

# Counter & Motion Controller

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CONTECBOX  
Computers  
Panel  
Computers  
Flat Panel  
Displays

Options

Industrial PC  
VPCBTO PCs  
Solution-ePC

Analog I/O

Digital I/O

Counter & Motion  
ControllerSerial  
CommunicationsGPIB  
CommunicationsExpansion Unit /  
Bus Adapter

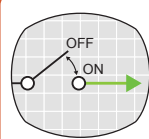
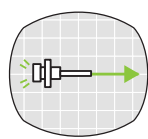
Software

Accessories &  
Cables

Remote I/O

Wireless LAN  
FLEXLANImage Distribution Unit  
FlexNetViewerSolutions /  
Services

## Counter

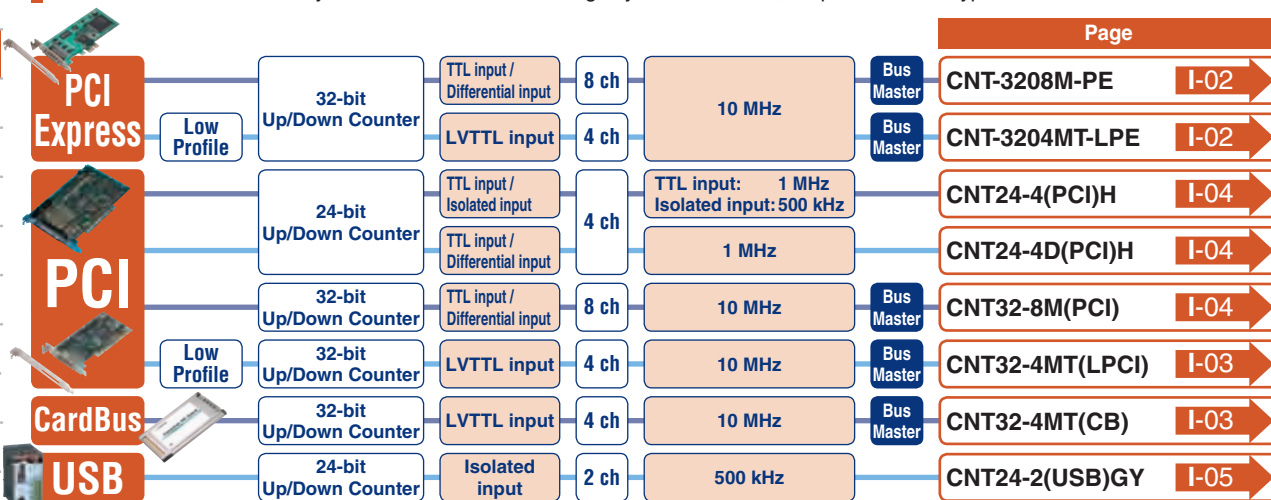
Application  
Counting ON/OFF of  
contact points and switchesDescription  
Input of  
ON/OFF signalsApplication  
Measurement of  
individual sensorsDescription  
Input of pulse  
signals

These boards communicate pulse train input and pulse number count functions to the PC.

They calculate addition and/or subtraction of count values onboard and read out current count values when needed. They can connect to incremental rotary encoders, linear gauges, pulse output type flowmeters or power meters.

## Product Lineup

You can choose from a variety of interface boards according to your desired bus, I/O points and I/O type.



## Pictograms

### Bus Specifications

**PCI Express**

Product is PCI Express standard compliant and can be used in the computer equipped with PCI Express Bus slot.

**USB 2.0**

Product is USB standard compliant and can be used in the computer equipped with USB 2.0/1.1 ports. Supports USB 2.0 high-speed mode (480 Mbps).

**PCI**

Product is PCI standard compliant and can be used in the computer equipped with PCI Bus expansion slot.

**Card Bus**

Product supports CardBus that is a 32-bit PC card standard bus and can be used in the computer equipped with a CardBus-compliant PC card slot.

### Supported Connectors

**96-pin  
Half Pitch**
**37-pin  
D-SUB**
**68-pin  
0.8 mm Pitch**

Indicates the number of pins and shapes of connectors used for external connection.

The supported cables and accessories will vary depending on these specifications.

CONTEC provides a wide variety of cables and accessories to suit your needs.

Cables with connectors on both ends  
Accessories (Terminal unit, etc.)

**N-27**

Cables with a connector on one end  
Connector set

**N-29**

### Software

#### Windows Driver

API-TOOL Drivers for Windows are provided.

The license-free driver software (both development and runtime) provides commands to interface boards or cards using Windows standard Win32API function (DLL).

#### Linux Driver

API-TOOL Drivers for Linux are provided.

The license-free driver software (both development and runtime) provides commands to interface boards or cards using module-style device drivers and the shared library.

#### ActiveX Component Package

ActiveX Component Package ACX-PAC(W32) is supported.

ACX-PAC(W32) is a program development support tool for Windows. Standard ActiveX Component for Windows (OCX) provides software parts specialized for add-on module control as well as measurement, such as screen displays, analyses and operations, and file operations. A collection of samples (application program) is included, so you can begin computer measurement right away without creating programs.

### Board Size

**Low  
Profile**

Product is PCI standard / Low Profile compliant. A bracket for standard-size PCI slots is provided.

### Number of Channels

**Counter  
XX ch**

Maximum number of input channels for pulse signals

### Points

**Differential  
Input**

A level input circuit in which a differential receiver is used as the input terminal. While it is not insulated from external circuit, it supports high-speed pulse input. It is also noise-resistant and allows for long distance transfer.

**Isolated  
input**

A current input circuit in which an opto-coupler (cathode side) is used as the input terminal. Since it is isolated from external circuits, it can prevent electric disturbance.

**TTL  
Input**

A level input circuit in which a TTL-IC (base) is used as the input terminal. While not isolated from external circuits, it enables high-speed pulse input.

**Digital  
Filter**

Delays the count processing by the specified length of time. By preventing incorrect counting induced by noise such as chattering, it ensures precise operation.

**Disconnection  
Detection**

During differential input, an error alarm is issued upon detection of a signal wire disconnection. (Status, interrupt, external output)

**Surge  
Protection**

The input interface is equipped with a Zener diode which prevents damage and malfunction induced by surge voltage and incoming current.

**Bus  
Master**

Large sampling data can be transferred promptly to PC memory without going through CPU.

I-01

Counter

Lineup

PCI Express

PCI

PC Card

USB

Motion Control

Lineup

PCI Express

PCI

ISA

## Counter

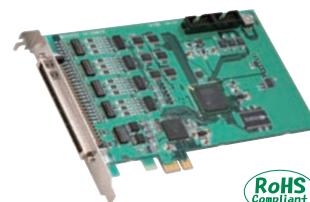
Please see page N-27 for optional accessories and cables/connectors, and page M-01 for software.

**PCI Express**
**96-pin  
Half Pitch**
**Counter  
8 ch**
**Differential  
Input**
**TTL  
Input**
**Digital  
Filter**
**Disconnection  
Detection**
**Bus  
Master**
**Windows Driver**
**ActiveX Component Package**

## High Speed 8-channel 32-bit Up/Down Counter

### CNT-3208M-PE

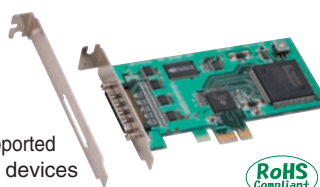
- 8-channel 32-bit up/down counter
- Capable of counting two-phase signals from devices like rotary encoders or linear gauges
- Disconnection can be detected at the time of differential input
- High-speed data transfer achieved by using the bus master transfer feature
- Synchronous Control Connectors enable the synchronous operation of the boards of 16 pieces at the maximum.
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board CNT32-8M(PCI).


**PCI Express**
**Low  
Profile**
**68-pin  
0.8 mm Pitch**
**Counter  
4 ch**
**TTL  
Input**
**Digital  
Filter**
**Bus  
Master**
**Windows Driver**
**ActiveX Component Package**

## High Speed 4-channel 32-bit Up/Down Counter

### CNT-3204MT-LPE

- 4-channel 32-bit up/down counter, LVTTTL input supported
- Capable of counting two-phase signals from devices like rotary encoders or linear gauges
- High-speed data transfer achieved by using the bus master transfer feature
- Low Profile PCI -compliant (includes bracket for use in standard PCI slot)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board CNT32-4MT(LPCI) and CardBus-compliant board CNT32-4MT(CB).
- Can be converted into differential input interface by using differential/TTL input terminal (CTP-4D) and a connecting cable (CNT-68M/50M) both of which are sold separately.



Differential / TTL Input  
Terminal  
CTP-4D



50-pin Mini-Ribbon Shielded  
Conversion Cable  
CNT-68M/50M


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CONTEC

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VPC  
BTO PCs  
Solution-ePC

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Digital I/O

 Counter & Motion  
Controller

 Serial  
Communications  
GPIB  
Communications  
Expansion Unit /  
Bus Adapter

Software

 Accessories &  
Cables

Remote I/O

 Wireless LAN  
FLEXLAN  
Image Distribution Unit  
FlexNetViewer

 Solutions /  
Services

## I-02

| Model                        | CNT-3208M-PE                                                                                                                                                                          | CNT-3204MT-LPE                                                                                                                   |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Number of Channels           | 8                                                                                                                                                                                     | 4                                                                                                                                |
| Counting System              | 32-bit up/down counter<br>(two-phase/single-phase/single-phase with Gate Control)                                                                                                     |                                                                                                                                  |
| Input Signals                | Phase A/UP: 1 point x 8 ch Phase B/DOWN: 1 point x 8 ch<br>Phase Z/CLR: 1 point x 8 ch General input: 1 point x 8 ch                                                                  | Phase A/UP: 1 point x 4 ch Phase B/DOWN: 1<br>point x 4 ch Phase Z/CLR: 1 point x 4 ch                                           |
| Response Frequency<br>(Max.) | Differential input: 10 MHz (duty: 50%)<br>TTL level input: 10 MHz (duty: 50%)                                                                                                         | 10 MHz, duty: 50%                                                                                                                |
| Timer                        | 1 - 6553 msec (selectable in 1 msec intervals)                                                                                                                                        |                                                                                                                                  |
| Max. Count                   | 32-bit binary data                                                                                                                                                                    |                                                                                                                                  |
| Input Specifications         | TTL level: 1 TTL level load;<br>Differential: input voltage range +/-7 V                                                                                                              | LVTTTL level                                                                                                                     |
| Interrupts                   | Count match (16 ch), counter error<br>(2 ch), sampling factor (6 ch), SCC<br>error (2 ch), carry/borrow (1 ch),<br>and timer (1 ch)                                                   | Count match (8 ch), counter error<br>(2 ch), sampling factor (6 ch),<br>carry/borrow (1 ch), and timer<br>(1 ch)                 |
| I/O Address                  | 32 port x 1, 64 port x 1 occupation                                                                                                                                                   |                                                                                                                                  |
| Additional Function          | Filter, Counter coincidence pulse output, Test<br>pulse output and Disconnection alarm output                                                                                         | Filter, Counter coincidence pulse<br>output, and Test pulse output                                                               |
| Power Consumption (Max.)     | 3.3 VDC 1.8 A                                                                                                                                                                         | 3.3 VDC 450 mA                                                                                                                   |
| Bus / Dimensions (mm)        | PCI Express Base Specification Rev.<br>1.0a x 1 / 169.33 (L) x 110.18 (H)                                                                                                             | PCI Express Base Specification Rev.<br>1.0a x 1 / 121.69 (L) x 67.90 (H)                                                         |
| Connector                    | CNT: 96-pin half pitch connector [M type]<br>PCR-E96LMD [HONDA Tsushin Kogyo] or equivalent<br>CN2, CN3: PS-10PE-D4L1-B1 [JAE] or equivalent x2                                       | HDRA-E68LFDT+[HONDA<br>TSUSHIN KOGYO] or equivalent                                                                              |
| Software                     | ACX-PAC(W32)                                                                                                                                                                          |                                                                                                                                  |
| Options                      | Accessories EPD-96A <sup>*1</sup> , EPD-96 <sup>*1</sup> , DTP-64A <sup>*1</sup><br>Cables / Connectors PCB96PS-0.5P / 1.5P, PCB96P-1.5,<br>PCA96PS-0.5P / 1.5P, PCA96P-1.5, CN5-H96F | CTP-4D <sup>*2</sup> , EPD-50A <sup>*2</sup> , EPD-68A <sup>*3</sup><br>CNT-68M/50M, PCA68PS-0.5P /<br>1.5P, PCB68PS-0.5P / 1.5P |

Note:

<sup>\*1</sup>: Requires use of optional cable PCB96P or PCB96PS <sup>\*2</sup>: Requires use of optional cable CNT-68M/50M  
<sup>\*3</sup>: Requires use of optional cable PCB68PS <sup>\*4</sup>: "Spring-up type terminal unit" is employed to retain terminal screws.  
 Attention: Direct I/O access from user applications is not supported. Please use the included Driver library.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

# Counter

Please see page N-27 for optional accessories and cables/connectors, and page M-01 for software.

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PCI

Low Profile

68-pin  
0.8 mm Pitch

Counter  
4 ch

TTL  
Input

Digital  
Filter

Bus  
Master

Windows Driver

ActiveX Component Package

## High Speed 4-channel 32-bit Up/Down Counter

### CNT32-4MT(LPCI)

- 4-channel 32-bit up/down counter, LVTTTL input supported
- Capable of counting two-phase signals from devices like rotary encoders or linear gauges
- High-speed data transfer achieved by using the bus master transfer feature
- Can be converted into differential input interface by using differential/TTL input terminal (CTP-4D) and a connecting cable (CNT-68M/50M) both of which are sold separately.
- Low Profile PCI-compliant (includes bracket for use in standard PCI slot)



Card Bus

68-pin  
0.8 mm Pitch

Counter  
4 ch

TTL  
Input

Digital  
Filter

Bus  
Master

Windows Driver

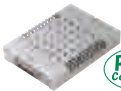
## High Speed 4-channel 32-bit Up/Down Counter

### CNT32-4MT(CB)

- 4-channel 32-bit up/down counter, LVTTTL input supported
- Capable of counting two-phase signals from devices like rotary encoders or linear gauges
- High-speed data transfer achieved by using the bus master transfer feature
- Can be converted into differential input interface by using differential/TTL input terminal (CTP-4D) and a connecting cable (CNT-68M/50M) both of which are sold separately.



\*This card cannot be used simultaneously with another card if the PC has 2 TYPE II PC card slots arranged in tandem. It can be used with other PC card, such as memory card, that does not use an external connector.



Differential / TTL Input  
Terminal  
CTP-4D



50-pin Mini-Ribbon Shielded  
Conversion Cable  
CNT-68M/50M

## I-03

|                |
|----------------|
| Counter        |
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |

| Model                     | CNT32-4MT(LPCI)                                                                                         | CNT32-4MT(CB)                      |  |
|---------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------|--|
| Number of Channels        | 4                                                                                                       |                                    |  |
| Counting System           | 32-bit up/down counter (two-phase/single-phase/single-phase with Gate Control)                          |                                    |  |
| Input Signals             | Phase A/UP: 1 point x 4 ch Phase B/DOWN: 1 point x 4 ch<br>Phase Z/CLR: 1 point x 4 ch                  |                                    |  |
| Response Frequency (Max.) | 10 MHz, duty: 50%                                                                                       |                                    |  |
| Timer                     | 1 - 6553 msec (selectable in 1 msec intervals)                                                          |                                    |  |
| Max. Count                | 32-bit binary data                                                                                      |                                    |  |
| Input Specifications      | LVTTTL level                                                                                            |                                    |  |
| Interrupts                | Count match (8 ch), counter error (2 ch), sampling factor (6 ch), carry/borrow (1 ch), and timer (1 ch) |                                    |  |
| I/O Address               | 32 port x 1, 64 port x 1 occupation                                                                     |                                    |  |
| Additional Function       | Filter, Counter coincidence pulse output, and Test pulse output                                         |                                    |  |
| Power Consumption (Max.)  | 5 VDC, 300 mA                                                                                           | 3.3 VDC, 300 mA                    |  |
| Bus / Dimensions (mm)     | PCI (32 bit, 33 MHz, Universal key shapes supported *) / 121.69 (L) x 63.41 (H)                         | PC Card Standard CardBus / TYPE II |  |
| Connector                 | HDRA-E68LFDT+[HONDA TSUSHIN KOGYO] or equivalent                                                        | -                                  |  |
| Software                  | ACX-PAC(W32)                                                                                            | -                                  |  |
| Options                   | Accessories CTP-4D*1, EPD-50A*1*4, EPD-68A*2*4                                                          |                                    |  |
| Cables / Connectors       | CNT-68M/50M, PCA68PS-0.5P / 1.5P, PCB68PS-0.5P / 1.5P                                                   |                                    |  |

\*1: Requires use of optional cable CNT-68M/50M \*2: +5 V power must be supplied from expansion slot.  
\*3: Requires use of optional cable PCB68PS \*4: "Spring-up type terminal unit" is employed to retain terminal screws.  
Attention: Direct I/O access from user applications is not supported. Please use the included Driver library.

Note:

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.



# Counter

|                                          |
|------------------------------------------|
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| Solutions /<br>Services                  |

USB  
2.0

Counter  
2 ch

Isolated  
Input

Digital  
Filter

CE

AC Adapter & USB Cable included

Windows DriverActiveX Component Package

## Opto-Isolated Counter Module CNT24-2(USB)GY

- Supporting a variety of counter modes
- Counter coincidence pulse output (signal frequency can be set 0 to 104.5 ms)
- Digital filter (0.1 to 1056.1 μs variable sampling range frequency)
- 2 Screw-less connectors for easy wiring - no special tools needed
- Additional channels through use of extension modules (Max. 3 sets)
- 35 mm DIN-rail mountable
- Sample development and utility debugging software included



|                                 |                                                                                                                      |                                                           |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Model                           | CNT24-2(USB)GY                                                                                                       |                                                           |
| Number of Channels              | 2                                                                                                                    |                                                           |
| Counting System                 | 24-bit up/down counter (two-phase/single-phase/single-phase with Gate Control)                                       |                                                           |
| Input Type                      | Opto-Isolated (for sink current output)                                                                              |                                                           |
| Input Signals                   | Phase A/UP: 1 point x 2 ch Phase B/DOWN: 1 point x 2 ch<br>Phase Z/CLR: 1 point x 2 ch General input: 1 point x 2 ch |                                                           |
| Response Frequency (Max.)       | 500 kHz, duty: 50%                                                                                                   |                                                           |
| Connector                       | FK-MC0.5/9-ST-2.5<br>[PHOENIX CONTACT]                                                                               |                                                           |
| USB speed                       | 12 Mbps (Full Speed), 480 Mbps (High Speed)                                                                          |                                                           |
| Additional Function             | Filter, Counter coincidence pulse output                                                                             |                                                           |
| Power Consumption (Max.)        | 5 VDC 450 mA*1                                                                                                       |                                                           |
| Dimensions (mm)                 | 50.4 (W) x 64.7 (D) x 94.0 (H)                                                                                       |                                                           |
| Weight (main unit)              | 100 g                                                                                                                |                                                           |
| Included AC Adapter (POA200-20) | 90 - 264 VAC, 5.0 VDC +/-5%, 2.0 A (Max.), Cable Length: approx. 1.5 m, AC Cable Length: approx. 1.5 m               |                                                           |
| Included Cable                  | USB cable 1.8 m                                                                                                      |                                                           |
| Options                         | Software                                                                                                             | ACX-PAC(W32)                                              |
|                                 | Applicable modules*2                                                                                                 | CNT24-2(FIT)GY                                            |
|                                 | Applicable Power Supplies*3                                                                                          | POA200-20, POW-AD13GY, POW-AD22GY, POW-DD10GY, POW-DD43GY |

Note: \*1: Since current consumption may exceed 500 mA when using an extension module, please use a attached AC adapter or a optional power supply.  
\*2: Please see P-04 or visit our web site for the details of Applicable Modules, Power supplies, Adapters.

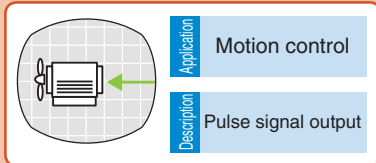
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## I-05

|                |
|----------------|
| Counter        |
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |

# Counter & Motion Controller

## Motion Control



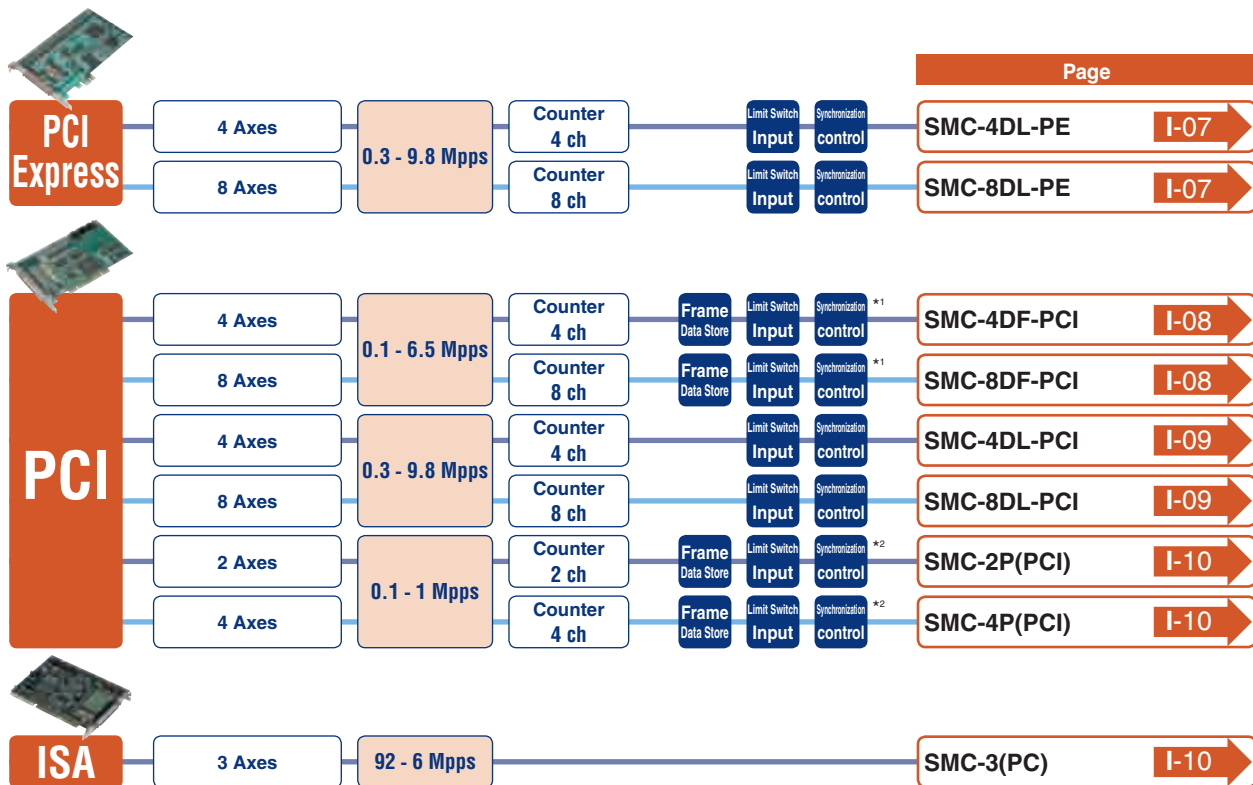
Enables PC controlled output of pulse train according to a specified pulse number and frequency.

Can automatically output control pulse which corresponds to operation parameters such as target position, speed and acceleration / deceleration rate. Limit input functions [required for positioning control] are also provided.

For use with pulse-input type stepping motors or servo motors.

## Product Lineup

You can choose from a variety of interface boards according to your desired bus, channel and I/O type.



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Expansion Unit /  
Bus Adapter

Software

Accessories &  
Cables

Remote I/O

Wireless LAN  
FLEXLAN

Image Distribution Unit  
FlexNetViewer

Solutions /  
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I-06

| Counter        |
|----------------|
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |

## Pictograms

### Bus Specifications

**PCI Express**

Product is PCI Express standard compliant and can be used in the computer equipped with PCI Express Bus slot.

**PCI**

Product is PCI standard compliant and can be used in the computer equipped with PCI Bus expansion slot.

### Supported Connectors

96-pin  
Half Pitch

100-pin  
Half Pitch

Indicates the number of pins and shapes of connectors used for external connection.

The supported cables and accessories will vary depending on these specifications.

CONTEC provides a wide variety of cables and accessories to suit your needs.

Cables with connectors on both ends  
Accessories (Terminal unit, etc.)

N-30

Cables with a connector on one end  
Connector set

N-30

### Software

**Windows Driver**

API-TOOL Drivers for Windows are provided.

The license-free driver software (both development and runtime) provides commands to interface boards or cards using Windows standard Win32API function (DLL).

**ActiveX Component Package**

ActiveX Component Package ACX-PAC(W32) is supported.

ACX-PAC(W32) is a program development support tool for Windows. Standard ActiveX Component for Windows (OCX) provides software parts specialized for add-on module control as well as measurement, such as screen displays, analyses and operations, and file operations. A collection of samples (application program) is included, so you can begin computer measurement right away without creating programs.

### Number of Channels

**Motion Control**  
XX ch

Maximum number of controllable channels

**Counter**  
XX ch

Maximum number of input channels for pulse signals

### Points

**Frame Data Store**

You can store a maximum of 1,000 frames [1 frame gathering information necessary for single positioning such as speed, acceleration / deceleration rate and target position].

**Limit Switch Input**

Detects the stop point, deceleration point and origin point of the motor for high-level positioning control.

**Synchronization control**

Synchronization control for multiple simultaneous start/stop control commands is available. For SMC-2P(PCI), SMC-4P(PCI), SMC-4DF-PCI and SMC-8DF-PCI, a bundled synchronization control cable makes it possible for synchronization control in up to 16 boards.

\*1: Compatible with both SMC-4DF-PCI and SMC-8DF-PCI type boards.

\*2: Only one type of board can be used with any single synchronization control cable.

# Motion Control

Please see page N-30 for optional accessories and cables/connectors, and page M-01 for software.

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## PCI Express

100-pin  
Half Pitch

Motion Control  
4 axes

Limit Switch  
Input

Synchronization  
control

Windows Driver

ActiveX Component Package

### High Speed 4 Axes Motion Controller for PCI Express

#### SMC-4DL-PE

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Enable to control Consecutive Movement, Target Location, ORG return, etc. by Fixed Speed, Beeline Acceleration/Deceleration
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Pulse output of up to 9.8 Mbps is supported.
- Override of Speed or Target Location in the movement is provided.
- General input 7 ch/axis and general output 3 ch are available.



## PCI Express

100-pin  
Half Pitch

Motion Control  
8 axes

Limit Switch  
Input

Synchronization  
control

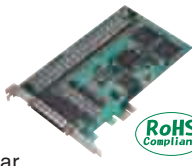
Windows Driver

ActiveX Component Package

### High Speed 8 Axes Motion Controller for PCI Express

#### SMC-8DL-PE

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Enable to control Consecutive Movement, Target Location, ORG return, etc. by Fixed Speed, Beeline Acceleration/Deceleration
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Pulse output of up to 9.8 Mbps is supported.
- Override of Speed or Target Location in the movement is provided.
- General input 7 ch/axis and general output 3 ch are available.



Realtime OS: Available with INtime. Please see page M-20 for details on INtime.

## I-07

|                |
|----------------|
| Counter        |
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |

| Model                     |                        | SMC-4DL-PE                                                                                                                                                                                             | SMC-8DL-PE                                                    |  |
|---------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--|
| Number of axes to control |                        | 4                                                                                                                                                                                                      | 8                                                             |  |
| Pulse output              | Output Specifications  | 2-pulse (CW/CCW) or Common-pulse (Pulse/Direction) or 90° Phase Difference pulse (Lead/Lag)                                                                                                            |                                                               |  |
|                           | Signal Type            | Differential Line Driver output                                                                                                                                                                        |                                                               |  |
|                           | Pulse Rate             | 0.3 - 9.8 Mpps                                                                                                                                                                                         |                                                               |  |
|                           | H Level Output Voltage | 2.5 V - 5.25 V                                                                                                                                                                                         |                                                               |  |
|                           | L Level Output Voltage | 0 V - 0.5 V                                                                                                                                                                                            |                                                               |  |
| Encoder input             | Signal Form            | Single-phase (UP/DOWN/Z), Two-phase (A/B/Z)                                                                                                                                                            |                                                               |  |
|                           | Output Type            | Differential, TTL-level, Open Collector                                                                                                                                                                |                                                               |  |
|                           | Response Frequency     | 5 MHz [Differential output, two-phase input, 4 twice, duty: 50 %]; 3 MHz [TTL-level output, two-phase input, 4 twice, duty: 50 %]; 1 MHz [Open Collector output, two-phase input, 4 twice, duty: 50 %] |                                                               |  |
|                           | Resistance             | 150 Ω (SW cut-able)                                                                                                                                                                                    |                                                               |  |
|                           | Signals                | 3 ch/axis (ORG, +LIM, -LIM)                                                                                                                                                                            |                                                               |  |
| Limit Input Signal        | Signal Type            | Opto-isolated input (for sink current output)                                                                                                                                                          |                                                               |  |
|                           | Resistance             | 4.7 kΩ                                                                                                                                                                                                 |                                                               |  |
|                           | General-purpose input  | Signals 7 ch/axis                                                                                                                                                                                      |                                                               |  |
| General-purpose input     | Signal Type            | Opto-isolated input (for sink current output)                                                                                                                                                          |                                                               |  |
|                           | Resistance             | 4.7 kΩ                                                                                                                                                                                                 |                                                               |  |
|                           | General-purpose output | Signals 3 ch/axis                                                                                                                                                                                      |                                                               |  |
| General-purpose output    | Signal Type            | Open collector (Current sinking type) (software selectable positive/negative logic)                                                                                                                    |                                                               |  |
|                           | Rating                 | 50 VDC; 100 mA per channel, 300 mA per axis                                                                                                                                                            |                                                               |  |
|                           | Controller Chip        | PCL6143 [NPM] or equivalent                                                                                                                                                                            |                                                               |  |
| Interrupts                |                        | 1                                                                                                                                                                                                      |                                                               |  |
| I/O Address               |                        | Any 128-byte boundary                                                                                                                                                                                  |                                                               |  |
| Power Consumption (Max.)  |                        | 3.3 VDC 1500 mA                                                                                                                                                                                        | 3.3 VDC 2100 mA                                               |  |
| Bus / Dimensions (mm)     |                        | PCI Express Base Specification Rev.1.0a x 1 / 169.33 (L) x 110.18 (H)                                                                                                                                  |                                                               |  |
| Connector                 |                        | HDRA-EC100LFDT+<br>[HONDA TSUSHIN KOGYO] or equivalent                                                                                                                                                 | HDRA-E100W1LFDT1EC-SL+<br>[HONDA TSUSHIN KOGYO] or equivalent |  |
|                           | Software               | ACX-PAC (W32)                                                                                                                                                                                          |                                                               |  |
| Options                   | Accessories            | CCB-SMC2 <sup>*1</sup> ×2×3, EPD-100A <sup>*2</sup> ×4                                                                                                                                                 |                                                               |  |
|                           | Cables / Connectors    | PCB100PS-0.5, PCB100PS-1.5, PCB100PS-3, PCB100PS-5, PCA100P-1.5, PCA100P-3, PCA100P-5                                                                                                                  |                                                               |  |

Note:

<sup>\*1</sup>: 100-pin 0.8 mm pitch connector x1 → 37-pin D-SUB x4, 9-pin D-SUB x4  
<sup>\*2</sup>: Requires use of optional cable PCB100PS <sup>\*3</sup>: Each connector needs cables and accessories. <sup>\*4</sup>: "Spring-up type terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant  is a CONTEC original marking for RoHS-compliant products.

Please see page N-30 for optional accessories and cables/connectors, and page M-01 for software.

# Motion Control



## High Speed 4 Axes Motion Controller

### SMC-4DF-PCI

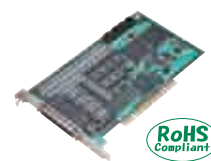
- Stepping and servo motors are easily controlled in familiar Windows environments.
- Diverse control, i.e. Target Location, ORG return, Linear/Circular Interpolation, S-type Acceleration/Deceleration, Frame consecutive movement, Synchronous Control, etc.
- Every axis can store 1024 frames without applying any additional load on the CPU
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Override of Speed or Target Location in the movement is provided.
- Supporting multiple axis in synchronization to arrange the timing of operation beginning and stopping (SMC-4DF-PCI and SMC-8DF-PCI can be coextensively composited, and the boards of 16 pieces at the maximum can be synchronously operated)



## High Speed 8 Axes Motion Controller

### SMC-8DF-PCI

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Diverse control, i.e. Target Location, ORG return, Linear/Circular Interpolation, S-type Acceleration/Deceleration, Frame consecutive movement, Synchronous Control, etc.
- Every axis can store 1024 frames without applying any additional load on the CPU
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Override of Speed or Target Location in the movement is provided.
- Supporting multiple axis in synchronization to arrange the timing of operation beginning and stopping (SMC-4DF-PCI and SMC-8DF-PCI can be coextensively composited, and the boards of 16 pieces at the maximum can be synchronously operated)



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FlexNetViewer

Solutions /  
Services

I-08

Counter

Lineup

PCI Express

PCI

PC Card

USB

Motion Control

Lineup

PCI Express

PCI

ISA

| Model                     | SMC-4DF-PCI                                                                      | SMC-8DF-PCI                                                                                                                                                                                            |
|---------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of axes to control | 4                                                                                | 8                                                                                                                                                                                                      |
| Pulse output              | Output Specifications                                                            | 2-pulse (CW/CCW) or Common-pulse (Pulse/Direction) or 90° Phase Difference pulse (Lead/Lag)                                                                                                            |
|                           | Signal Type                                                                      | Differential Line Driver output                                                                                                                                                                        |
|                           | Pulse Rate                                                                       | 0.1 - 6.5 Mpps                                                                                                                                                                                         |
|                           | H Level Output Voltage                                                           | 2.5 V - 5.25 V                                                                                                                                                                                         |
| Encoder input             | L Level Output Voltage                                                           | 0 V - 0.5 V                                                                                                                                                                                            |
|                           | Signal Form                                                                      | Single-phase (UP/DOWN/Z), Two-phase (A/B/Z)                                                                                                                                                            |
|                           | Output Type                                                                      | Differential, TTL-level, Open Collector                                                                                                                                                                |
|                           | Response Frequency                                                               | 5 MHz [Differential output, two-phase input, 4 twice, duty: 50 %]; 3 MHz [TTL-level output, two-phase input, 4 twice, duty: 50 %]; 1 MHz [Open Collector output, two-phase input, 4 twice, duty: 50 %] |
| Limit Input Signal        | Resistance                                                                       | 150 Ω (SW cut-able)                                                                                                                                                                                    |
|                           | Signals                                                                          | 3 ch/axis (ORG, +LIM, -LIM)                                                                                                                                                                            |
|                           | Signal Type                                                                      | Opto-isolated input (for sink current output)                                                                                                                                                          |
| General-purpose input     | Resistance                                                                       | 4.7 kΩ                                                                                                                                                                                                 |
|                           | Signals                                                                          | 7 ch/axis                                                                                                                                                                                              |
|                           | Signal Type                                                                      | Opto-isolated input (for sink current output)                                                                                                                                                          |
| General-purpose output    | Resistance                                                                       | 4.7 kΩ                                                                                                                                                                                                 |
|                           | Signals                                                                          | 3 ch/axis                                                                                                                                                                                              |
|                           | Signal Type                                                                      | Open collector (Current sinking type) (software selectable positive/negative logic)                                                                                                                    |
| Options                   | Rating                                                                           | 50 VDC; 100 mA per channel, 300 mA per axis                                                                                                                                                            |
|                           | Controller Chip                                                                  | PCL6045B [NPM] or equivalent                                                                                                                                                                           |
|                           | Interrupts                                                                       | 1                                                                                                                                                                                                      |
| I/O Address               | Any 128-byte boundary                                                            |                                                                                                                                                                                                        |
|                           | Power Consumption (Max.)                                                         | 5 VDC 800 mA                                                                                                                                                                                           |
| Bus / Dimensions (mm)     | 5 VDC 1600 mA                                                                    |                                                                                                                                                                                                        |
|                           | PCI (32 bit, 33 MHz, Universal key shapes supported *) / 176.41 (L) x 106.68 (H) |                                                                                                                                                                                                        |
| Connector                 | HDRA-EC100LFD1+ [HONDA TSUSHIN KOGYO] or equivalent                              | HDRA-E100W1LFD1EC-SL+ [HONDA TSUSHIN KOGYO] or equivalent                                                                                                                                              |
|                           | Software                                                                         | ACX-PAC(W32)                                                                                                                                                                                           |
| Accessories               | CCB-SMC2 *2*3*4, EPD-100A *3*4*5                                                 |                                                                                                                                                                                                        |
|                           | Cables / Connectors                                                              | PCB100PS, PCA100P                                                                                                                                                                                      |

Note:

\*1: +5 V power must be supplied from PCI bus slot. (it does not work on a machine with a +3.3 V power supply alone).  
\*2: 100-pin 0.8 mm pitch connector x1 → 37-pin D-SUB x4, 9-pin D-SUB x4 \*3: Requires use of optional cable PCB100PS  
\*4: Each connector needs cables and accessories. \*5: "Spring-up type terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

# Motion Control

Please see page N-30 for optional accessories and cables/connectors, and page M-01 for software.

|                                          |
|------------------------------------------|
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PCI

100-pin  
Half Pitch

Motion Control  
4 axes

Limit Switch  
Input

Synchronization  
control

Windows Driver

## High Speed 4 Axes Motor Controller SMC-4DL-PCI

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Enable to control Consecutive Movement, Target Location, ORG return, etc. by Fixed Speed, Beeline Acceleration/Deceleration
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Pulse output of up to 9.8 Mbps is supported.
- Override of Speed or Target Location in the movement is provided.



PCI

100-pin  
Half Pitch

Motion Control  
8 axes

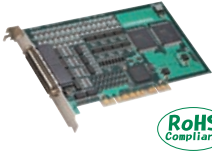
Limit Switch  
Input

Synchronization  
control

Windows Driver

## High Speed 8 Axes Motor Controller SMC-8DL-PCI

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Enable to control Consecutive Movement, Target Location, ORG return, etc. by Fixed Speed, Beeline Acceleration/Deceleration
- Encoders compatible with Differential output, TTL-level output, Open collector output are provided.
- Pulse output of up to 9.8 Mbps is supported.
- Override of Speed or Target Location in the movement is provided.



Realtime OS: Available with INtime. Please see page M-20 for details on INtime.

## I-09

|                |
|----------------|
| Counter        |
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |

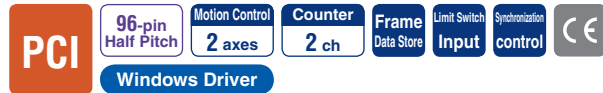
| Model                     |                        | SMC-4DL-PCI                                                                                 | SMC-8DL-PCI                                                |
|---------------------------|------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Number of Axes to Control |                        | 4                                                                                           | 8                                                          |
| Pulse Output              | Output Specifications  | 2-pulse (CW/CCW) or Common-pulse (Pulse/Direction) or 90° Phase Difference pulse (Lead/Lag) |                                                            |
|                           | Signal Type            | Differential Line Driver output                                                             |                                                            |
|                           | Pulse Rate             | 0.3 - 9.8 Mpps                                                                              |                                                            |
|                           | H Level Output Voltage | 2.5 V - 5.25 V                                                                              |                                                            |
|                           | L Level Output Voltage | 0 V - 0.5 V                                                                                 |                                                            |
| Encoder Input             | Signal Form            | Single-phase (UP/DOWN/Z), Two-phase (A/B/Z)                                                 |                                                            |
|                           | Output Type            | Differential, TTL-level, Open Collector                                                     |                                                            |
|                           | Response               | 5 MHz [Differential output, two-phase input, 4 twice, duty: 50 %],                          |                                                            |
|                           | Frequency              | 3 MHz [TTL level output, two-phase input, 4 twice, duty: 50 %],                             |                                                            |
|                           |                        | 1 MHz [Open Collector output, two-phase input, 4 twice, duty: 50 %]                         |                                                            |
| Limit Input Signal        | Resistance             | 150 Ω (SW cut-able)                                                                         |                                                            |
|                           | Signals                | 3 ch/axis (ORG, +LIM, -LIM)                                                                 |                                                            |
|                           | Signal Type            | Opto-isolated input (for sink current output)                                               |                                                            |
| General-purpose input     | Resistance             | 4.7 kΩ                                                                                      |                                                            |
|                           | Signals                | 7 ch/axis                                                                                   |                                                            |
|                           | Signal Type            | Opto-isolated input (for sink current output)                                               |                                                            |
| General-purpose output    | Resistance             | 4.7 kΩ                                                                                      |                                                            |
|                           | Signals                | 3 ch/axis                                                                                   |                                                            |
|                           | Signal Type            | Open collector (Current sinking type) (software selectable positive/negative logic)         |                                                            |
| Controller Chip           | Rating                 | 50 VDC; 100 mA per channel, 300 mA per axis                                                 |                                                            |
|                           |                        | PCL6143 [NPM] or equivalent                                                                 |                                                            |
| Interrupts                |                        | 1                                                                                           |                                                            |
| I/O Address               |                        | Any 128-byte boundary                                                                       |                                                            |
| Power Consumption (Max.)  |                        | 5 VDC 700 mA                                                                                | 5 VDC 1200 mA                                              |
| Bus / Dimensions (mm)     |                        | PCI (32 bit, 33 MHz, Universal key shapes supported *) / 176.41 (L) x 106.68 (H)            |                                                            |
| Connector                 |                        | HDRA-EC100LFDT+ [HONDA TSUSHIN KOGYO] or equivalent                                         | HDRA-E100W1LFDT1EC-SL+ [HONDA TSUSHIN KOGYO] or equivalent |
|                           | Software               | ACX-PAC(W32)                                                                                |                                                            |
| Options                   | Accessories            | CCB-SMC2 *2*3*4, EPD-100A *3*4*5                                                            |                                                            |
|                           | Cables / Connectors    | PCB100PS, PCA100P                                                                           |                                                            |

Note: \*1: +5 V power must be supplied from PCI bus slot. (it does not work on a machine with a +3.3 V power supply alone). \*2: 100-pin 0.8 mm pitch connector x1 → 37-pin D-SUB x4, 9-pin D-SUB x4 \*3: Requires use of optional cable PCB100PS \*4: Each connector needs cables and accessories. \*5: "Spring-up type terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

Please see page N-30 for optional accessories and cables/connectors, and page M-01 for software.

# Motion Control



## High Speed 2 Axes Motion Controller SMC-2P(PCI)

While supplies last

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Able to store 1000 frames - each frame carrying required information for single positioning sequence (i.e. speed, acceleration / deceleration rate, target location)
- Able to control multiple axis (max. 32) in synchronization
- Supporting linear interpolation control on several axis



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Communications

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Bus Adapter

Software

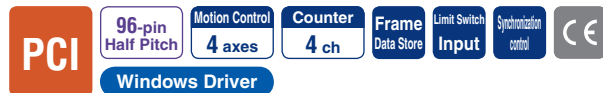
Accessories &  
Cables

Remote I/O

Wireless LAN  
FLEXLAN

Image Distribution Unit  
FlexNetViewer

Solutions /  
Services



## High Speed 4 Axes Motion Controller SMC-4P(PCI)

While supplies last

- Stepping and servo motors are easily controlled in familiar Windows environments.
- Able to store 1000 frames - each frame carrying required information for single positioning sequence (i.e. speed, acceleration / deceleration rate, target location)
- Able to control multiple axis (max. 64) in synchronization
- Supporting linear interpolation control on several axis



## High Speed 3 Axes Stepping Motion Controller SMC-3(PC)

Production  
by order

- Speed and acceleration rate can be changed during pulse output.
- Automatic deceleration start point calculation function is available.
- Acceleration rate and deceleration rate can be set separately and asymmetry trapezoid or triangle driving is possible.
- 4 signals/channel opto-isolated current driving limit input (ORG, Slow Down, +LIM, -LIM) is available.
- I/O 4 point/channel opto-isolated general I/O terminal is available. Input 1 point can be used for emergency stop.



| Model                     | SMC-2P(PCI)                                                                         | SMC-4P(PCI)                                                  | SMC-3(PC)                                                                                    |  |
|---------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------|--|
| Number of Axes to Control | 2                                                                                   | 4                                                            | 3                                                                                            |  |
| Pulse output              | Output Specifications                                                               | 2-pulse (CW/CCW) or Common-pulse (Pulse/Direction)           |                                                                                              |  |
|                           | Signal Type                                                                         | Open collector (software selectable positive/negative logic) |                                                                                              |  |
|                           | Pulse Rate                                                                          | 0.1 - 1 Mpps                                                 | 92 - 6 Mpps                                                                                  |  |
|                           | Rating                                                                              | 35 VDC 100 mA                                                | -                                                                                            |  |
| Encoder input             | Signal Form                                                                         | Single-phase (UP/DOWN/Z), Two-phase (A/B/Z)                  |                                                                                              |  |
|                           | Signal Type                                                                         | High-speed opto-isolated                                     |                                                                                              |  |
|                           | Response Frequency                                                                  | 1 MHz                                                        | -                                                                                            |  |
|                           | Resistance                                                                          | A,B: 220 Ω/Z: 510 Ω                                          | -                                                                                            |  |
| Limit Input               | Signals                                                                             | 3 ch/axis (ORG, +LIM, -LIM)                                  | 4 ch/axis (ORG, +LIM, -LIM, Slow Down)                                                       |  |
|                           | Signal Type                                                                         | Opto-isolated input (12 - 24 VDC)                            |                                                                                              |  |
|                           | Resistance                                                                          | 3 kΩ                                                         | 3.3 kΩ                                                                                       |  |
| General-purpose input     | Signals                                                                             | 7 ch/axis                                                    | 2 ch/axis (each emergency stop option is jumper selectable)                                  |  |
|                           | Signal Type                                                                         | Opto-isolated input (12 - 24 VDC)                            |                                                                                              |  |
|                           | Resistance                                                                          | 3 kΩ (1.8 kΩ for 1 signal only)                              | 3.3 kΩ                                                                                       |  |
| General-purpose output    | Signals                                                                             | 3 ch/axis                                                    | 2 ch/axis                                                                                    |  |
|                           | Signal Type                                                                         | Opto-isolated Open collector                                 |                                                                                              |  |
| Controller Chip           | Rating                                                                              | 35 VDC 100 mA                                                | 35 VDC, 200 mA (Max.)                                                                        |  |
|                           | Controller Chip                                                                     | PCL5014 [NPM]                                                | MPG1020 x 3 [MYCOM]                                                                          |  |
| Interrupts                | -                                                                                   | -                                                            | Pulse output stop or stop error (Can use 4 of IRQ3 - 7, 9 - 12, 14 or 15)                    |  |
| I/O Address               | Any 16-byte boundary                                                                | -                                                            | Any 4-byte boundary                                                                          |  |
| Power Consumption (Max.)  | 5 VDC 800 mA                                                                        | 5 VDC 900 mA                                                 | 5 VDC 600 mA                                                                                 |  |
| Bus / Dimensions (mm)     | PCI (32 bit, 33 MHz, 5 V) / 176.41 (L) x 106.68 (H)                                 | -                                                            | ISA / 163.0 (L) x 122.0 (H)                                                                  |  |
| Connector                 | 96-pin half pitch connector [M type] PCR-E96LMD [HONDA TSUSHIN KOGYO] or equivalent | -                                                            | 37-pin D-SUB connector [F type]                                                              |  |
| Options                   | Software                                                                            | ACX-PAC(W32)                                                 | API-PAC(W32)                                                                                 |  |
|                           | Accessories                                                                         | CCB-SMC1* <sup>1</sup> , EPD-96, EPD-96A* <sup>3</sup>       | DTP-3C* <sup>2</sup> , DTP-4C* <sup>2</sup> , EPD-37A* <sup>2,3</sup> , EPD-37* <sup>2</sup> |  |
|                           | Cables / Connectors                                                                 | PCA96P, PCB96P, PCA96PS, PCB96PS, CN5-H96F                   | PCA37P, PCB37P, PCA37PS, PCB37PS                                                             |  |

Note:

- \*1: Requires use of optional cable PCB96P or PCB96PS  
 \*2: Requires use of optional cable PCB37P or PCB37PS  
 \*3: "Spring-up type terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, Pbfree is a CONTEC original marking for lead-free products.

## I-10

| Counter        |
|----------------|
| Lineup         |
| PCI Express    |
| PCI            |
| PC Card        |
| USB            |
| Motion Control |
| Lineup         |
| PCI Express    |
| PCI            |
| ISA            |