Bus Expansion System

EXPANSION UNIT
BUS ADAPTER

An expansion system is used to expand the number of available PCI bus slots of either CONTEC industrial computers or standard PCs.
It is also useful in applications where the power consumption of add-on boards exceeds the power supply capacity of the host PC. An expansion system is used to join the expansion chassis and the host PC into one system.

+

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Product Lineup

We provide wide array of models to meet your desired bus specifications.

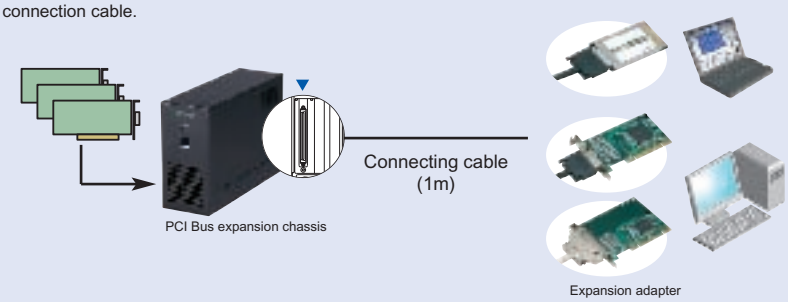
Bus Extension Type Expansion Adapter & Chassis

M-03

Standard Bus extension

This bus extension externally expands PCI bus and transmits signals directly between the expansion chassis and host PC. It is best suited for use in an environment where the measurement control is conducted in close proximity to the host PC.

* The expansion adapters to be inserted in the PC and expansion chassis are connected with a 1m-long connection cable.

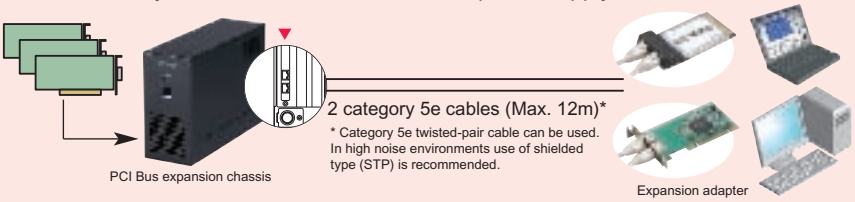


StarFabric-compliant Type Expansion Adapter & Chassis

M-07

StarFabric-compliant extension

With this style extension, you can conduct StarFabric-compliant high-speed serial transfer (2.5Gbps). The expansion adapters to be inserted into the PC and expansion chassis are connected using Category 5e cable creating easy wiring and installation. The included cable can be extended up to 12m, making it an optimal choice where measure / control is conducted at a distance from the host PC. PCI bus compliant, it allows you to construct a system without changing existing boards or software. The power supply of the expansion chassis can be controlled in synchronization with the host PC power supply.



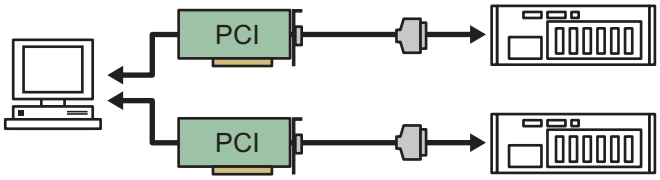
Caution:

Please note that the following expansion boards cannot be used inside an expansion chassis.

- Video boards
- Additional PCI bus expansion boards
- Boards with the disclaimer "Cannot be used with PCI-to-PCI Bridge"
- Please note that even when a board is compatible with PCI bus specifications, it may not operate due to specification limitations.

* For further details, please check the manual or visit our web site.

An expansion adapter is an adapter that connects a host PC to an expansion chassis for the purpose of extending high-speed signal transmission. It is not possible to link one expansion chassis to another expansion chassis due to resultant signal degradation. When using more than one expansion chassis, you must allocate an open slot to each chassis for a parallel connection.



Bus Expansion System

Bus Extension Type Expansion Adapter & Chassis

Expansion Adapter

Name	Type
EAD(LPCI)BE	For Low Profile PCI Bus slot
EAD(PCI)BE	For PCI Bus slot
EAD(CB)BE	For CardBus slot

PCI Bus Expansion Chassis

Name	Installation Type			Slots	Installable Board	
	Desktop	Rack Mount	Wall Mount		Long	Short
EAD(PCI)BE-H2B	○	—	—	2	×	○
EAD(PCI)BE-H4B	○	—	—	4	×	○
EAD(PCI)BE-F2B	○	—	—	2	○	○
EAD(PCI)BE-F4B	○	—	—	4	○	○
EAD(PCI)BE-H4A	○	○	○	4	×	○
EAD(PCI)BE-F7A	○	○	○	7	○	○
EAD(PCI)BE-F13A	○	○	○	13	○	○

StarFabric-compliant Type Expansion Adapter & Chassis

Expansion Adapter

Name	Type
EAD(LPCI)SF	For Low Profile PCI Bus slot
EAD(CB)SF	For CardBus slot

PCI Bus Expansion Chassis

Name	Installation Type			Slots	Installable Board	
	Desktop	Rack Mount	Wall Mount		Long	Short
EAD(PCI)SF-H2B	○	—	—	2	×	○
EAD(PCI)SF-H4B	○	—	—	4	×	○
EAD(PCI)SF-F2B	○	—	—	2	○	○
EAD(PCI)SF-F4B	○	—	—	4	○	○
EAD(PCI)SF-H4A	○	○	○	4	×	○
EAD(PCI)SF-F7A	○	○	○	7	○	○
EAD(PCI)SF-F13A	○	○	○	13	○	○

Bus Expansion Adapter

Name	Type	Backplane	Installable Unit of PCI Bus Expansion Adapter (FA-UNIT-**)			
BUF(PCI)4	PCI → PCI (4 slots)	Included	F6DR	F6RFV	M6RFV	
BUF(PCI)	PCI → PCI (7 slots)	Included	F8DR	F8DR/M	F11RFV	M11RFV
BUF(PCI)13	PCI → PCI (13 slots)	Included	F8DR	F8DR/M		
BUF(PC)E	ISA → ISA	—	—	—	—	—

Bus Converter Adapter

Name	Type
BUF-PCI(PC)	PCI → ISA
BUF-CARD(PC)P	PC Card → ISA
PC-CARD(PC)H	ISA → PC Card

Pictograms

Expansion adapter

PCI The product is compatible with PCI standard and can be used on PC equipped with PCI bus expansion slot.

Low Profile PCI The product is compatible with PCI standard/Low Profile PC board size standard. A bracket for PCI slot is standardly provided.

Card Bus The product supports CardBus that is a 32-bit bus compatible with PC card standard.

Expansion chassis

X Slot Maximum number of boards that can be installed.

XX Size Maximum board size that can be installed

Power on Board Expansion chassis is equipped with built-in power supply.

AC Adapter Includes AC adapter. The expansion chassis has no built-in power source.

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M-03

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Bus Extension Type
Selecting Optimal Expansion Adapter and Expansion Chassis

Bus Extension is best suited for use in an environment where the control is conducted in close proximity to the PC unit.
If the expansion unit needs to be further away (up to 12m - max), select from the StarFabric-compliant system - list on M-07
CONTEC offers 19 different configurations based on the type of host PC, needed number and lengths of PCI slots.

Expansion Adapter

PC equipped with CardBus-compliant card slot

■ **Expansion adapter for CardBus slot (PC side)**
EAD(CB)BE

Supported OS: Windows XP, Windows 2000, Windows Me, Windows 98

M-04

A dedicated connection cable (1m) is included.

PC equipped with standard PCI/Low Profile PCI slot

■ **Expansion adapter for Low Profile PCI bus slot (host PC)**
EAD(LPCI)BE

M-04

A dedicated connection cable (1m) and standard PCI bus bracket are included.

■ **Expansion adapter for PCI bus slot (host PC)**
EAD(PCI)BE

M-04

A dedicated connection cable (1m) is included.

Expansion Chassis

Stylish compact black chassis

■ **PCI expansion chassis (Includes AC adapter)**

ECH(PCI)BE-H2B
2 Slots | Short Size | AC adapter
M-05

ECH(PCI)BE-H4B
4 Slots | Short Size | AC adapter
M-05

ECH(PCI)BE-F2B
2 Slots | Long Size | Short Size | AC adapter
M-05

ECH(PCI)BE-F4B
4 Slots | Long Size | Short Size | AC adapter
M-05

Solid steel industrial chassis

■ **PCI bus expansion chassis (Built-in power supply)**

ECH(PCI)BE-H4A
4 Slots | Short Size | Power on board
M-06

ECH(PCI)BE-F7A
7 Slots | Long Size | Short Size | Power on board
M-06

ECH(PCI)BE-F13A
13 Slots | Long Size | Short Size | Power on board
M-06

Short size: A short-size PCI board can be installed
Long size: A long-size PCI board can be installed

■ Note to customers using the CONTEC's conventional expansion units [FA-PAC(PCI) and NOTE-PAC(PC) Series]

When replacing conventional expansion units with expansion chassis and adapters, please refer to the following table so that you can purchase a complete unit with the same specifications as those of the conventional models.

PCI bus expansion system		Expansion adapter		Expansion chassis
FA-PAC(PCI)H4	=	EAD(PCI)BE	+	ECH(PCI)BE-H4A
FA-PAC(PCI)F7	=	EAD(PCI)BE	+	ECH(PCI)BE-F7A
FA-PAC(PCI)F13	=	EAD(PCI)BE	+	ECH(PCI)BE-F13A
CardBus to PCI bus expansion system				
NOTE-PAC(PCI)H2	=	EAD(CB)BE	+	ECH(PCI)BE-H2B
NOTE-PAC(PCI)H4	=	EAD(CB)BE	+	ECH(PCI)BE-H4A

Bus Expansion System

Bus Extender
LPCI bus slot Expansion Adapter (Host PC)
EAD(LPCI)BE

- PCI bus (5V/32bit 33MHz) can be added using one Low Profile or Standard PCI slot of the host PC.
- Expansion chassis can be selected to match required number of PCI slots and add-on board size.
- The expansion chassis power supply can be turned on & off with the host PC power supply.
- Both Low Profile and Standard PCI slots are supported by using the included bracket.

Bus Extender
PCI bus slot Expansion Adapter (Host PC)
EAD(PCI)BE

- PCI bus (5V/32bit 33MHz) can be added using one PCI slot of the PC.
- Expansion chassis can be selected to match required number of PCI slots and add-on board size.
- The expansion chassis power supply can be turned on & off with the host PC power supply.

Bus Extender
CardBus slot expansion adapter (Host PC)
EAD(CB)BE

- PCI bus (5V/32bit 33MHz) can be added using one CardBus slot of a Note-PC.
- Expansion chassis can be selected to match required number of PCI slots and add-on board size.
- The expansion chassis power supply can be turned on & off with the host PC power supply.
- Supported OS: Windows XP, Windows 2000, Windows Me, Windows98SE and Windows 98.

SUPPORTED OS

Windows XP / Windows 2000 / Windows Me / Windows 98

- A dedicated device driver needs to be installed under Windows XP and Windows 2000.
- Windows NT4.0 and Windows 95 are not supported.

Model	EAD(LPCI)BE	EAD(PCI)BE *2	EAD(CB)BE
Bus type	PCI Local Bus Specification Rev2.3 (+5V / +3.3V)		-
Card slot	-		CardBus compatible with PC Card Standard
Dimensions (mm)	121.69(L) × 63.41(H)	121.69(L) × 105.68(H)	TYPE II (85.6 × 54.0 × 5.0)
Bus Operating Clock	33MHz (Max.)		-
Power Consumption (Max.)	3.3VDC 200mA (Max.) (JP1 1-2 Short) 5VDC 200mA (Max.) (JP1 2-3 Short)		3.3VDC 200mA (Max.)
Operating Conditions	0~50°C, 10~90%RH (no condensation)		
Attached cable	CB-CB68/96 (cable length: 1m) *1	CB-BF96 (cable length: 1m) *1	CB-CB68/96 (cable length: 1m) *1

Note:
*1: Only the cable included with the unit can be used.
*2: This product cannot be used with the [ECH(PCI)BE-F7A, F13A] expansion chassis.

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PC Card
Media Converter
ISA

Bus Extender PCI bus expansion chassis (×2 Short size slots, AC Adapter) ECH(PCI)BE-H2B

2 Slots | Short Size | CE

- 2× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Including an AC adapter

Bus Extender PCI bus expansion chassis (×2 Long size slots, AC Adapter) ECH(PCI)BE-F2B

2 Slots | Short Size | Long Size | CE

- 2× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Including an AC adapter

Bus Extender PCI bus expansion chassis (×4 Short size slots, AC Adapter) ECH(PCI)BE-H4B

4 Slots | Short Size | CE

- 4× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Including an AC adapter

Bus Extender PCI bus expansion chassis (×4 Long size slots, AC Adapter) ECH(PCI)BE-F4B

4 Slots | Short Size | Long Size | CE

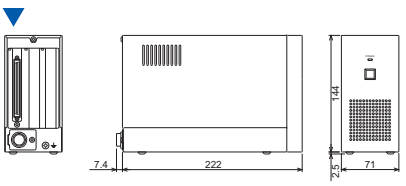
- 4× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Including an AC adapter

Model	ECH(PCI)BE-H2B	ECH(PCI)BE-H4B	ECH(PCI)BE-F2B	ECH(PCI)BE-F4B
Bus type	PCI Local Bus Specification Rev2.3 (+5VDC)			
Address Space	Memory: 32-bit addressing, I/O: 32-bit addressing			
Interrupt Level	INTA-INTD			
Bus Clock	33MHz (Max.)			
User slots	2 (Short-size)	4 (Short-size)	2 (Long-size)	4 (Long-size)
Installable Board (mm)	176.5(L) × 107(H)		313.8(L) × 107(H)	
Power supply capacity (Max.)	Output current shall not exceed the following values. +5VDC: 7A, +3.3VDC: 3A, +12VDC: 1.5A, -12VDC: 0.3A			
AC input voltage	100 to 240VAC			
Overall maximum power supply capacity	60W			
Operating Conditions	0~50ºC, 20~80%RH (no condensation)			
Dimensions (mm)	71.0(W) × 222.0(D) × 144.0(H)	112.0(W) × 222.0(D) × 144.0(H)	71.0(W) × 360.0(D) × 144.0(H)	112.0(W) × 360.0(D) × 144.0(H)
Weight of Chassis	1.2kg	1.5kg	1.6kg	2.0kg
Weight of AC Adapter	0.9kg			
Note:				

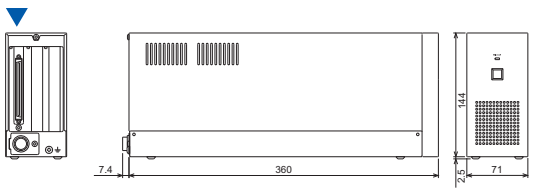
■ Dimensions

(Unit:mm)

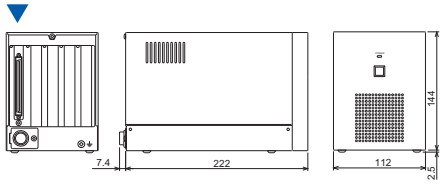
ECH(PCI)BE-H2B



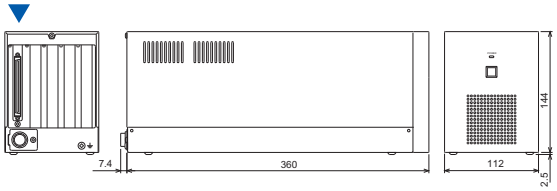
ECH(PCI)BE-F2B



ECH(PCI)BE-H4B



ECH(PCI)BE-F4B



Bus Expansion System

Bus Extender PCI bus Expansion Chassis (×4 Short size slots, On board Power) ECH(PCI)BE-H4A

4 Slots | Short Size | Power On board

- 4× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- The chassis power supply can be turned on & off with the power

Bus Extender PCI bus Expansion Chassis (×7 Long size slots, On-board Power) ECH(PCI)BE-F7A

7 Slots | Short Size | Long Size | Power On board

- 7× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply

Bus Extender PCI bus Expansion Chassis (×13 Long size slots,On-board Power) ECH(PCI)BE-F13A

13 Slots | Short Size | Long Size | Power On board

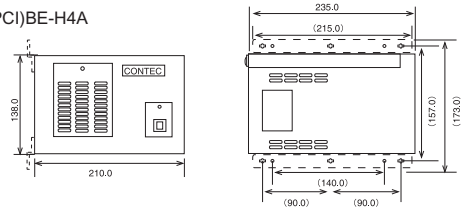
- 13× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply

Model	ECH(PCI)BE-H4A	ECH(PCI)BE-F7A *2	ECH(PCI)BE-F13A *2
Bus type	PCI Local Bus Specification Rev2.3 (+5VDC)		
Address Space	Memory: 32-bit addressing, I/O: 32-bit addressing		
Interrupt Level	INTA-INTD		
Bus Clock	33MHz (Max.)		
User slots	4 (short-size)	7 (Long-size)	13 (Long-size)
Installable Board (mm)	176.5(L) × 107(H)	313.8(L) × 107(H)	
Power supply capacity (Max.)	+5VDC: 11.3A, +3.3VDC: 6A, +12VDC: 3A, -12VDC: 0.7A		+5VDC: 18A*1, +3.3VDC: 15A*1, +12VDC: 9A, -12VDC: 1A
AC input voltage	115/230VAC (switch selectable)		
Overall maximum power supply capacity	130W		0~30ºC: 230W, 30~40ºC: 205W, 40~50ºC: 175W
Operating Conditions	0~50ºC, 20~80%RH (no condensation)		
Dimensions (mm)	210.0(W) × 235.0(D) × 138.0(H)	300.0(W) × 372.2(D) × 138.0(H)	424.0(W) × 372.2(D) × 156.0(H)
Weight	3.5kg	5.0kg	9.5kg
Note:	*1: The sum of +5VDC/+3.3VDC can not exceed 90W. *2: This product cannot be used with the [ECH(CB)BE] expansion chassis.		

■ Dimensions

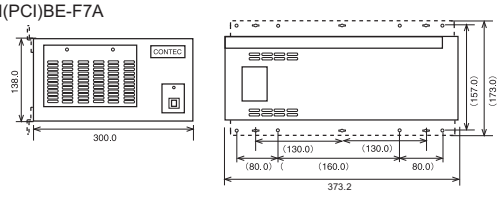
(Unit:mm)

ECH(PCI)BE-H4A



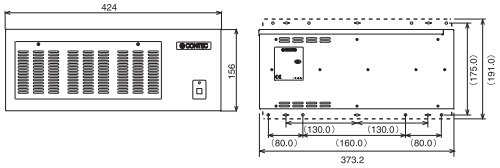
*The figures inside the bracket indicate the dimension with the bracket attached.

ECH(PCI)BE-F7A



*The figures inside the bracket indicate the dimension with the bracket attached.

ECH(PCI)BE-F13A



*The figures inside the bracket indicate the dimension with the bracket attached.

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StarFabric-compliant
Selecting an Expansion Adapter and Expansion Chassis

A StarFabric-compliant system is best suited for measurement control when distance between host PC and chassis is required.
When using an expansion chassis in close proximity to the host PC, select from the Bus Extension list on M-03
CONTEC offers a total of 12 different combinations according to type of host PC, needed PCI slots and sizes on add-on boards.

Expansion Adapter

PC equipped with CardBus-compliant card slot

■**Expansion adapter for CardBus slot (Host PC)**
EAD(CB)SF

Supported OS: Windows XP, Windows 2000

M-08

2× (12m) Category 5e STP cables are included

PC equipped with standard PCI/Low Profile PCI slot

■**Expansion adapter for Low Profile PCI bus slot (Host PC)**
EAD(LPCI)SF

M-08

2× (12m) Category 5e STP cables and standard PCI bus bracket included

Expansion Chassis

Stylish and compact black chassis

■**PCI expansion chassis (Includes AC adapter)**

ECH(PCI)SF-H2B
2 Slots | Short Size | AC adapter
M-09

ECH(PCI)SF-H4B
4 Slots | Short Size | AC adapter
M-09

ECH(PCI)SF-F2B
2 Slots | Long Size | Short Size | AC adapter
M-09

ECH(PCI)SF-F4B
4 Slots | Long Size | Short Size | AC adapter
M-09

Solid steel industrial chassis

■**PCI bus expansion chassis (On board power supply)**

ECH(PCI)SF-H4A
4 Slots | Short Size | Power on board
M-10

ECH(PCI)SF-F7A
7 Slots | Long Size | Short Size | Power on board
M-10

ECH(PCI)SF-F13A
13 Slots | Long Size | Short Size | Power on board
M-10

Short size: Short-size add-on PCI boards can be installed
Long size: Long-size add-on PCI boards can be installed

* Category 5e twisted-pair cable can be used.
In high noise environments, shielded cable (STP) is recommended.

Bus Expansion System

StarFabric-compliant
LPCI bus slot Expansion Adapter (Host PC)
EAD(LPCI)SF

- 12m PCI bus expansion and high-speed serial transfer (2.5Gbps)are supported
- PCI bus-compatible, eliminating any need to change PCI add-on boards or software
- Uses noise resistant Cat 5e STP cable - easy wiring and installation
- PCI bus (5V/32bit 33MHz) expansion uses one Low Profile PCI or standard PCI slot of the host PC
- Expansion chassis can be selected to match required number of PCI slots and add-on board size

StarFabric-compliant
CardBus slot Expansion Adapter (Host PC)
EAD(CB)SF

- 12m PCI bus expansion and high-speed serial transfer (2.5Gbps)are supported
- Uses noise resistant Cat 5e STP cable - easy wiring and installation
- PCI expansion (5V/32bit 33MHz) using CardBus slot of the note PC
- Expansion chassis can be selected to match required number of PCI slots and add-on board size
- The expansion chassis power supply can be turned on & off with the host PC power supply

SUPPORTED OS: Windows XP, Windows 2000

- A dedicated device driver needs to be installed under Windows XP and Windows 2000.

Model	EAD(LPCI)SF	EAD(CB)SF *2	
Bus / Size (mm)	PCI Local Bus Specification Rev2.2 (+5V / +3.3V)/ 121.69(L) × 63.41(H)	PC Card Standard / CardBus-compliant / TYPE II (119.0 × 54.0 × 19.0)	
Power Consumption (Max.)	3.3VDC 450mA (Max.) <JP1 1-2 Short> 5VDC 350mA (Max.) <JP1 2-3 Short>	3.3VDC 450mA (Max.)	
Operating Conditions	0~50°C, 10~90%RH (no condensation)	0~50°C, 20~90%RH (no condensation)	
Attached cable *1	2× Category 5e STP cables (12m)		

Note:
*1: Category 5e twisted-pair cable can be used. In noisy environments shielded cable (STP) is recommended.
*2: This product cannot be used with the expansion chassis [ECH(PCI)SF-F7A, F13A].

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StarFabric-compliant PCI bus Expansion Chassis (×2 Short size slots, AC Adapter) ECH(PCI)SF-H2B

2 Slots | Short Size

- 2× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Includeing an AC adapter

StarFabric-compliant PCI bus Expansion Chassis (×2 Long size slots, AC Adapter) ECH(PCI)SF-F2B

2 Slots | Short Size | Long Size

- 2× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Includeing an AC adapter

StarFabric-compliant PCI bus Expansion Chassis (×4 Short size slots, AC Adapter) ECH(PCI)SF-H4B

4 Slots | Short Size

- 4× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Includeing an AC adapter

StarFabric-compliant PCI bus Expansion Chassis (×4 Long size slots, AC Adapter) ECH(PCI)SF-F4B

4 Slots | Short Size | Long Size

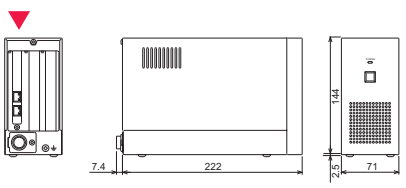
- 4× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply
- Equipped with a built-in cooling fan
- The compact chassis design combines space-saving system configuration with portability
- Includeing an AC adapter

Model	ECH(PCI)SF-H2B	ECH(PCI)SF-H4B	ECH(PCI)SF-F2B	ECH(PCI)SF-F4B
Bus type	PCI Local Bus Specification Rev2.2 (+5VDC)			
Address Space	Memory: 32-bit addressing, I/O: 32-bit addressing			
Interrupt Level	INTA-INTD			
Bus Clock	33MHz (Max.)			
User slots	2 (Short-size)	4 (Short-size)	2 (Long-size)	4 (Long-size)
Installable Board (mm)	176.5(L) × 107(H)		313.8(L) × 107(H)	
Power supply capacity (Max.)	The output current shall not exceed the following values. +5VDC: 7A, +3.3VDC: 3A, +12VDC: 1.5A, -12VDC: 0.3A			
AC input voltage	100 to 240VAC			
Overall maximum power supply capacity	60W			
Operating Conditions	0~50ºC, 20~80%RH (no condensation)			
Dimensions (mm)	71.0(W) × 222.0(D) × 144.0(H)	112.0(W) × 222.0(D) × 144.0(H)	71.0(W) × 360.0(D) × 144.0(H)	112.0(W) × 360.0(D) × 144.0(H)
Weight of Chassis	1.2kg	1.5kg	1.6kg	2.0kg
Weight of AC Adapter	0.9kg			
Note:				

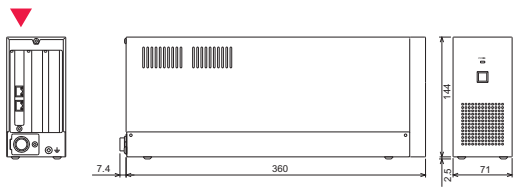
■ Dimensions

(Unit:mm)

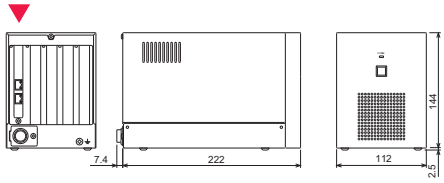
ECH(PCI)SF-H2B



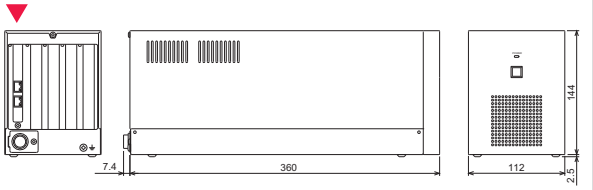
ECH(PCI)SF-F2B



ECH(PCI)SF-H4B



ECH(PCI)SF-F4B



Bus Expansion System

StarFabric-compliant PCI bus Expansion Chassis (×4 Short size slots, On board Power) ECH(PCI)SF-H4A

4 Slots | Short Size | Power On board

- 4× PCI expansion slots
- Length accomodates short-size PCI add-on boards (5V/32bit)
- The chassis power supply can be turned on & off with the power

StarFabric-compliant PCI bus Expansion Chassis (×7 Long size slots, On-board Power) ECH(PCI)SF-F7A

7 Slots | Short Size | Long Size | Power On board

- 7× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply

StarFabric-compliant PCI bus Expansion Chassis (×13 Long size slots, On-board Power) ECH(PCI)SF-F13A

13 Slots | Short Size | Long Size | Power On board

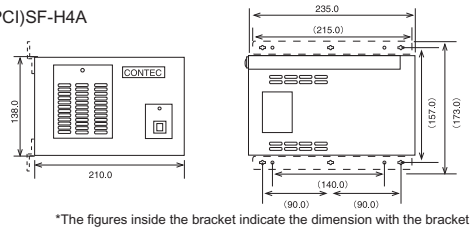
- 13× PCI expansion slots
- Length accomodates long-size PCI add-on boards (5V/32bit)
- Chassis power supply can be turned on & off with the host PC power supply

Model	ECH(PCI)SF-H4A	ECH(PCI)SF-F7A *2	ECH(PCI)SF-F13A *2
Bus type	PCI Local Bus Specification Rev2.2 (+5VDC)		
Address Space	Memory: 32-bit addressing, I/O: 32-bit addressing		
Interrupt Level	INTA-INTD		
Bus Clock	33MHz (Max.)		
User slots	4 (short-size)	7 (Long-size)	13 (Long-size)
Installable Board (mm)	176.5(L) × 107(H)	313.8(L) × 107(H)	
Power supply capacity (Max.)	+5VDC: 11.3A, +3.3VDC: 6A, +12VDC: 3A, -12VDC: 0.7A		+5VDC: 18A*1, +3.3VDC: 15A*1, +12VDC: 9A, -12VDC: 1A
AC input voltage	115/230VAC (switch selectable)		
Overall maximum power supply capacity	130W		0~30ºC: 230W, 30~40ºC: 205W, 40~50ºC: 175W
Operating Conditions	0~50ºC, 20~80%RH (no condensation)		
Dimensions (mm)	210.0(W) × 235.0(D) × 138.0(H)	300.0(W) × 372.2(D) × 138.0(H)	424.0(W) × 372.2(D) × 156.0(H)
Weight	3.5kg	5.0kg	9.5kg
Note:	*1: The sum of +5VDC/+3.3VDC can not exceed 90W. *2: This product cannot be used with the ECH(CB)BE expansion chassis.		

■ Dimensions

(Unit:mm)

ECH(PCI)SF-H4A



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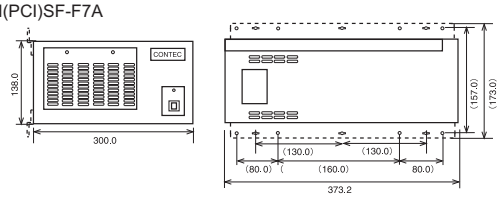
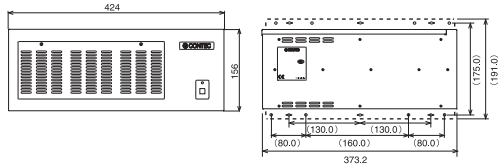
ECH(PCI)SF-F7A



*The figures inside the bracket indicate the dimension with the bracket attached.

ECH(PCI)SF-F13A



*The figures inside the bracket indicate the dimension with the bracket attached.

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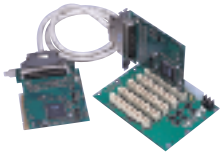
PCI to PCI Bus Expansion System (4 Slots) **BUF(PCI)4**



- External backplane expansion slots function as regular PCI slots
- Using ATX power supply, Chassis power supply can be turned on & off with the host PC power supply.

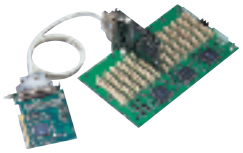
* It cannot be used in PC-9800 series.

PCI to PCI Bus Expansion System (7 Slots) **BUF(PCI)**

- External backplane expansion slots function as regular PCI slots
- Using ATX power supply, Chassis power supply can be turned on & off with the host PC power supply.

* It cannot be used in PC-9800 series.

PCI to PCI Bus Expansion System (13 Slots) **BUF(PCI)13**



- External backplane expansion slots function as regular PCI slots
- Using ATX power supply, Chassis power supply can be turned on & off with the host PC power supply.

* It cannot be used in PC-9800 series.

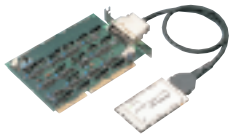
PCI to ISA Bus Conversion System **BUF-PCI(PC)**

- Standard ISA slots can be connected from a PCI slot of host PC.
- Included driver software for Windows XP/2000/NT/Me/98/95.
- I/O access wait and refresh signal for the expansion unit.

Model	BUF(PCI)4	BUF(PCI)	BUF(PCI)13	BUF-PCI(PC) *2
Bus type	32-bit PCI bus Rev2.1 (+5V type)			PCI to ISA Expansion
Address space	I/O: 32-bit addressing, Memory: 32-bit addressing			-
User slots	4	7	13	-
Interrupt Level	INTA-INTD			One interrupt signal within expansion chassis
DMA	-			Not supported
Accessible I/O space	-			Max.248 port (PC BIOS assigns I/O space to BUF-PC(PCI))
Accessible Memory	-			Not supported
Bus Clock	33MHz (Max.)			-
Power Consumption (Max.)	BUS-PC(PCI) (PC side): +5VDC 700mA (Max.) / +5VDC 300mA (typ) BUS-PAC(PCI) (Extension side: +5VDC 700mA(Max.) / +5VDC 500mA (typ)		BUS-PC(PCI) (PC side): +5VDC 700mA (Max.) / +5VDC 300mA (typ) BUS-PAC(PCI) (Extension side): +5VDC 1500mA (Max.) / +5VDC 900mA (typ)	BUS-PCI(PCI) (PC side): +5VDC 300mA (Max.) BUS-PCI(PC) (Extension side): +5VDC 300mA (Max.)
Operating Conditions	0~50ºC, 30~90%RH(no condensation)			0~50ºC, 10~90%RH (no condensation)
Dimensions (mm)	BUS-PC(PCI) (PC side): 122.0(L) × 107.0(H) × 18.5(D) BUS-PAC(PCI) (Extension side): 122.0(L) × 107.0(H) × 18.5(D) PC-MB5(PC) (Back plane): 165.0(L) × 124.0(H) × 20.0(D)	BUS-PC(PCI) (PC side): 122.0(L) × 107.0(H) × 18.5(D) BUS-PAC(PCI) (Extension side): 122.0(L) × 107.0(H) × 18.5(D) PC-MB8(PCI) (Back plane): 220.0(L) × 185.0(H) × 20.0(D)	BUS-PC(PCI) (PC side): 122.0(L) × 107.0(H) × 18.5(D) BUS-PAC(PCI) (Extension side): 122.0(L) × 107.0(H) × 18.5(D) PC-MB8(PCI) (Back plane): 311.5.0(L) × 185.0(H) × 20.0(D)	BUS-PC(PCI) (PC side): 120.0(L) × 107.0(H) × 18.5(D) BUS-PAC(PCI) (Extension side): 134.2(L) × 107.0(H) × 18.5(D)
Attached cable	96-pin shielded cable, 1m *1			
Note:	*1: Only the Attached cable can be used. *2:This product provides I/O access to ISA bus board. It is subject to software and hardware restrictions. Please contact General Information for details.			

Bus Expansion System

PCMCIA to ISA Bus Conversion System **BUF-CARD(PC)P**



- Standard ISA slots can be connected from a PC Card (PCMCIA) slot of host PC.
- Supported OS: Windows XP/2000/98/95/3.1, MS-DOS

ISA to ISA Bus Expansion System **BUF(PC)E**

- Standard ISA slots can be connected from a ISA slot of host PC.

ISA to PCMCIA Expansion Board **PC-CARD(PC)H**

- Compatible with PC card Type I, Type II, and Type III based on PCMCIA 2.1 / J EIDA 4.2 or late
- Maximum 2pcs. can be mounted simultaneously on the same system.

Model	BUF-CARD(PC)P *1	BUF(PC)E	BUF-CARD(PC)H
Bus type	PCMCIA to ISA Bus expansion	ISA to ISA Bus Expansion	-
Card slot	JEIDA Ver.4.1 / PCMCIA Rel.2.0 (TYPE II)	-	
Card type	-		PC Card: JEIDA 4.2 / PCMCIA 2.0 or later TYPE I, II, III (Power consumption 1.2A Max.)
I/O Adress	-		2 ports (X3E0h, X3E1)
DMA	Not supported		-
Bus Clock	-	8MHz	-
Data Bus width	8-bit (16-bit not available)	-	-
Accessible I/O space	I/O: 32 consecutive ports can be selected as following: 220-23F,240-25F,260-27F,280-29F,2A0-2BF, 2C0-2DF,2E0-2FF,300-31F,320-33F,340-35F, 360-37F,380-39F,3A0-3BF,3C0-3DF,3E0-3FF	0000H - FFFFH (unrelated to expansion bus adapters)	-
Accessible Memory	Not supported	080000H - 09FFFFH (DIP switch selectable) 0C0000H - 0DFFFFH (DIP switch selectable) 000000H - FEFFFFH (DIP switch selectable)	-
Interrupt Level	One of IRQ 3~7, 9~12, 14 or 15 (jumper selectable)	IRQ 3-7, 9-12, 14, 15 (rotary SW selectable)	-
Power Consumption (Max.)	BUS-CARD(PM)P (PC side): +5VDC 100mA BUS-CARD(PC) (Extension side): +5VDC 500mA	BUS-PC(PC)E (PC side): +5VDC 300mA BUS-PAC(PC)E (Extension side): +5VDC 500mA	+5VDC 150mA (without PC Card)
Operating Conditions	0~50°C, 20~90%RH (no condensation)	0~50°C, 30~90%RH (no condensation)	0~50°C, 0~90%RH (no condensation)
Dimensions (mm)	BUS-PC(PCI) (PC side): 54.0(L) × 85.6(H) × 5.0(D) BUS-PAC(PCI) (Extension side): 160.0(L) × 122.0(H) × 18.5(D)	Both PC & Extension side: 160.0(L) × 122.0(H) × 22.0(D)	-
Applicable Models	AT-compliant PC equipped with a card slot compatible with a JEIDA 4.1 / PCMCIA 2.0 or laterType II card (should be compatible with Card Service Release 2.0 or later)	-	
Attached cable	32-pin shielded cable, 1m *2	96-pin shielded cable, 1m *2	-
Bus / Size (mm)	-		ISA / 160(L) × 107(H)
Note:	*1: There might be boards that cannot be used in some conditions. Please contact General Information for details. *2: Only the Attached cable can be used.		

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