis

This product is an expansion chassis that adds PCI bus slots to a PC. It can add PCI bus slots by connecting an optional expansion adapter (EAD-CE-LPE, EAD-CE-EC). The board that can be mounted is short-type [176.5 (L) x 107 (H) mm] PCI bus boards. It is easy to install the product within the panel or device using DIN rail mounting jigs.

Features

- PCI bus (5V/32bit 33MHz) slots can be added to your PC.

Four PCI bus (5V/32bit 33MHz) slots can be added.
This expansion chassis is connected to a PC using an optional expansion adapter.

- Short-type PCI bus boards can be connected.

You can connect four short-type [176.5 (L) x 107 (H) mm] PCI bus boards.

- The product can install within the panel or the device

DIN rail mounting mechanism is equipped as standard with the product, making it easy to install the product within the panel or the device.

- Steel chassis with cooling fan.

Steel chassis with cooling fan suitable for use in fields

- A wide range of power supplies (10.8 - 31.2VDC) supported

As the product supports a wide range of power (10.8 - 31.2VDC), it can be used in a variety of power environments.

Expansion adapter (Option)

Expansion Adapter for Express Card Slot : EAD-CE-EC
Expansion Adapter for PCI Express Slot : EAD-CE-LPE

Check the CONTEC's Web site for more information on these expansion adapters.

Combinations of Expansion Adapters and Expansion Chassis

The expansion adapters and expansion chassis can be used in the following combinations:

Expansion adapter	Expansion chassis ECH-PCI-CE								
	-H2B	-H2C	-F2B	-H4B	-F4B	-H4A	-H4D	-H7A	-H13A
EAD-CE-EC	O	O	O	O	O	O	O	x	x
EAD-CE-LPE	O	O	O	O	O	O	O	O	O

Expansion Chassis


ECH-PCI-CE-H2B


ECH-PCI-CE-H2C


ECH-PCI-CE-F2B


ECH-PCI-CE-H4B


ECH-PCI-CE-F4B


ECH-PCI-CE-H4A


ECH-PCI-CE-H4D


ECH-PCI-CE-H7A


ECH-PCI-CE-H13A

Expansion Adapter


EAD-CE-EC


EAD-CE-LPE

Accessory (Option)

PCI Express Cable (1m) : CB-CE-1
PCI Express Cable (3m) : CB-CE-3

Restrictions

This product is used in a combination with the optional expansion adapter. The following restrictions apply to the situation when the expansion adapter is connected to the expansion chassis.

This product has restrictions on the types of PCs and boards that can be used.
Be sure to check the following restrictions before use.

< Restrictions of PC>

This product uses the PCI-to-PCI Bridge to extend the bus.
The PCI boards plugged in PCI slots in this product are recognized if the PCI-to-PCI bridge is recognized by the BIOS in the PC used. Ask the PC vendor for whether the BIOS recognizes the PCI-to-PCI bridge.

< Restrictions on transfer rate >

When the expansion chassis accommodates a board that performs high-speed transfer such as bus mastering, the overall transfer rate may be lower than that of PCI bus slots in the main unit of a desktop PC.

This is caused by bus extension by the PCI-to-PCI Bridge.

The transfer rate may vary with the system configuration and the type of the PC.

< Restrictions of PCI board>

None of the following boards can be plugged into any expansion slot in this product.

- Video display board (VGA board)
- Board to connect a PCI bus expansion chassis
- Board explicitly stated not to be used with the PCI-to-PCI Bridge
- Some boards, even PCI-compliant ones, may not work depending on their specifications

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

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

⚠ DANGER

Do not use the product where it is exposed to flammable or corrosive gas. Doing so may result in an explosion, fire, electric shock, or failure.

⚠ CAUTION

- Do not plug or unplug any board into or from an expansion slot with the PC or this product powered.
  Doing so may result in a malfunction, overheating, or fault.
  Be sure to turn off the PC or this product and unplug their power cables before plugging or unplugging any expansion board.
- Do not plug or unplug the cable interconnecting the PC and the expansion chassis with the PC or this product powered.
- Do not turn on or off the power switch of this product with the PC powered. Doing so may result in a malfunction.
- The total current consumption by the boards installed in the expansion slots in this product must not exceed the maximum power capacity of its power supply.
  Failure to supply ample power to expansion boards could result in a malfunction, overheating, or fault.
- The external supply voltage or drive current must not exceed the rating.
- Do not connect any signal other than specified to the on-board connector.
  Doing so may result in a malfunction, overheating, fault, or damage.
- If a specific expansion slot is recommended for a board, plug the board into that slot. Failure to do so may result in a malfunction, overheating, fault, or damage.
- When plugging or unplugging the Power Connector, be sure to hold it by the connector itself.

- Since the expansion chassis is a precision device, do not store or use it where it is subject to shock or vibration. Also avoid any place where the chassis is exposed to direct sunlight, extremely high humidity, or much dust.
- Do not use or store the chassis where it is exposed to any chemical either directly or as vapor in the air.
- The chassis has ventilating slits to prevent it from overheating. Avoid using the chassis with the ventilating slits blocked or in an ill-ventilated place.
- Do not use the chassis near equipment generating a strong magnetic field or noise.
  Doing so may result in a malfunction, overheating, fault, or damage in the chassis, your PC, or both.
- It is very dangerous to use the chassis with water, liquid, or metal (conductive) chips left inside. Be careful not to let such foreign matters in the chassis.
- The specifications of this product are subject to change without notice for enhancement or quality improvement.
  Even when using the product continuously, be sure to read the manual and understand the contents.
- Do not modify this product.
  CONTEC will bear no responsibility for any problems, etc., resulting from modifying the product.
- Regardless of the foregoing statements, CONTEC is not liable for any damages whatsoever (including damages for loss of business profits) arising out of the use of or inability to use this CONTEC product or the information contained herein.

FCC PART 15 Class A Notice

NOTE

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

WARNING TO USER

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

Environment

Use this product in the following environment. If used in an unauthorized environment, the chassis may overheat, malfunction, or cause a failure.

Operating temperature

0 - 50°C

Humidity

20 - 80%RH (No condensation)

Corrosive gases

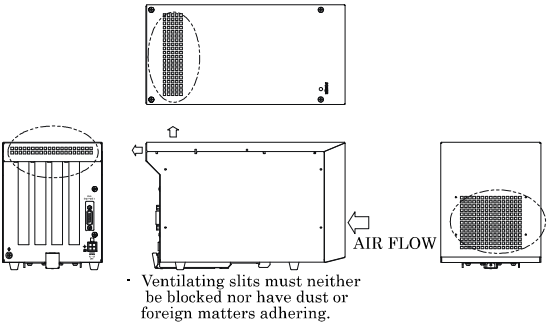
None

Floating dust particles

Not to be excessive

Inspection

Inspect the product periodically as follows to use it safely.



Storage

When storing this product, keep it in its original packing form.

(1) Wrap it in the packing material, and then put it in the box.

(2) Store the package at room temperature at a place free from direct sunlight, moisture, shock, vibration, magnetism, and static electricity.

Disposal

When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.

2 Setup

This chapter explains how to set up the chassis.

Refer to the user's manual for the expansion adapter EAD-CE-LPE, EAD-CE-EC as required.

What is Setup?

Setup means a series of steps to take before the product can be used.

Taking the following steps in this chapter sets up the ECH-PCI-CE-H2B.

Step 1 Preparation

Step 2 Setup the Hardware

Step 3 Installing the Expansion Board

Step 4 Connecting the Cable

Step 5 Installing the expansion adapter board

Step 6 Setup and Check

If setup fails to be performed correctly, refer to "Setup Troubleshooting".

Step 1 Preparation

Configuration image

The photo is of the ECH-PCI-CE-H4D

Figure 2.1. Configuration image

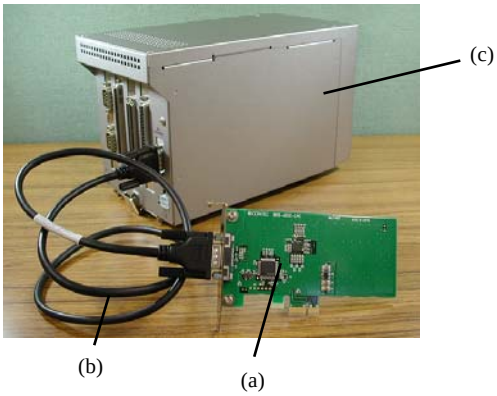
Items to be prepared

- PC
- Expansion adapter

  Expansion adapter card…(a),
  Connection Cable …(b)
- Expansion chassis

  This product(Chassis)…(c)

  Power Supply
- PCI board to be installed



Names of major parts

ECH-PCI-CE-H4D

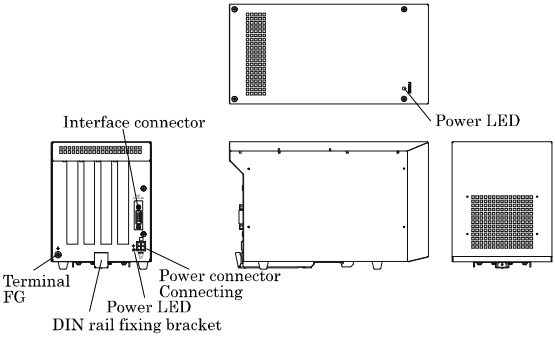
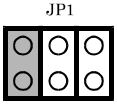


Figure 2.2. Names of major parts < ECH-PCI-CE-H4D >

Setting Jumper

The board mounted on the expansion chassis has a jumper. Usually, the jumper can be set to link the power systems. But this function is not supported with this product.



1 : Linked to the power of the PC

When the PC is turned on, the power of the expansion chassis also comes on.

2 : Linked to the power of the expansion chassis

When the power receptacle inside the expansion chassis is connected, the power of the chassis comes on.

3 : Not linked

When the power switch at the front of the expansion chassis is turned on, the power of the chassis comes on.

Figure 2.3. Setting Jumper

⚠ CAUTION

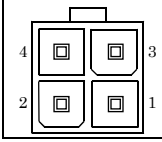
Do not remove BUS-PAC-PCI-CE or change its position.
It may result in malfunction, heat generation, failure, or breakage.

DC Power Input Connector: DC-IN

To supply the power, always use the power supply listed below.

Rated input voltage : 12 - 24VDC
Range of input voltage : 10.8 - 31.2VDC
Power capacity : 12V 10.0A or more, 24V 5A or more

Table 2.1. DC Power Connector

Connector type	9360-04P (mfd. by ALEX)	
	Pin No.	Signal name
	1	GND
	2	GND
	3	12 - 24V
	4	12 - 24V

Applicable connector on the connector side

Housing : 9357-04 (mfd. by ALEX) or 5557-04R (mfd. by MOLEX)
Contact : 4256T2-LF (AWG18-24) (mfd. by ALEX) or 5556 (AWG18-24) (mfd. by MOLEX)

Recommendation power supply

It is recommended to use the power supply of 120W or more.

DIN rail-connectable power supply is as follows

Maker	Model type	Power capacity	Power type
IDEC	PS5R-SG24	240W	DIN rail-connectable
TDK-Lambda	DLP180-24-1	180W	DIN rail-connectable

Rise time of power supply

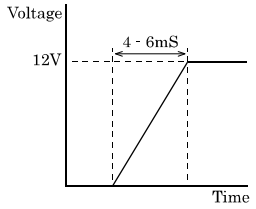


Figure 2.4. Graph of Rise Time of Power Supply

Step 2 Setting up the hardware

Attaching the FG

(1) Use screws to attach the FG.

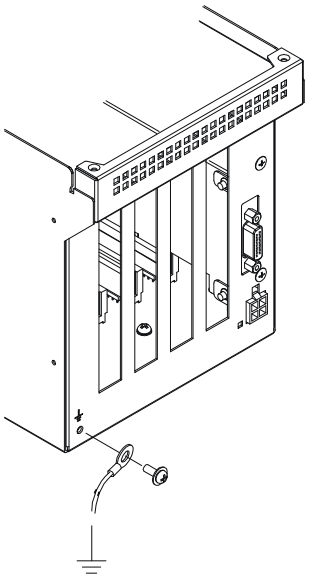


Figure 2.5. Attaching the FG

Step 3 Installing the Expansion Board

⚠ CAUTION

Before installing an expansion board on this product, be sure to turn off your PC or this product and unplug the AC power cables from wall outlets.

Follow the procedure below to install the expansion board on this product.

(1) Unplug the Power Connector and Connection Cable from this product.

(2) Remove four screws from the top panel.

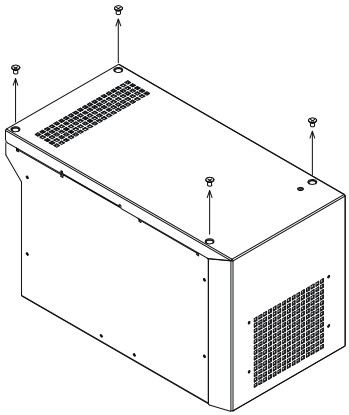


Figure 2.6. Removing the screws

(3) Remove the chassis cover by sliding it to the rear side (in the order of arrows 1 and 2).

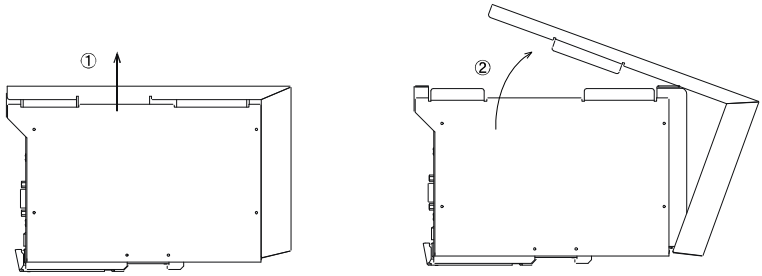


Figure 2.7. Removing the cover

(4) Removing the bundled attachment.

(5) Plug the expansion board into a PCI slot and fasten the brackets with the attached screw. Apply fasten the bundled attachment fittings with a screw.

Slot covers to unused slots and fasten them with screws.

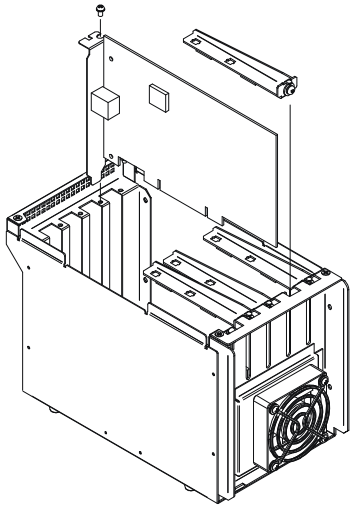


Figure 2.8. Installing the Expansion Board

(6) Put the chassis cover back in place and fasten it with the removed screws.

Step 4 Connecting the Cable

Connecting the connection cable to the Expansion Adapter

Refer to the user's manual for the expansion adapter EAD-CE-LPE, EAD-CE-EC to connect its connection cable to the expansion adapter.

Connecting the connection cable to this product

Connect the connector of the connection cable to the connector of this product.

Figure 2.9. Connecting the connection cable to this product

⚠ CAUTION

Do not plug the connection cable into any other connector as doing so can cause a fault.

Connecting the AC adapter

(1) Check that the power supply of an external power supply is turned off.

(2) Connect the Power Connector to this product.

Figure 2.10. Connecting the Power Connector of Power Supply

* This product has not Power Switch.

⚠ CAUTION

Do not connect the Power Connector to this product with external power supply powerd, or the expansion chassis may cause a fault.
Connect the Power Connector to this product first, then turned on the external power supply.

Turned off the Power Supply

(1) Please turned off the external power supply.

(2) Please confirm the led on the front panel and the top panel of expansion chassises is turned off.

(3) Please pull out the Power Connector from chassis.

⚠ CAUTION

Do not pull out the Power Connector from chassis when external power supply is still turnd on. This may cause product malfunction. Please pull out the Power Connector from the chassis after external power supply is turned off.

Step 5 Installing the expansion adapter board

Refer to the user's manual for the expansion adapter EAD-CE-LPE, EAD-CE-EC to install the expansion bus adapter on the PC.

Step 6 Setup and Check

Starting the system

This product is turned on and off in power supply.

Turning on the system

(1) Connect the Power Connector to this product.

(2) The External power supply is turned on.

(3) Make sure that the POWER LED on this product is on.

(4) The power supply of a PC is turned on.

Turning off the system

(1) The power supply of a PC is turned off.

(2) The external power supply is turned off.

(3) Pull out the Power Connector from chassis.

⚠ CAUTION

- Do not turn on or off this product with the PC main unit powered.
  Doing so cancels the detection of the bus adapter. When turning this product on back, restart the PC main unit.
- If you turn on the PC after turning it off, keep a time interval of at least 10 seconds in between. If the power OFF-to-ON interval is too short, the expansion chassis may fail to be turned on.

Setting up the hardware in Windows

At startup of Windows, the PCI-to-PCI Bridge used by this product are detected in sequence and identified automatically by the Windows standard driver.

After that, the PCI boards installed on this product are detected in sequence.

For setting up and checking the boards used on the expansion chassis, refer to their respective manuals.

Checking the hardware in Windows

You can use Device Manager to check whether this product has been identified in Windows. Device Manager shows “PCI standard PCI-to-PCI bridge” under “System devices”.

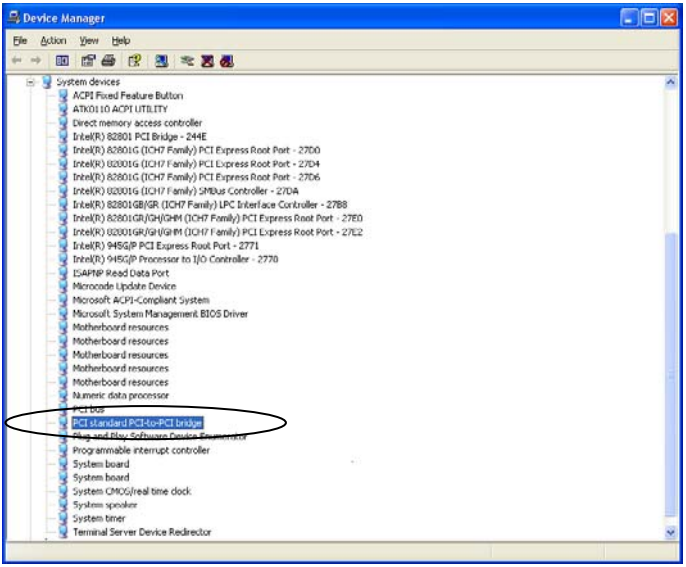


Figure 2.11. Sample screen shot of Device Manager

Setup Troubleshooting

Please confirm followings when the ECH-PCI-CE-H4D does not work.

Symptoms and Actions

The chassis won't be turned on.

a. Make sure that the Power Connector has been connected correctly.

b. Make sure that the power supplies of the PC or this product are on.

c. Make sure that you have followed the procedure in Chapter 2.

d. Even though the chassis is still not turned on, check whether it is turned on with no board installed. If the chassis is turned on with no board installed, check the total current consumption by the installed boards. The total current consumption must not exceed the power capacity of this product.

No PCI board on this product is detected.

e. Make sure that the expansion adapter has been installed correctly.

f. Make sure that the connection cable has been installed correctly. When connecting the connection cable to the main chassis, insert the connector until it clicks into place.

g. Make sure that the POWER LED on this product is turned on.

3 Connection and Installation

Installation Method

Desktop Installation

Using the rubber feet

(1) Use screws to attach the rubber feet fittings with a screw.
Do not tighten screws with excess force.

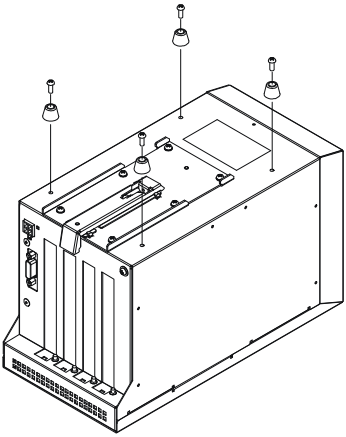


Figure 3.1. Mounting the rubber feet

⚠ CAUTION

The rubber feet may be damaged if screws are tightened with a torque greater than the excess torque that the rubber feet changes.

Mounting on a DIN Rail

Mounting procedure

(1) Mounting the two rubber feet by the side of the front panel.

(2) Hook the product from the upper part of the DIN rail, and press the lower part on to the DIN rail.

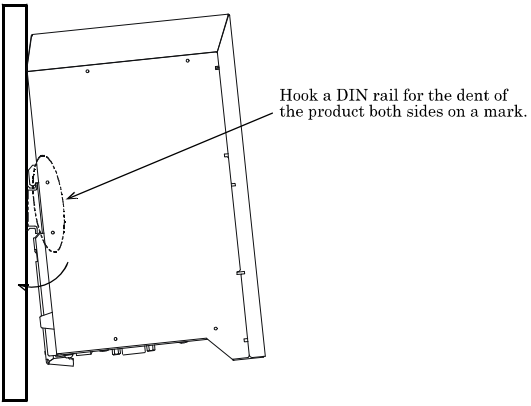


Figure 3.2. Mounting on a DIN Rail

Removal procedure

(1) Pull down the fixing hook of the unit to unlock it.

(2) With the fixing hook unlocked, pull the lower part of this unit toward you.

(3) By lifting this unit, you can easily remove it from the DIN rail.

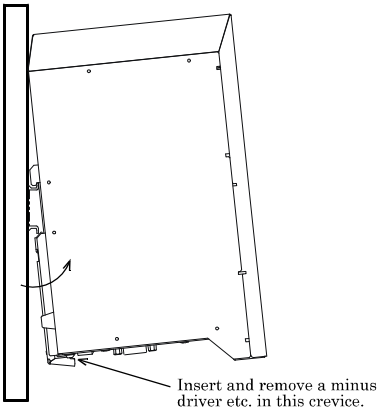
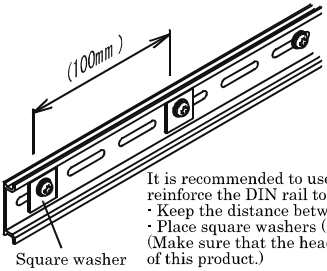


Figure 3.3. Removing the unit from the DIN rail



It is recommended to use the following methods in order to reinforce the DIN rail to which this product is connected.
- Keep the distance between screw positions short. (About 100mm)
- Place square washers (22-24mm) under the rail fixing screws. (Make sure that the heads of the screws do not touch the back of this product.)

Figure 3.4. Mounting on a DIN Rail Installation Metal Fittings

Installation Conditions

Installation orientation

It is possible to mount it in the orientations shown in the following figure. Other orientations would cause problems in usage, such as inadequate heat dissipation.

< Vertically installation (DIN rail fixation)> **< Desktop installation >**

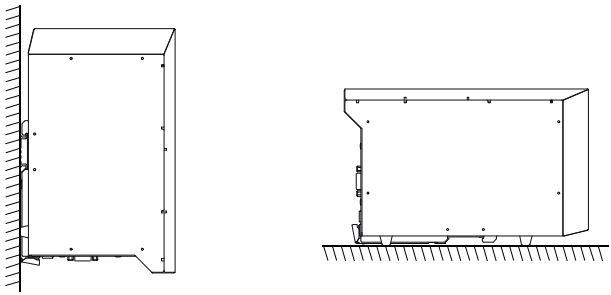


Figure 3.5. Installation Orientation

⚠ CAUTION

Be sure that the ambient temperature is within the range specified in the installation environment requirement by making space between the product and device that generates heat or exhaust air.

4 About Hardware

Hardware specification

Table 4.1. Specification

Item		ECH-PCI-CE-H4D
Compatible bus		PCI Local Bus Specification Rev2.3 (+5Vtype)
Address space		32bit memory address, I/O address
Interrupt level		INTA - INTD
Bus operating clock		33MHz (Max.)
Number of user-available slots		4 slots (short size)
Acceptable board sizes (mm)		176.5(L) x 107(H)
Power supply		
	Expansion slot supplied power (The output current must not exceed the value on the right.)	+5VDC 10A (Max.) +3.3VDC 4A (Max.) +12VDC 2A (Max.) -12VDC 0.6A (Max.)
	Rated input voltage	12 - 24VDC
	Range of input voltage	10.8-31.2VDC
	Power consumption	12V 10.0A (Max.), 24V 5.0A (Max.)
Outside dimensions (mm)		120.2(W) x 144(H) x 239.6(L) (without rubber feet)
Weight		1.74 kg

Outside dimensions of acceptable board (Max.)

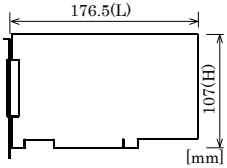


Table 4.2. Environmental specification

Item		Specification
Operating temperature		0 - 50ºC
Operating humidity		20 - 80%RH (No condensation)
Storage temperature		0 - 60ºC
Storage humidity		10 - 90%RH(No condensation)
Floating dust particles		Not to be excessive
Corrosive gases		None
Line-noise resistance	Line noise*1	AC line / ±2kV Signal line / ±1kV (IEC61000-4-4 Level 3,EN61000-4-4 Level 3)
	Static electricity resistance	Contact discharge / ±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2)
		Atmospheric discharge / ±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)
Vibration resistance	Sweep resistance*1*2	10 - 57Hz / semi-amplitude 0.075 mm, 57 - 150Hz/1.0G 40 min. each in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
Impact resistance*1*2		10G, half-sine shock for 11 ms in x, y, and z directions (JIS C60068-2-27-compliant, IEC60068-2-27-compliant)
Grounding		Class D grounding (previous class 3 grounding), SG-FG / continuity

*1: When PS5R-SG24 (manufactured by IDEC) is used for the DC power supply unit.

*2: The examination was done by 2.44kg of gross weight.

⚠ CAUTION

The power supply and cooling fan in this product is consumables, requiring replacement after use for a certain period of time. Although each of the parts should be replaced after use for the following period of time in principle, the life may be shortened depending on the operating environment. Keep in mind that the lives of the parts may be extremely shortened if they are used where it is either exposed to must dirt, metal chips or particles, or dust or affected by oil or corrosive gas.

- Power supply : About 5 years(in an office environment kept at a temperature of 25°C and a humidity of 60%)
- Fan : About 5 years (in an office environment kept at a temperature of 25°C and a humidity of 60%)
- Fan Filter : About 1 year (in an office environment kept at a temperature of 25°C and a humidity of 60%)

Physical Dimensions

⚠ CAUTION

- When using this chassis, keep it at least 20mm away from any object such as the wall for cooling purposes.
- Attaching the rubber feet to the chassis makes it 9mm taller.

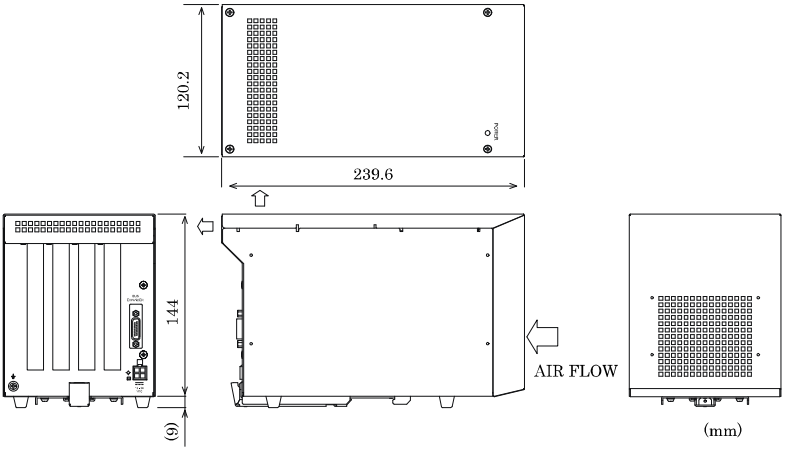


Figure 4.1. Outside Dimensions < ECH-PCI-CE-H4D >

ECH-PCI-CE-H4D

User's Manual

CONTEC CO., LTD.

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3-9-31, Himesato, Nishiyodogawa-ku, Osaka 555-0025, Japan
Japanese http://www.contec.co.jp/
English http://www.contec.com/
Chinese http://www.contec.com.cn/

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